Cityscape

A Journal of Policy Development and Research

Double Issue
Reentry Housing After Jail or Prison

Recent Reforms in Zoning
Volume 25, Number 2 • 2023

U.S. Department of Housing and Urban Development Office of Policy Development and Research

PD&R

Cityscape

A Journal of Policy Development and Research

Double Issue

Reentry Housing After Jail or Prison

Recent Reforms in Zoning

Volume 25, Number 2 • 2023

U.S. Department of Housing and Urban Development
Office of Policy Development and Research

The goal of *Cityscape* is to bring high-quality original research on housing and community development issues to scholars, government officials, and practitioners. *Cityscape* is open to all relevant disciplines, including architecture, consumer research, demography, economics, engineering, ethnography, finance, geography, law, planning, political science, public policy, regional science, sociology, statistics, and urban studies.

Cityscape is published three times a year by the Office of Policy Development and Research (PD&R) of the U.S. Department of Housing and Urban Development (HUD). Subscriptions are available at no charge and single copies at a nominal fee. The journal is also available on line at huduser.gov/periodicals/cityscape.html.

PD&R welcomes submissions to the Refereed Papers section of the journal. Our referee process is double blind and timely, and our referees are highly qualified. The managing editor will also respond to authors who submit outlines of proposed papers regarding the suitability of those proposals for inclusion in *Cityscape*. Send manuscripts or outlines to cityscape@hud.gov.

Visit PD&R's website, huduser.gov, to find this report and others sponsored by PD&R. Other services of HUD USER, PD&R's Research and Information Service, include listservs, special interest and bimonthly publications (best practices, significant studies from other sources), access to public use databases, and a hotline (1–800–245–2691) for help with accessing the information you need.

Contents

Symposium

Reentry Housing After Jail or Prison
Guest Editor: Calvin C. Johnson

Guest Editor's Introduction

Reentry and Housing

Calvin C. Johnson
U.S. Department of Housing and Urban Development

The views expressed in this article are those of the author and do not represent the official positions or policies of the Office of Policy Development and Research, the U.S. Department of Housing and Urban Development, or the U.S. Government.

In 2021, HUD Secretary Marcia L. Fudge stated the President's and her position on reentry and housing: "The President and I believe that everyone deserves a second chance and a stable home from which to rebuild their lives. No person should exit a prison or jail only to wind up on the streets." She went on to clarify to HUD-assisted housing providers and Continuums of Care that returning citizens at risk of homelessness were among the eligible population for the recently awarded 77,000 new emergency housing vouchers. She continued by stating—

> HUD is committed to taking a comprehensive approach to addressing the housing needs of returning citizens and people with criminal records, and by doing so, increasing public safety within our communities. Addressing reentry housing needs also furthers the Biden Administration's commitment to advancing equity and reversing systemic racism, given the racial disparities evident in the criminal justice system.

The following year (April 2022), Secretary Fudge charged the Department's leadership with conducting a comprehensive review of regulations and guidance to identify ways to reduce barriers to HUD programs for people with criminal records. She acknowledged that—

> Individuals with criminal histories too often face daunting and unnecessary barriers to obtaining and maintaining housing, including public housing, HUD-assisted housing, and HUD-insured housing, which are often the only types of housing they can afford … Too often, criminal histories are used to screen out or evict individuals who pose no actual threat to the health and safety of their neighbors. And this makes our communities less safe because providing returning citizens with housing helps them reintegrate and makes them less likely to reoffend.

Within that context, *PD&R Edge* (HUD-PD&R's online magazine) published a series of messages from PD&R's leadership on these topics (in April 2022, May 2022, and August 2022), and the planning for this *Cityscape* symposium on reentry and housing emerged.

The research articles in this symposium are intended to support evidence-building and policy-development activities on both issues identified by HUD's Secretary: (1) housing supports for returning citizens and (2) the enduring barrier to housing presented by a criminal record. Furthermore, these papers are written with a recognition that housing is an important tool for increasing public safety and connecting individuals to services associated with successful reentry (e.g., employment, health and wellness, and other social services), especially in the days immediately following release from correctional institutions.

Introduction

Despite having the lowest incarceration rate on record since 1995, the United States continues to incarcerate more people per capita than any other country for which data are available—810 inmates for every 100,000 adult residents (Gramlich, 2021). That proportion amounts to nearly 2.1 million incarcerated individuals, with the majority (69 percent) confined to state or federal prisons, where they typically serve a period of incarceration of more than 1 year, and the remaining 31 percent confined to local jails, where they typically serve 1 year or less (Carson and Kluckow, 2023). An additional 4.4 million individuals were being supervised in the community on probation (3.5 million) or on parole (900,000). The impact of those corrections practices disproportionately affects low-income communities and communities of color. No matter the form of correctional supervision, the facts remain the same: nearly all of them will go home. And when they go home—that is, return to their communities—they will have been labeled for their criminal justice involvement and, as a result, will face extremely challenging circumstances navigating life outside jail and prison walls.

The literature can be no clearer. Individuals with a criminal record confront barriers to accessing the most basic needs of food and shelter and an array of needed support services (e.g., employment, behavioral health, and physical and mental health care) to facilitate successful transitions from jails and prisons and reduce the risk of rearrest, relapse, or any negative behavioral outcomes that might land them back in a correctional institution (Reentry Coordination Council, 2022). With stable housing or a viable housing plan, these individuals establish meaningful connections to family and community-based services that support their reentry journey and slow the rate of future criminal offending (Fontaine, Gilchrist-Scott, Roman et al., 2012; La Vigne et al., 2009; Visher et al., 2010). Without such stable housing or a viable housing plan, these individuals are likely to lose their connections to meaningful social networks and support services that mitigate the risk posed by social and economic deficits known to contribute directly and indirectly to criminal behavior (Fontaine, Gilchrist-Scott, Denver et al., 2012).

In addition to being one of the most important basic needs, housing is a key predictor of successful community reentry (Burrowes, 2019). Returning citizens for whom safe and affordable housing is inaccessible often experience a downward spiral immediately following release from incarceration that increases the risk of returning to jail or prison. Without housing, accessing much-needed

social services and health services is extremely challenging. Safe and affordable housing serves as a protective factor by removing the search for housing as a primary need and therefore facilitating access to other needed services (Criminal Justice Policy Group, 2019; Johnson, 2022). Therefore, housing should qualify as a prescription for public safety that supports access to other protective factors known to reduce the rate of return to jail or prison.

Returning Citizens (formerly incarcerated individuals) and Barriers to Reentry

Each year, between 600,000 and 650,000 individuals return to the community following a period of confinement in state or federal prisons (Carson, 2015), and another 4.9 million individuals return to the community following a period of confinement in local jails (Sawyer and Wagner, 2023). Upon return to the community, they experience the same set of social, economic, and health conditions that contributed to their incarceration. A significant share of these individuals return to a relatively small number of communities across the country (La Vigne et al., 2003; Olson and Anderson, 2020; Travis, Solomon, and Waul, 2001; University of Wisconsin, Institute for Research on Poverty, 2020). Those communities have an ever-shrinking supply of quality affordable housing and limited access to employment opportunities and healthcare services (including physical, mental, and behavioral health). Based on surveys of returning citizens in The Returning Home Study, more than one-half returned to neighborhoods that have major drug problems (Visher, La Vigne, and Travis, 2004; Visher, Yahner, and La Vigne, 2010). Despite every effort by families, community nonprofit organizations, faith-based institutions, local government service providers, and community corrections officers committed to supporting successful transitions from correctional institutions to the community, the structural conditions within those communities (e.g., inadequate affordable housing stock, high poverty, and high unemployment) are significant contributors to crime and its correlates and, as such, present program and policy challenges for reentry.

Nearly all individuals confined to a period of incarceration in either jails or prisons will go home and return to the community, so where do they live upon their return? Housing arrangements for citizens returning from prison or jail are fragile; they were fragile before incarceration and are even more fragile upon return to the community. Upon release from jail or prison, returning citizens might stay with family, stay in emergency housing shelters, or find themselves experiencing a variety of unsheltered sleeping arrangements. For those fortunate enough to have housing arrangements with family, those arrangements often are temporary. Families who rent their homes and invite a person returning from incarceration to stay with them often do so in violation of their lease agreements. Moreover, families who receive federally assisted rental housing often are restricted from adding individuals who have a criminal record to the lease, even if the individual was listed as a tenant on the lease before incarceration. Those temporary and unstable housing arrangements and lease restrictions further exacerbate the housing challenges faced by the more than 600,000 individuals released from state and federal prisons and the nearly 5 million individuals released from local jails each year.

The literature consistently indicates that returning citizens are more likely to transition successfully to the community when housing and support services are in place, connections to healthcare

resources are established (including physical, behavioral, and mental health), and employment or vocational skill development plans are in place (Travis et al., 2001; Zhang et al., 2019). Further, the interconnectedness of health, employment, and housing as part of the reentry process (Link, Ward, and Stansfield, 2019) requires intentionality with respect to prerelease planning (Nelson, Deess, and Allen, 2011) and policy and program development. When people returning from incarceration are housed and connected to services that address their healthcare needs and other service delivery needs, such as employment or vocational programs, they are more likely to remain in the community without being reincarcerated for a new offense (Bureau of Justice Assistance (BJA), 2022; Fontaine, Gilchrist-Scott, Roman et al., 2012; La Vigne, Shollenberger, and Debus, 2009; Bae, diZerega, Kang-Brown et al., 2016).

When returning citizens have access to safe and affordable housing, they can reunify with family members willing to support the implementation of a reentry plan, engage in employment services or maintain their employment, participate in behavioral health services, and better manage their physical and mental well-being (BJA, 2022). A growing body of evidence highlights the importance of well-structured and coordinated housing interventions plus support services in increasing the likelihood of successful reentry. A few such programs are listed below.

- Denver Social Impact Bond Initiative
    - *Program Description:* Offers permanent housing and supportive services to "front end" or frequent users of criminal justice and emergency medical services.
    - *Partners:* Colorado Coalition for the Homeless, Colorado Division of Housing, Denver Continuum of Care, Denver Housing Authority, and Mental Health Center of Denver.
    - *Outcome (experimental design):* Compared with a control group, the treatment group experienced a 34-percent reduction in police contact and a 40-percent reduction in arrests.
- New York City Frequent Users Service Enhancement (FUSE)
    - *Program Description:* Individuals experiencing homelessness who had experienced four jail stays and four shelter stays in the past 5 years were offered permanent supportive housing.
    - *Partners:* Corporation for Supportive Housing, Department of Corrections, Department of Health and Mental Hygiene, Department of Homeless Services, Housing Preservation and Development, New York City Housing Authority, and nonprofit housing and service providers.
    - *Outcome (quasi-experimental design):* Compared with a comparison group, FUSE participants experienced a larger reduction in jail days, lower rates of hard drug and alcohol use, and higher levels of family and social supports.
- Returning Home—Ohio (RHO)

- *Program Description:* A component of the Corporation for Supportive Housing's Returning Home Initiative, in which citizens returning from incarceration with unmet medical needs and at risk of being homeless are offered permanent housing and supportive services.
- *Partners:* Corporation for Supportive Housing, Ohio Department of Alcohol and Drug Addiction Services, Ohio Department of Mental Health, and Ohio Department of Rehabilitation and Corrections.
- *Outcome (quasi-experimental design):* Compared with a comparison group, RHO participants were less likely to be rearrested and to return to prison within 1 year of release.

In the absence of stable housing or a viable housing plan upon release from jail or prison, returning citizens are nearly 10 times more likely to be homeless than the general public (Couloute, 2018). The rates are significantly higher among those released from incarceration within the past 2 years. Using HUD Point-in-Time estimates and the National Former Prisoner Survey, Couloute estimates that the sheltered homeless rate is 98 per 10,000 for formerly incarcerated individuals, compared with 13 per 10,000 for the general public. The unsheltered homeless rate is 105 per 10,000 for formerly incarcerated individuals compared with 8 per 10,000 for the general public. An additional 367 per 10,000 formerly incarcerated individuals have marginal housing insecurities, living in rooming housings, hotels, or motels.

The Enduring Effect of a Criminal Record

Nearly 1 in 3 adults (or 85.1 million adults) in the United States are estimated to have a criminal arrest record. No matter the length of time since their arrest, their criminal record has an enduring effect, causing barriers to housing, employment, and a range of social services. Landlords conduct criminal background checks and deny housing because of the presence of a criminal record—even when the applicant is financially qualified.

Criminal history data (the compilation of crime records) typically are used in risk assessment and screening tools across criminal and juvenile justice settings, but little empirical evidence supports their use to predict successful tenancy (Malone, 2009). Instead, housing providers and their management agents routinely conduct criminal background checks as part of their tenant screening processes, believing that criminal history is an accurate predictor of future criminal behavior that could pose harm to other tenants or disturb their peaceful enjoyment of the property. Housing providers and their management agents rely on findings from recidivism studies that take an event-based approach using an arrest in the past to predict future arrests or other behavioral outcomes. In so doing, housing providers and their management agents fail to acknowledge that the greater the distance in time since the criminal activity, the more indistinguishable the risk of arrest is for a person with a criminal record compared with a person with no prior arrest (Bushway et al., 2022; Kurlychek, Brame, and Bushway, 2006, 2007).

Given disproportionate patterns of arrest in low-income communities and communities of color, the use of criminal records to determine eligibility for housing is a disadvantage for renters who are people of color. Even when criminal records are assessed for all potential renters, this practice

has a disparate impact on low-income people and people of color who are adversely affected by discriminatory policing and sentencing practices.

The articles in this symposium address the challenges of reentry and housing and provide more details about the challenges faced by citizens returning from incarceration and individuals with a criminal record as they attempt to obtain housing—one of the most important basic needs.

Order of Articles and Summaries

- In their article, Elizabeth Beck and her research partners from Georgia State University share research from their evaluation of Second Chance Act (SCA) grantees in three communities. The research team interviewed local SCA program providers in each site and 31 program participants across the sites. Program participants' list of housing challenges included housing affordability, barriers in the private and public housing market caused by a criminal record, and the importance of family in providing a housing safety net. Program providers relied on a variety of efforts to support connection to housing for their program participants, including referrals to housing partners and providers that also offer case management support and collaboration with local housing authorities to promote the use of vouchers for returning citizens.

- David Kirk's article presents findings from pilot randomized evaluations of a "fresh start" with free housing—the Maryland Opportunities through Vouchers Experiment (MOVE). Kirk notes that a large share of citizens released from incarceration return to the community or areas close to the community where they were arrested. Essentially, they return to the places familiar to them—places where they have social networks that facilitate their criminal involvement—and do so facing housing challenges. Although resources limited the design of the pilot evaluation, Kirk designed two pilots testing (1) the effect of moving to a new jurisdiction with free housing and (2) the effect of moving to a new jurisdiction with free housing compared with the usual reentry housing search process. These pilots provide promising signals for followup research offering returning citizens a "fresh start" in jurisdictions that are less familiar and where they have no existing social networks that might facilitate criminal involvement.

- The article by Sarah Hunter and Stephanie Mercier presents findings from Los Angeles County's first Pay For Success (PFS) initiative—Just in Reach (JIR). In general, PFS allows the private sector to invest in public initiatives and receive their initial investment plus interest if outcomes are achieved. JIR PFS is modeled after Los Angeles County's Housing for Health program and is administered by the Office of Diversion and Reentry. The program model includes prerelease screening for potential eligibility, assignment to intensive case management services with mental health services as needed, and assignment to transitional housing (up to 9 months) followed by permanent supportive housing. Using a quasi-experimental design, the authors report positive program effects for jail days, housing and homeless services, and healthcare services and related costs.

- The article by Niloufer Taber and her research partners highlights the significant barrier to obtaining housing presented by a conviction history. Further, the research team identifies

"1,300 documented local and state barriers to housing for people with conviction histories and 26 federal barriers." Using policies across public housing authorities in Michigan and Oklahoma regarding housing eligibility for persons with a criminal history and criminal conviction data in both states, the researchers estimate the number of individuals potentially excluded from housing in the 116 housing authorities in Michigan and the 101 housing authorities in Oklahoma if the lookback period[1] was changed. The numbers are large and speak to the deleterious effect of the lookback period.

Acknowledgments

I am thankful to the authors for their submissions to this symposium. Their research contributes to evidence-building and policy development at the intersection of reentry and housing.

Guest Editor

Calvin C. Johnson, PhD, is the Deputy Assistant Secretary for the Office of Research, Evaluation, and Monitoring at the U.S. Department of Housing and Urban Development.

References

Bae, John, Margaret diZerega, Jacob Kang-Brown, Ryan Shanahan, and Ram Subramanian. 2016. *Coming Home: An Evaluation of the New York City Housing Authority's Family Reentry Pilot Program*. New York: Vera Institute of Justice. https://www.vera.org/downloads/publications/NYCHA_report-032917.pdf.

Bureau of Justice Assistance (BJA). 2022. *Opening Doors, Returning Home: How Public Housing Authorities Across the Country Are Expanding Access for People with Conviction Histories*. https://bja.ojp.gov/doc/opening-doors-returning-home.pdf.

Bureau of Justice Statistics (BJS). 2014. *Survey of State Criminal History Information Systems, 2012: A Criminal Justice Information Policy Report*. https://www.ojp.gov/pdffiles1/bjs/grants/244563.pdf.

Burrowes, Kimberly. 2019. "Can Housing Interventions Reduce Incarceration and Recidivism?" *Housing Matters*, February 27. https://housingmatters.urban.org/articles/can-housing-interventions-reduce-incarceration-and-recidivism.

Bushway, Shawn D., Brian G. Vegetabile, Nidhi Kalra, Lee Remi, and Greg Baumann. 2022. *Resetting Recidivism Risk Prediction*. Rand Corporation Research Brief. https://www.rand.org/pubs/research_briefs/RBA1360-1.html.

[1] The lookback period is how far back a landlord "looks back" when conducting a criminal background check of a housing applicant.

Carson, E. Ann. 2015. "Prisoners in 2014," *Bulletin*, September: 1–33. https://bjs.ojp.gov/content/pub/pdf/p14.pdf.

Carson, E. Ann, and Rich Kluckow. 2023. *Correctional Populations in the United States, 2021—Statistical Tables*. Bureau of Justice Statistics: Statistical Tables. https://bjs.ojp.gov/sites/g/files/xyckuh236/files/media/document/cpus21stB.pdf.

Couloute, Lucius. 2018. *Nowhere to Go: Homelessness Among Formerly Incarcerated People*. Prison Policy Initiative. https://www.prisonpolicy.org/reports/housing.html.

Criminal Justice Policy Group. 2019. *Successful Reentry: A Community-Level Analysis.* The Harvard University Institute of Politics. https://iop.harvard.edu/sites/default/files/sources/program/IOP_Policy_Program_2019_Reentry_Policy.pdf.

Fontaine, Jocelyn, Douglas Gilchrist-Scott, Megan Denver, and Shelli B. Rossman. 2012. *Families and Reentry: Unpacking How Social Support Matters*. Washington, DC: Urban Institute. https://www.urban.org/sites/default/files/publication/24921/1001630-Families-and-Reentry-Unpacking-How-Social-Support-Matters.PDF.

Fontaine, Jocelyn, Douglas Gilchrist-Scott, John Roman, Samuel Taxy, and Caterina Roman. 2012. *Supportive Housing for Returning Prisoners: Outcomes and Impacts of the Returning Home-Ohio Pilot Project*. Urban Institute Research Report, August. https://www.urban.org/sites/default/files/publication/25716/412632-Supportive-Housing-for-Returning-Prisoners-Outcomes-and-Impacts-of-the-Returning-Home-Ohio-Pilot-Project.PDF.

Gramlich, John. 2021. *America's Incarceration Rate Falls to Lowest Level Since 1995*. Washington, DC: Pew Research Center.

Johnson, Calvin. 2022. "Why Housing Matters for Successful Reentry and Public Safety," *PD&R Edge*, April 19. https://www.huduser.gov/portal/pdredge/pdr-edge-frm-asst-sec-041922.html.

Kurlychek, Megan C., Robert Brame, and Shawn D. Bushway. 2007. "Enduring Risk? Old Criminal Records and Predictions of Future Criminal Involvement," *Crime and Delinquency* 53 (1).

———. 2006. "Scarlet Letters and Recidivism: Does an Old Criminal Record Predict Future Offending?" *Criminology and Public Policy* 5 (3): 483–504.

La Vigne, Nancy G., Cynthia A. Mamalian, Jeremy Travis, and Christy Visher. 2003. *A Portrait of Prisoner Reentry in Illinois*. Urban Institute Research Report, April. Washington, DC: Urban Institute.

La Vigne, Nancy G., Tracey L. Shollenberger, and Sara A. Debus. 2009. *One Year Out: Tracking the Experiences of Male Prisoners Returning to Houston, Texas*. Urban Institute Research Report, June. https://www.urban.org/sites/default/files/publication/30436/411911-One-Year-Out-The-Experiences-of-Male-Returning-Prisoners-in-Houston-Texas.PDF.

Link, Nathan W., Jeffrey T. Ward, and Richard Stansfield. 2019. "Consequences of Mental and Physical Health For Reentry and Recidivism: Toward a Health-Based Model of Desistance," *Criminology* 57 (3): 544–573. DOI: 10.1111/1745-9125.12213.

Malone, Daniel K. 2009. "Assessing Criminal History as a Predictor of Future Housing Success for Homeless Adults with Behavioral Health Disorders," *Psychiatric Services* 60 (2): 224–230.

Nelson, Marta, Perry Deess, and Charlotte Allen. 2011. "The First Month Out: Post-Incarceration Experiences in New York City," *Federal Sentencing Reporter* 24 (1): 72–75.

Olson, Steve, and Karen M. Anderson. 2020. *The Effects of Incarceration and Reentry on Community Health and Well-Being: Proceedings of a Workshop*. Washington, DC: National Academies Press.

Reentry Coordination Council. 2022. *Coordination to Reduce Barriers to Reentry: Lessons Learned from COVID-19 and Beyond*. Report to Congress from the Reentry Coordination Council. https://www.justice.gov/opa/press-release/file/1497911/download.

Sawyer, Wendy, and Peter Wagner. 2023. "Mass Incarceration: The Whole Pie 2023." Press release. *Prison Policy Initiative*, March 14.

Travis, Jeremy, Amy L. Solomon, and Michelle Waul. 2001. *From Prison to Home: The Dimensions and Consequences of Prisoner Reentry*. Washington, DC: Urban Institute.

University of Wisconsin, Institute for Research on Poverty. 2020. *Connections Among Poverty, Incarceration, and Inequality*. Fast Focus Research/Policy Brief No. 48-2020. https://www.irp.wisc.edu/resource/connections-among-poverty-incarceration-and-inequality/.

Visher, Christy, Nancy La Vigne, and Jeremy Travis. 2004. *Returning Home: Understanding the Challenges of Prisoner Reentry. Maryland Pilot Study: Findings from Baltimore*. Urban Institute Research Report, January. https://www.urban.org/sites/default/files/publication/42841/410974-Returning-Home-Understanding-the-Challenges-of-Prisoner-Reentry.PDF.

Visher, Christy, Jennifer Yahner, and Nancy La Vigne. 2010. *Life After Prison: Tracking the Experiences of Male Prisoners Returning to Chicago, Cleveland, and Houston*. Urban Institute Research Brief, May. https://www.urban.org/sites/default/files/publication/28671/412100-Life-after-Prison-Tracking-the-Experiences-of-Male-Prisoners-Returning-to-Chicago-Cleveland-and-Houston.PDF.

Zhang, Ryan, Swathi Srinivasan, Amisha Kambath, Venus Nnadi, Adiah Price-Tucker, Amy Zhou, Andrew Charroux, Choetsow Tenzin, Emma Robertson, Hoda Abdalla, Jeffrey Gu, Jordan Barton, Maria Keselj, Owen Bernstein, Paul Alexis, Sethu Odayappan, and Tabitha Escalante. 2019. *Successful Reentry: A Community-Level Analysis*. Harvard Kennedy School Institute of Politics Criminal Justice Policy Group. https://iop.harvard.edu/sites/default/files/sources/program/IOP_Policy_Program_2019_Reentry_Policy.pdf.

Addressing Barriers to Housing in Reentry Programs Working to Address a Variety of Needs: A Qualitative Study of Second Chance Act Grantees

Elizabeth L. Beck
Natasha N. Johnson
Sommer Delgado
Victoria Helmly
Susan A. McLaren
Alice Prendergast
Leigh Alderman
Lorenzo Almada
Brian Bride
Eric Napierala
William J. Sabol
Georgia State University

Abstract

Using data from an evaluation of three Second Chance Act grantees, we explore formerly incarcerated people's (FIP) access to housing. This study is unique in that it includes the perspectives of individuals with lived experiences and the insights of the reentry program providers working to meet their overall needs, including in the area of housing. The data come from reentry programs in three regions of the United States. Although the needs of the people with lived experiences have similarities, regional differences exist, particularly related to housing costs and supply, including the availability of transitional housing. Also, variations exist between FIP who are able to live with family compared with those who do not have this option. The three programs this study examined worked to address housing needs in distinctive ways and explores the housing needs of FIP and the strategies the three programs use to address these needs. Incorporating a two-pronged approach, this article includes analyses of (1) interview data with 31 FIP from 3 months to 3 years post-incarceration and (2) interviews and program materials to support formulative case analyses of the housing-related work that program enacted. Through this work, highlighting program efforts to remove barriers to housing for this population, the study seeks to promote the advancement of relevant policy, practice, and research in this arena.

Key Words: Barriers to Housing, Second Chance Act, Post-Incarceration, Post-Release, Formerly Incarcerated People, Recidivism, Reentry, Transitional Housing

Introduction

In 2020, one in five U.S. households experienced housing insecurity, and the nightly shelter count of homeless people in 2021 was 326,000. For formerly incarcerated people (FIP), stable housing represents the foundation for successful reentry from prisons and jails (HUD, 2022). It is against this backdrop that the 600,000 people released annually from prisons and the 6 to 7 million people who are booked and released from jail in a year must find housing (Kovera, 2019; Rodríguez-Pose and Storper, 2020; Spaulding et al., 2011, 2009; Yousefi-Rizi et al., 2021).

Housing, a primary determinant in one's ability to successfully reintegrate, is a challenging barrier that FIP face (Bowman and Ely, 2020; Geller and Curtis, 2011; Gunnison and Helfgott, 2011; Remster, 2019). For a person reentering from incarceration, safe and affordable housing is more than mere shelter. Stable housing is associated with positive psychosocial outcomes, including employment, physical and behavioral health, and lower rates of recidivism (Bostic et al., 2012; Semenza and Link, 2019). A criminal record exacerbates FIP's challenges in finding housing, as Marcia Fudge, Secretary of the U.S. Department of Housing and Urban Development (HUD), succinctly stated—

> Individuals with criminal histories too often face daunting and unnecessary barriers to obtaining and maintaining housing, including public housing, HUD-assisted housing, and HUD-insured housing, which are often the only types of housing they can afford […] Too often, criminal histories are used to screen out or evict individuals who pose no actual threat to the health and safety of their neighbors. And this [policy] makes our communities less safe, because providing returning citizens with housing helps them reintegrate and makes them less likely to reoffend. (Fudge, 2022, p. 1)

The search for shelter among FIP is fraught with resource barriers and exclusionary policies (Remster, 2021). This general lack of access to housing can be considered a public safety issue. As such, after the initial Second Chance Act (SCA) of 2008 expired, Congress reauthorized it within the First Step Act of 2018 under Title V—Second Chance Act of 2008 Reauthorization.[1, 2] Both bipartisan bills provided assistance for programs for FIP to successfully return and reintegrate into their communities. Through the SCA, the Bureau of Justice Assistance and the Office of Juvenile Justice and Delinquency Prevention have made more than 800 awards across 49 states since 2009 (Ritter, 2014). Even in areas where grant recipients are working to support FIP, securing housing remains difficult (Bae et al., 2016; Simmons University School of Social Work, 2016).

Although people with lived experiences of reentry often have difficulties securing housing, regional differences exist, especially related to housing costs and supply. This article examines data from three geographically different SCA grantees, explores FIP's access to housing, and includes both the perspectives of individuals with lived experiences and the insights of the reentry program providers

[1] *Second Chance Act of 2008*. Public Law 110-199.

[2] *First Step Act of 2018*. Public Law 115-391.

working to meet their needs. While none of the reentry sites had a specific focus on housing, according to the SCA legislation, grantees are to provide comprehensive services that include support with social services, jobs, and housing. This article begins by reviewing the relevant literature on the reentry-housing-community development nexus.

Literature Review on the Reentry-Housing-Community Development Nexus

Access to safe, stable, and affordable housing remains a prevalent—and foundational—need among FIP as they reenter society. Geller and Curtis (2011), Remster (2021, 2019), and Smoyer et al. (2021) found that FIP frequently experience prolonged, unstable housing situations and "ping-pong" between friends, family, romantic partners, shelters, and other temporary living arrangements (Smoyer et al., 2021). Those who do not have familial access to housing are often led to housing programs such as halfway houses or shelters, and others will face unsheltered homelessness (Baxter et al., 2019). Remster (2021, 2019) evidenced the prolonged nature of ping-pong housing, reporting that 49.6 percent of FIP who used shelters did so in the 2 years following release. This finding points to the lack of stability often associated with living with friends or family post-release, as overcrowding, family tensions, and other issues surface. These issues are, in many instances, exacerbated by the income constraints of those providing housing to FIP and the income constraints of FIP (Fontaine, 2013).

Extensive literature discusses the relationships between poverty and crime and poverty and recidivism (Goodley, Pearson, and Morris, 2022; Jacobs et al., 2022; Nivette, 2011; Olver, Stockdale, and Wormith, 2014; Patel et al., 2018; Pratt and Cullen, 2005). Hayat (2022: 657) investigated these relationships and noted that "poverty may be a more significant predictor of recidivism than dangerousness." In their study involving 3,000 low-income men, Geller and Curtis (2011) found that FIP were twice as likely to fall into one of the most extreme forms of poverty and homelessness than others with similar risk factors. This finding is concerning, given the strong relationship between homelessness and reincarceration (Brown, 2004; Moschion and Johnson, 2019; Travis, Solomon, and Waul, 2001). In a study of roughly 50,000 men released from New York State prisons, Metraux and Culhane (2004) found that 11.4 percent experienced homelessness; of that population, nearly one-third were reincarcerated (Metraux and Culhane, 2004; Metraux, Hunt, and Yetvin, 2020). In addition, Travis, Solomon, and Waul (2001) observed that FIP living in homeless shelters were seven times more likely to not meet parole expectations due to the compounding effects of homelessness that put them at greater risk for rearrest. Compounding factors include rearrests for so-called 'quality-of-life offenses,' often incurred as people attempt to meet their daily needs while living unsheltered (Travis, Solomon, and Waul, 2001).

Recognizing that housing provides a foundation from which one can seek employment, maintain sobriety, address behavioral, mental, and physical health needs, and make positive contributions to their community, the United States began implementing the Rapid Rehousing model for people experiencing homelessness in 2014 (Beck and Twiss, 2018; Padgett, Henwood, and Tsemberis, 2015). Rapid Rehousing swiftly provides housing based on the assumption that once persons experiencing homelessness obtain housing, they have the space and support to mitigate other issues. The model has proven successful across various matrices, including cost-effectiveness, and can be considered a response to previous models that did not prioritize housing (Lee, Shinn, and

Culhane, 2021; Padgett, Henwood, and Tsemberis, 2015). Rapid Rehousing holds essential lessons and implications for the future of reentry work in terms of its philosophy and the strategies used to overcome barriers to housing (Fontaine, 2013).

A criminal record is a significant barrier to securing housing. This record allows property owners to deny FIP rental applications, disproportionately affecting minoritized citizens' efforts to obtain housing (HUD, 2022). This exclusion extends to public housing agencies (PHAs), which administer federally subsidized housing at the local level. Historically, PHAs had prohibitions on renting to people with felony records, and in some locations, this prohibition includes misdemeanors. Other policies limit the ability of friends and family participating in PHA programs to support FIP through housing. In response, President Barack Obama issued guidance to PHAs in 2015 to remove these constraints. However, the decision to follow this guidance was left in the hands of PHAs; ultimately, few changes were made (Hayat, 2022; Voborníková, 2016). On June 23, 2021, Secretary Marcia Fudge made a second appeal to remove barriers to public housing. As part of the American Rescue Plan, 7,000 housing vouchers were awarded to 600 PHAs for use by FIP at risk for homelessness (Fudge, 2021).

In a randomized controlled trial, the Maryland Opportunities Through Voucher Experiment, 0 percent of the formerly incarcerated participants who received housing vouchers in the first wave were rearrested. In subsequent waves, a few members of the treatment group were rearrested. In this same vein, "rearrest was lower among the treatment group of movers than the nonmovers and was also lower for nonmovers who received free housing versus nonmovers who did not receive housing" (Kirk et al., 2018: 213). In contrast, 22 percent of individuals in the control group were rearrested (Kirk et al., 2018). The New York City Department of Homeless Services and the New York City Housing Authority created the Family Reentry Pilot Program, which resulted in the rearrest of only 1 of the 150 participants who received a public housing unit and participated in a program to support family reunification (Bae et al., 2016). As impressive as these studies are, they did little to address subpopulations with unique housing struggles. The Maryland program was not open to women, and only 8.5 percent of the participants in the New York program were women, who frequently face additional barriers like seeking housing suitable for their children. The programs also did not explicitly address access to housing for people convicted of sexual crimes. The barriers to housing for both populations are substantial.

When considering the reentry-housing-community development nexus, it is necessary to acknowledge the combination of the following policies. First, the austerity measures used to dismantle public housing; second, the rise of mass incarceration; and third, the policing and criminal justice policies that disproportionality affect the incarceration rates of people of color (Alexander, 2010; Beck and Twiss, 2018). Black and Latinx people are incarcerated at five times and one and one-third times the rate of White people, respectively. During the past 50-plus years, these policies collided to create a reentry-recidivism cycle that fuels the prison industrial complex (Beck and Twiss, 2018; Kovera, 2019; Williams, Wilson, and Bergeson, 2019). Instead of making communities safer, the inability to securely house FIP often leads to reincarceration and the perpetuation of policies disproportionally targeting people of color (Western and Sirois, 2019).

Data and Methods

Data were collected from each SCA-funded site between the summer of 2021 and early 2023. The data collection process included one multiday site visit and regular interaction between the authors and the SCA-funded sites. In addition, program providers from each location participated in a 1-hour interview via video conferencing software (for example, Zoom) that was recorded and transcribed. During these interviews, program providers were asked a series of questions designed to better understand the role and goals of each site in the reentry-housing-community development nexus. Information was also collected through documentation the site personnel provided, and the authors obtained information via site visits and ongoing conversations. Open coding was used to identify categories from these data.

Data Collection and Analysis

In the summer of 2022, the evaluation team interviewed 31 FIP who participated in SCA programs. The SCA site assisted with recruiting subjects by using recruitment materials the evaluation team provided and that the institutional review board approved. As a part of this recruitment, the evaluation team requested that the sites try to refer individuals with diverse experiences regarding the length of time since exiting prison; specifically, the team sought an array of individuals with diverse backgrounds, program perceptions, and transitional experiences. Participants were asked about ongoing interactions with the SCA program providers and their reentry experiences, including barriers to reentry, but were not explicitly asked about their housing situations. Interviews were between 30 and 180 minutes each and were primarily conducted within the SCA site. However, several participants elected to participate through video conferencing software or telephone. All participants were compensated $50.00 per hour for the interviews. The data from these interviews were recorded, transcribed, and then coded using an open coding method to identify categories. Some authors worked together to code the data, and interrater reliability was achieved with several of the remaining authors.

Participant Overview

Demographic data on the participants were collected during the interviews. A diverse set of participants were interviewed, categorized by their self-classified gender, race and ethnicity, and age group. Interviewers asked open-ended questions regarding these demographics. Exhibit 1 outlines participants' self-identities.

Exhibit 1

Participant Demographic Data*

Participants	n = 31
Gender	
Men	22
Women	9
Nonbinary and Gender Nonconforming	0
Race and Ethnicity	
Black	12
White and Caucasian	7
Hispanic*	7
Other or Multiracial	5
Age	
18–25	4
26–35	12
36–45	9
46 or Older	6

** Based on participants' self-identities.*

Source: authors' data

Program Overview

The three sites in this study are each uniquely situated in their community and generally use different strategies and resources to support program participants. Each site implemented its respective program to reduce recidivism. The first site, implemented at a local probation department, is designed to reduce recidivism among FIP returning to their communities from prison by initiating case planning, service referrals, and reentry preparation prerelease. In regard to housing and other social service needs, the program used referrals and pursued memorandum of agreements with more than 50 organizations to provide services to FIP. The referral process begins during incarceration when program providers make referrals based on participants' reentry needs, including housing, employment, and other services.

The second site is a community-based organization with a pre and post-release reentry program designed to reduce recidivism by identifying specific needs that are not currently available through community support. The program is a partnership between the community-based organization and a local law enforcement office. The program acts as a liaison between the network of post-release service providers and FIP, providing case management services, education and training, housing coordination, and mentoring services.

The third site is a local governmental organization with a long history of collaborative efforts to support successful reentry using a coalition of service providers. The program is designed to reduce recidivism and address systemic gaps in reentry services, focusing on the specific needs of incarcerated parents. This program includes individualized needs assessments, intensive

programming during incarceration, and referrals to community agencies that provide reentry services post-incarceration.

Findings

The following sections detail the findings—first, those related to FIP and housing and, second, the barriers programs worked to address to meet the housing needs of participants.

Affordability—Living Wages and Cost of Living

Participants mentioned several challenges related to the financial barriers to finding stable, safe housing. Although the housing markets in the three cities varied significantly, housing affordability was noted in all three cities. Some participants spoke of a shortage of housing, specifically, the lack of safe, affordable housing options that would meet their needs. Conversations with participants about housing affordability and other financial barriers often also included information about available employment opportunities. One participant stated—

> I mean, I've had a couple interviews, but honestly, my background isn't the greatest, so that I'm not going to get a good job [...] It's just going to be something that's minimum wage. And when you think about it, minimum wage is nothing compared to how much the cost of living is now.

Another participant, who lives with his mom as his caregiver, mentioned that their combined incomes are so low that they rent out one of the rooms in their house to afford housing costs. He further explained that they would be "going through hard times" without this additional money.

Whether their criminal record affected their employment search or the jobs available did not pay enough to afford safe and stable housing in their communities, the link between employment and housing in their reentry experiences was evident. These experiences varied by site; however, in all locations, participants discussed how the local job market or the wages at their current job influenced their ability to secure housing. Participants who lived with family but wanted to find their own housing also often described their employability or wages as a barrier to securing a place to live. In addition, participants with children sought housing that was safe and suitable for their children, including the need for additional room, which affected the affordability of their housing search.

Several participants mentioned the cost of housing and other financial requirements to apply for housing in the private market, like deposit amounts, poor or no credit, and income requirements. One participant mentioned that an apartment complex required him to prove that his income was three times the monthly rent amount, which was impossible for him to do. Another participant talked about the challenges of income requirements as a single parent. She said, "So that's just my main thing is that background and just having to make triple by yourself. I could see if it was you and somebody else, with your guys' income combined, but by yourself, that's a ladder to climb." Other participants mentioned that credit checks were required in some of the housing they sought, which was a barrier for them. One person explained, "Right now, I'm trying to find a house. I can make the money for it. I got the money. The money is not the issue. It's the credit thing. I've never

had a bill in my life. I've never paid; I probably paid a phone bill when I was like 18. That was it." For participants who did have credit scores, the minimum credit score requirement to apply for housing was too high.

The effect of discrepancies between clients' wages and local housing costs was evident at each site. One of these sites is in an area known for its very high cost of living, and the other sites reported the cost of rental properties and housing skyrocketing with the COVID-19 pandemic. Because of the cost of housing, one of the sites stated they are working on securing opportunities for higher-wage jobs so that participants can afford a place to live. Two of the sites also discussed the importance of credit history, and both worked with clients to obtain documents and credit scores. One site encouraged participants to find building management positions, as they often include housing as compensation.

Arrest Records, Administrative Barriers, and Other Nonfinancial Barriers to Stable Housing

Participants described several administrative or nonfinancial barriers to housing, including criminal history and paperwork requirements, like birth certificates, social security, or other identification cards. These barriers relate to accessing housing programs designed to assist them with housing needs and to apply for housing in the private market. As with Section 8 in general, there is often a dearth of available housing and resistance to participating in the Section 8 program. Limited access to housing is an additional strain for FIP who have Section 8 vouchers and criminal records. Also, nonfinancial barriers exist to using housing vouchers or staying with family or friends who use housing vouchers. Programs described how the inspection requirements of vouchers made landlords less likely to accept them. One program explained how they work to convince landlords who hesitate to accept Section 8 vouchers because of past experiences with other Section 8 residents. They assure landlords that the participants in their program have a lot of support and that the program staff are involved in their lives, including doing home visits. A participant described how Section 8 rules prevented him from staying with friends or family that received benefits, saying, "if somebody has Section 8 or something, and I need a place, I can't stay with them ... because I'm a felon."

For some participants, their criminal histories or the conditions of their parole or probation create limitations on where they can live and their ability to access housing. For one participant, living with a family member proved to create challenges with the conditions of his release. The family member worked in security and had a firearm in the home, which was a violation for the participant. Another participant was participating in drug court, with a requirement being that he stay in a halfway house. He felt the drug court would not allow him to get his own apartment, saying, "Like getting my own house, my housing, they won't let you until they think you're ready. They don't appreciate the good that somebody's doing like they should do." Another participant said that although criminal records used to be a significant barrier to housing, affordability was the biggest obstacle, and it mattered more whether one could make three times the rent than if one had a criminal history when applying for housing.

Other participants talked about how criminal record background checks affected their ability to secure employment that would allow them to live independently. One stated—

> I was actually interested in getting some of that expunged, because when people look up my background, it's like they meet me, and then when they look up my background, they're like, 'I can see that you're a good person, but' ... I've done got fired from jobs because of my background.

Aside from the barriers due to a person's criminal history, other administrative challenges inhibit securing stable housing. In this study, the paperwork involved in applying for financial assistance for housing was prohibitive. Participants described exiting incarceration without any identification, and programs required birth certifications, social security cards, or driver's licenses to apply for housing assistance. Some programs offering housing assistance scheduled meetings to help participants with paperwork. However, one participant missed these appointments on multiple occasions due to rigid scheduling timeframes and her inflexible parole officer.

All programs assisted participants with documentation, such as identification needed to apply for housing programs. One program worked specifically on the expungement of criminal records. This program indicated that the time to secure the documentation and complete everything required for HUD housing is too short. To address documentation issues, for 1 week during the month, the program convenes a large event that brings FIP and programs together. As part of this monthly event, participants are provided onsite assistance with issues like driver's license reinstatement, child support modifications, and other documents needed to secure jobs and housing.

Family and Social Support

Living with a family member or a partner was common among the participants in this research across all three sites. This arrangement included living with parents, siblings, extended family, friends, and current or ex-partners. In one program, the staff estimated that more than one-half of participants live with family or partners. For some of the study participants, living with families was their only option for housing. One participant stated, "I'm basically homeless, and if it wasn't for my mom, I'd be living in my car." Some participants were living with family or a partner, providing care for loved ones with serious illnesses, including one participant who is a full-time, paid caregiver for a partner with a terminal condition. Other participants noted that they were able to help their families with housing costs by staying with them.

Although this living situation was favorable for some, the team learned that many participants viewed this arrangement as temporary and not ideal due to conflicts or personality differences. In some cases, the housing was unsafe due to both neighborhood and family members' engagement in illegal activities. Several participants just wanted a place of their own. For participants with children, some wanted to establish a home on their own with their children. It was common among our participants to stay with family members and their children. For example, one participant described living in a full house (with mother, siblings, and siblings' children) and not having a private room.

Several participants inherited or were given property from family members that provided them with a stable and safe place to live. However, two participants were unstably housed and unable to live in the family property because of the trauma they associated with the house. One participant discussed finding his brother, who had overdosed, on the property his parents gifted them. Another participant inherited her parent's house, the home she grew up in, but felt she could not live with the memories.

Site personnel also revealed that living with family is a widely used strategy but noted that it is often a "very temporary to temporary" solution. One of the sites indicated that they generally do not view living with family members as a real solution because the stay is typically short-term. Program providers at each site were asked about participant exploitation; only one indicated that they knew of one such experience, with each site saying that it likely happens. When asked, sites also recognized that due to location parameters, staying with friends and family is often prohibitive for people convicted of sexual crimes.

Need for Independence and a Place of Their Own

For most participants in various living situations (living with their families, in shelters, in halfway houses, or with roommates), finding a place to live independently was vital to them. Nearly every participant stated that finding a place to live independently was one of their short- or long-term goals. For participants in unstable housing situations, securing stable housing was a priority. For those with more stable housing in the short term, purchasing a home was one of their long-term goals. Participants looked forward to having their own space or, at minimum, a place to store their belongings. One participant noted that their main complaint about their current living situation with a parent and younger siblings is that they lack privacy. They mentioned that being in one's own space offers freedom and time to "...be in my feelings, be in my thoughts, pray, cry…."

Participants who wanted a place of their own spoke about how their current living situations lacked privacy, freedom, and safety. Some participants believed having their own place to live would give them a sense of accomplishment and stability. One participant reported drug use in the house and that his housemates were not supportive enough of his sobriety. Another participant was sexually assaulted in her home and relocated to a battered women's shelter. This participant described being robbed several times since her release. Moving several times since her release for safety reasons also made it difficult for her to stay connected to program providers and to keep track of and complete the paperwork she had been given. In addition to overcoming financial and other barriers, providing a safe home for their children was of the utmost importance to interviewees. One participant said, "I have found a landlord who has a nice house on the south end by Medical College. And if, indeed, I can get in that house, it is a decent neighborhood where I don't got to worry about my daughter getting gunned down by a stray bullet."

Each site's response to participants' needs for independence varied. Two facilities saw long-term independent housing as a goal, and another was concerned more about ensuring that participants had roofs over their heads. The sites that worked toward long-term housing also acknowledged that this type of housing had limitations. For one, it is generally found in low-income areas that are problematic due, in part, to violence and proximity to criminal behavior.

Interactions With the SCA-Funded Programs

Participants described several ways the programs in the SCA evaluation offered support in securing housing. In some instances, the case managers were hands-on in helping participants search for accommodations, including calling landlords on their behalf and taking the participants to see available housing. Other examples included helping participants create a personal budget to determine the housing options they can afford. In addition, some participants described how the program linking them with employment—and, in some cases, higher-wage jobs—could help them overcome some of the barriers to housing.

Some participants felt the housing programs could be more hands-on or proactive with housing assistance. Participants described being referred to programs or handed a list of shelters or apartments but doing most of the leg work. Other participants described being unaware of the program's housing assistance. One participant, for example, explained that he would not have known about the housing assistance available if he had not known to ask. He said—

> I know [the program] got a lot of things for us, but they're not going to sit there and tell you. You got to ask questions; you got to speak up, say something. You will never know until you say something [...] For instance, with the housing thing, I never knew about that. I found that out from word of mouth, from somebody else.

Participants discussed how the program financially assists with housing, including paying for rent and application fees. However, the requirements or criteria for this assistance can be restrictive. For example, one program secured rental assistance for up to 6 months for clients if they were within 120 days post-release from jail. This requirement meant one participant was ineligible, because she stayed with family post-release. She wanted to use the voucher to secure a place to live independently but was unaware of the assistance until after learning she was ineligible.

Another participant talked about time limits in the housing program in which he was participating. He stated that the transitional housing he was in was only available for a certain period. If he met the program's requirements, that time could be extended; however, after the first extension, the participant would have to find another option. When the sites are not administering the services, they must rely on their referral partners. One participant was enrolled in a program to pay her rent but stated that her landlord never received the rent. This program receives referrals directly from the site, although she engaged with the program on her own. She described child protective services taking away her child after being evicted from her housing.

Second Chance Act-Grantees' Efforts in Securing Housing

The staff at each SCA grantee site recognized the importance of housing, and two programs cited it as the most crucial resource for the population. In one conversation, a staff person stated, "Workforce development, it's great. Substance abuse, great. All that stuff is needed. But none of it matters at all if you don't have a place to lay your head that's safe."

Program staff recognize the systemic challenges that make overcoming housing barriers so difficult. A staff person explained, "[it's] such a larger part of a systemic problem, and it all goes back to

poverty." She described their clients' layered disadvantages, largely tied to a lack of resources and the barriers of a criminal record. Despite these challenges, each site worked to secure housing using the following strategies: Partnerships, referrals, and case management; securing additional housing units; and using HUD resources.

Referral, Case Management, and Partnership

Every site engaged in partnerships, referrals, and case management and had either a housing coordinator or a case manager whose work focused on housing. One of the programs relied on partners to provide more intensive case management than the program structure supported, which included obtaining housing. Two of the three programs contracted other providers to set aside shelter and transitional "beds." The third program is working to develop contracts with transitional housing units that are in development. This program was also able to secure 22 Section 8 vouchers annually.

In one of the sites, a community-based partner renovated a motel that now provides the SCA program with 265 units of transitional housing. Two of the programs partnered with community-based organizations that assisted clients with security deposits. One program provided the first and last month's rent, and a second community-based organization provided up to 6 months of rent. In the latter situation, the SCA program negotiated services for 15 participants; however, the rental assistance was provided through The American Rescue Plan Act 2021 and will end within a year. One of the SCA programs used an innovative approach that had a family reunification component, which provided cash support to family members that were housing participants. The hope is that the money used to offset household expenses might increase program participants' stability.

To varying degrees, each program indicated that, at times, they needed to use shelter space. In one of the sites, the SCA case manager continued to provide direct support in finding better housing alternatives, and one of the sites provided no additional support. The third site was in a community that used a tiered shelter system. The first tier offered little to no services, and the second tier provided case management, especially related to housing. When participants were in a tier-one shelter, the SCA program staff worked with them until they were moved to the next level.

Sites Working to Expand Housing

Efforts to expand housing opportunities included engaging landlords and brick-and-mortar development. Two of the SCA sites worked hard to develop partnerships with landlords. For example, one program jotted down every "for rent" sign and scoured social media to look for available housing. Two programs discussed the effort they needed to advocate for their clients with landlords who are hesitant to rent to FIP. One of the SCA programs informs landlords that the program will vet potential participants, as the program views this process critical to the sustainability of this approach. This program is also considering developing a certificate program for renters that would focus on what it means to be a reliable and successful tenant.

Another program attempted to develop new housing. The site sought to create a 14-bed supportive housing program through its SCA grant. The program then purchased an office building and planned to convert it into a mixed-use space to include housing. Because the property was commercially zoned, it needed to be rezoned, which required a public hearing. Despite gaining the

support of local commissioners, the site faced strong opposition from community members, and the rezoning effort was denied. Now, the site is raising money to develop supportive housing for FIP 55 and older, which it sees as a proactive way to address the compassionate relief their state is offering to senior incarcerated people. The program providers feel confident about their ability to secure zoning, as they are already operating housing on this specific lot and have built rapport with the community.

Using HUD Resources

Each site discussed the importance of rapid rehousing, and each indicated that this option is a long shot for their client population, given the scarcity of space in the program and the limited time in which new applications are accepted. However, one program has worked hard to break these barriers and set aside Section 8 vouchers from their local housing authority. Regardless, a shortage of Section 8 units and paperwork are some of the additional obstacles to using the vouchers. This program is working hard to develop relationships with landlords and ensure that participants have the credentials they need to apply for Section 8 housing, including supporting documentation such as birth certificates. Program staff noted that the short timeline to provide the documentation was an additional barrier to securing units and wished they could work with participants' prerelease on this process. Program staff also discussed the difficulties associated with finding housing for women with children and families.

This program is also supported by a long collaborative relationship with the localities' HUD program and a forward-thinking housing authority, supporting Section 8 use for FIP since the progression of relevant PHA guidelines from 1975 to the present (National Housing Law Project, 2008). For example, this housing authority offers a $500.00 incentive to landlords willing to accept HUD vouchers. The program sees the incentive as one potential tool to counter landlords' hesitancy to accept vouchers due to the stringent nature of the annual housing inspection HUD requires. This highly collaborative SCA program also supports state policy under discussion to develop a certificate of qualification that will help protect landlords if they experience damages and losses resulting from their tenants.

In addition, all programs discussed the difficulties of finding housing for people convicted of sexual crimes and FIP with children, the costs of housing due to location, or rent hikes that occurred with the COVID-19 pandemic. Neighborhoods were also discussed as an issue, as accessible housing is often in problematic regions in terms of safety and proximity to illegal activities.

Major Findings

Although the sites in this study operate in different contexts and have different strategies to address the housing needs of participants, the themes uncovered were very strong within and across sites. In many instances, the participants and program staff were aligned in their views of the prominent challenges and barriers to housing. Ultimately, it is evident from these interviews that housing is a primary concern and has a significant effect on the lives of FIP and their families. Participants lived in a variety of housing situations, from shelters to transitional housing to family members' homes. The people interviewed also had various family ties and responsibilities that affected their housing

situations and needs. Aside from the financial challenges of securing housing, compounding administrative barriers were present, including credit score requirements. A significant thread that linked many of the participants was their desire and need to have housing they could call their own. They sought independence and privacy, regardless of their current housing situation. The existing barriers to housing stand in the way of achieving this goal.

Consistent with Bowman and Ely's (2020: 423) findings, the provision of stable housing is a critical need for FIP reentering society, and its absence can have a deleterious effect on physical, mental, and behavioral health and can hinder job searches. Stable housing directly affects both the reentering individual and the community at large, as housing often provides a critical space in which one can enact life changes needed to reduce recidivism and desistance. Even though addressing housing was not the primary objective for any of the three sites, each of the reentry sites recognized the importance and key role of FIPs finding stable housing as a predicate to successful reentry and each worked to support FIP across a variety of spectra, with one participant highlighting the importance of housing and income compared with other needs—

> I'm an ex-addict. Well, actually, I'm a recovering addict, but [I use] every excuse possible to use. You know what I mean? Like me not having my kids right now or me just in a situation where I'm living or anything, or anything, not the house or no job or whatever. It's just a reason to continue to f*** up, to where like, in [...] But if we had a house, or let's say if I had a home or let's say I have this really nice job and then a decent place, or whatever, it's almost like that would trump that because you don't want to mess it up. You know what I mean? But it's so hard to pull, because of, I'm an ex-felon, to pull myself from the bottom.

This quote demonstrates the importance of housing in this FIP's life and the struggle to achieve specific post-incarceration goals. It also signifies that housing cannot be divorced from employment and income. For many individuals, housing provides a foundation for seeking employment, and as the data show, living with a family member or with others can also serve as a temporary bridge from which FIP can seek employment. However, given the cost of housing on the open market and the difficulties in earning a living wage, connecting FIP with employment opportunities that will allow them to secure stable housing is important. Without programmatic efforts that address housing and employment, the lasting effect of interventions is perhaps more questionable.

Presently, many people without criminal records are ill-housed and in need of services and living wage jobs. McChesney (1990) likened the search for housing among homeless people, for example, to a game of musical chairs in which those who were more able-bodied and carried fewer burdens were more likely to secure chairs, and those who had more difficulties were left standing. The presence of a criminal record can be a deciding factor in a person's efforts to secure housing, given the limited availability of extant resources. Therefore, it is important to recognize that FIP are often competing with less burdened people for already very limited resources. Among FIP, a hierarchy of burdens also exists, as women tend to have a more difficult time securing housing than men, largely due to the need to find space for children, coupled with histories of interpersonal violence and exploitation. Although none of the sites in our study provided explicit information about their efforts to work with people sentenced for sexual crimes, each site did mention the challenges involved in finding spaces for these individuals, including shelters.

The current housing problem echoes broader employment, income, poverty, and housing-access issues. In this regard, FIP are entering and navigating markets with the stigma and, in some cases, exclusionary policies associated with a criminal record. Therefore, it is incumbent on stakeholders to develop proactive ways to support the housing needs of FIP, assisting them with the logistics of reentry and also addressing issues of desistance and recidivism. The following section offers recommendations for improving the reentry-housing-community development nexus.

Recommendations for Improving the Reentry-Housing-Community Development Nexus

Both SCA participants with lived experiences and service providers alike emphasized the importance of housing, particularly considering housing as it is connected to broader employment, income, poverty, and housing-access issues. As such, what follows are recommendations provided by participants, as well as information synthesized by the authors that build on the literature, interviews, and additional data collected as part of the evaluation grant.

Recommendations at the Federal Level

1. Given the housing challenges FIP face, opportunities exist for HUD and the SCA grantors (the U.S. Department of Justice [DOJ] and Bureau of Justice Assistance) to enhance collaboration in support of SCA-funded programs. Collaborative efforts might include providing support for SCA programs to work with local public housing agencies to ensure that they follow Secretary Fudge's guidelines allowing FIP to participate in voucher programs. Additional efforts might include highlighting the positive effects of collaboration between local reentry programs and PHAs as one of the sites discussed. The collaboration model set by this reentry site shows the mutually beneficial nature of the partnership, as the site works to ensure that all vouchers are used, thereby allowing the PHA to maintain its allotment.

2. Opportunities exist for DOJ and HUD to explore testing innovative reentry grant efforts. Given the positive results of rapid rehousing for the general population of homeless people, a HUD-offered demonstration grant for people reentering can be an important contribution. It would be helpful if such a demonstration included a data and cost-benefit component to test if rapid rehousing provides the same benefits to FIP as it does to those who are homeless. Due to the costs associated with prison and jail, a cost-saving effect is likely with this approach. Other possibilities for innovation include incentivizing landlords to accept vouchers for FIP. As with one of the study sites, this might include processes for SCA initiatives to vet future Section 8 renters.

3. The connection between housing and income is two-fold and provides ample opportunity to use reentry grants for income support for housing. The team encourages DOJ to examine the imbued opportunities presented here and consider testing this model.

Recommendations That Can Be Implemented at All Levels

1. The supplemental funding through efforts such as the American Rescue Plan Act of 2021 provided invaluable support to some of the sites. The inclusion of rental assistance allowed FIP to secure or maintain housing. The programs developed with this funding need to be

continued through public or private dollars.

2. Innovative reentry efforts, such as providing incentives to family members with whom FIP stay as one of the sites discussed, should be shared, and efforts used to obtain public and private resources should be supported.

Recommendations for Programs

1. Programs working with FIP should prioritize stable and safe housing as FIP reenter post-incarceration. If possible, the programs should begin this work prior to the FIP's release to ensure their needs are assessed, they have access to emergency shelter post-release if necessary, and they can begin to establish the paperwork necessary to apply for critical housing assistance. In addition, programs should work to ensure that FIP are aware of the housing assistance available to them through the program or the program's referral agencies. Even if FIP do not ask for housing assistance or talk about their housing struggles, they may require housing assistance.

2. Given the strong connection between employment and housing, programs should work to assist participants in overcoming financial barriers, including their search for higher-wage employment and application requirements, such as deposit amounts. Program participants who remain unbanked or underbanked may not have a credit score. As a result, programs should look toward services that will assist participants in establishing and building credit, which will assist in removing an additional important barrier to housing.

3. To remove barriers to employment and housing, programs should work to establish access to expungement, where available.

Conclusion

The work to improve the lives and trajectories of FIP and the communities in which they reside continues as the team continues to build more fruitful relationships with housing providers, local PHAs, and other relevant stakeholders. Consistent with the prior literature on the reentry-housing-community development nexus, this study's findings reiterate the need to prioritize housing in the efforts to support FIP and reduce recidivism. By highlighting program efforts to forge these relationships and remove barriers to housing for this unique population, the team seeks to move this needle forward by promoting the advancement of relevant policy, practice, and research in this arena.

Acknowledgments

This project was supported by Award No. 2020-CZ-BX-0014, awarded by the National Institute of Justice (NIJ), Office of Justice Programs, U.S. Department of Justice. The opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect those of the Department of Justice.

The authors would like to thank the Bureau of Justice Assistance, the NIJ, the three collaboration sites, the study participants, and all stakeholders who worked to see this product to fruition.

Authors

Elizabeth L. Beck is a professor in the Department of Social Work at the Andrew Young School of Policy Studies, Georgia State University. Natasha N. Johnson is a clinical instructor in the Department of Criminal Justice and Criminology at the Andrew Young School of Policy Studies, Georgia State University. Sommer Delgado is a doctoral candidate in the Department of Criminal Justice and Criminology at the Andrew Young School of Policy Studies, Georgia State University. Victoria Helmly is a doctoral candidate in the Department of Criminal Justice and Criminology at the Andrew Young School of Policy Studies, Georgia State University. Susan A. McLaren is an assistant project director in the Georgia Health Policy Center at the Andrew Young School of Policy Studies, Georgia State University. Alice Prendergast is a senior research associate in the Georgia Health Policy Center at the Andrew Young School of Policy Studies, Georgia State University. Leigh Alderman is an assistant project director in the Georgia Health Policy Center at the Andrew Young School of Policy Studies, Georgia State University. Lorenzo Almada is a clinical assistant professor in the Department of Economics at the Andrew Young School of Policy Studies, Georgia State University. Brian Bride is a distinguished university professor in the Department of Social Work at the Andrew Young School of Policy Studies, Georgia State University. Eric Napierala is a research associate II in the Georgia Health Policy Center at the Andrew Young School of Policy Studies, Georgia State University. William J. Sabol is a distinguished university professor in the Department of Criminal Justice and Criminology at the Andrew Young School of Policy Studies, Georgia State University.

Direct all correspondence to Natasha N. Johnson, Department of Criminal Justice and Criminology, Andrew Young School of Policy Studies, Georgia State University at njohnson93@gsu.edu.

References

Alexander, Michelle. 2010. "The War on Drugs and the New Jim Crow," *Race, Poverty and the Environment* 17 (1): 75–77.

Bae, John, Margaret diZerega, Jacob Kang-Brown, Ram Subramanian, and Ryan Shanahan. 2016. *Coming Home: An Evaluation of the New York City Housing Authority's Family Reentry Pilot Program*. New York: Vera Institute of Justice. https://www.vera.org/downloads/publications/NYCHA_report-032917.pdf.

Baxter, Andrew J., Emily J. Tweed, Srinivasa Vittal Katikireddi, and Hilary Thomson. 2019. "Effects of Housing First Approaches on Health and Well-Being of Adults Who Are Homeless or at Risk of Homelessness: Systematic Review and Meta-Analysis of Randomised Controlled Trials," *Journal of Epidemiology and Community Health* 73 (5): 379–387. https://doi.org/10.1136/jech-2018-210981.

Beck, Elizabeth, and Pamela C. Twiss. 2018. *The Homelessness Industry: A Critique of U.S. Social Policy*. Boulder: Lynne Rienner Publishers. https://www.degruyter.com/document/doi/10.1515/9781626377974/html?lang=en.

Bostic, Raphael W., Rachel L. J. Thornton, Elizabeth C. Rudd, and Michelle J. Sternthal. 2012. "Health in All Policies: The Role of the U.S. Department of Housing and Urban Development and Present and Future Challenges," *Health Affairs* 31 (9): 2130–2137. https://doi.org/10.1377/hlthaff.2011.1014.

Bowman, Edward I., and Katherine Ely. 2020. "Voices of Returning Citizens: A Qualitative Study of a Supportive Housing Program for Ex-Offenders in a Rural Community," *The Prison Journal* 100 (4): 423–46. https://doi.org/10.1177/0032885520939273.

Brown, Katherine. 2004. "Homelessness and Prisoner Re-Entry," *Criminology and Public Policy* 3 (2): 201–222.

Fontaine, Jocelyn. 2013. *Examining Housing as a Pathway to Successful Reentry: A Demonstration Design Process*. Washington, DC: Urban Institute. https://www.urban.org/sites/default/files/publication/24206/412957-Examining-Housing-as-a-Pathway-to-Successful-Reentry-A-Demonstration-Design-Process.PDF.

Fudge, Marcia L. 2022. "Eliminating Barriers That May Unnecessarily Prevent Individuals with Criminal Histories from Participating in HUD Programs." https://www.hud.gov/sites/dfiles/Main/documents/Memo_on_Criminal_Records.pdf.

———. 2021. "Letter from the United States Secretary of Housing and Urban Development." https://www.hud.gov/sites/dfiles/PA/documents/SOHUD_reentry_housing_letter.pdf.

Geller, Amanda, and Marah A. Curtis. 2011. "A Sort of Homecoming: Incarceration and the Housing Security of Urban Men," *Social Science Research* 40 (4): 1196–1213. https://doi.org/10.1016/j.ssresearch.2011.03.008.

Goodley, Gary, Dominic Pearson, and Paul Morris. 2022. "Predictors of Recidivism Following Release from Custody: A Meta-Analysis," *Psychology, Crime and Law* 28 (7): 703–729. https://doi.org/10.1080/1068316X.2021.1962866.

Gunnison, Elaine, and Jacqueline B. Helfgott. 2011. "Factors That Hinder Offender Reentry Success: A View From Community Corrections Officers," *International Journal of Offender Therapy and Comparative Criminology* 55 (2): 287–304. https://doi.org/10.1177/0306624X09360661.

Hayat, Norrinda Brown. 2022. "Housing the Decarcerated: Covid-19, Abolition, and the Right to Housing," *California Law Review* 110 (3). https://californialawreview.org/print/housing-the-decarcerated-covid-19-abolition-the-right-to-housing/.

Jacobs, Leah A., Laura Ellen Ashcraft, Craig J. R. Sewall, Danielle Wallace, and Barbara L. Folb. 2022. "Recidivism in Context: A Meta-Analysis of Neighborhood Concentrated Disadvantage and Repeat Offending," *Criminal Justice and Behavior* 49 (6): 783–806. https://doi.org/10.1177/00938548221076094.

Kirk, David S., Geoffrey C. Barnes, Jordan M. Hyatt, and Brook W. Kearley. 2018. "The Impact of Residential Change and Housing Stability on Recidivism: Pilot Results from the Maryland Opportunities Through Vouchers Experiment (MOVE)," *Journal of Experimental Criminology* 14 (2): 213–226. https://doi.org/10.1007/s11292-017-9317-z.

Kovera, Margaret Bull. 2019. "Racial Disparities in the Criminal Justice System: Prevalence, Causes, and a Search for Solutions," *Journal of Social Issues* 75 (4): 1139–1164. https://doi.org/10.1111/josi.12355.

Lee, Barrett A., Marybeth Shinn, and Dennis P. Culhane. 2021. "Homelessness as a Moving Target," *The ANNALS of the American Academy of Political and Social Science* 693 (1): 8–26. https://doi.org/10.1177/0002716221997038.

McChesney, Kay Young. 1990. "Family Homelessness: A Systemic Problem," *Journal of Social Issues* 46 (4): 191–205. https://doi.org/10.1111/j.1540-4560.1990.tb01806.x.

Metraux, Stephen, and Dennis P. Culhane. 2004. "Homeless Shelter Use and Reincarceration Following Prison Release," *Criminology and Public Policy* 3 (2): 139–160. https://doi.org/10.1111/j.1745-9133.2004.tb00031.x.

Metraux, Stephen, Dana Hunt, and Will Yetvin. 2020. *Criminal Justice Reentry and Homelessness*. Rockville, MD: Center for Evidence-Based Solutions to Homelessness. http://evidenceonhomelessness.com/wp-content/uploads/2020/04/Reentry-and-Homelessness_Synthesis-of-the-Evidence.pdf.

Moschion, Julie, and Guy Johnson. 2019. "Homelessness and Incarceration: A Reciprocal Relationship?" *Journal of Quantitative Criminology* 35 (4): 855–887. https://doi.org/10.1007/s10940-019-09407-y.

National Housing Law Project. 2008. "An Affordable Home on Re-Entry: Federally Assisted Housing and Previously Incarcerated Individuals." https://www.nhlp.org/wp-content/uploads/2018/08/Rentry-Manual-2018-FINALne.pdf.

Nivette, Amy E. 2011. "Cross-National Predictors of Crime: A Meta-Analysis," *Homicide Studies* 15 (2): 103–31. https://doi.org/10.1177/1088767911406397.

Olver, Mark E., Keira C. Stockdale, and J. Stephen Wormith. 2014. "Thirty Years of Research on the Level of Service Scales: A Meta-Analytic Examination of Predictive Accuracy and Sources of Variability," *Psychological Assessment* 26 (1): 156–176. https://doi.org/10.1037/a0035080.

Padgett, Deborah, Benjamin Henwood, and Sam Tsemberis. 2015. *Housing First: Ending Homelessness, Transforming Systems, and Changing Lives*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199989805.001.0001.

Patel, Vikram, Jonathan K. Burns, Monisha Dhingra, Leslie Tarver, Brandon A. Kohrt, and Crick Lund. 2018. "Income Inequality and Depression: A Systematic Review and Meta-Analysis of the Association and a Scoping Review of Mechanisms," *World Psychiatry: Official Journal of the World Psychiatric Association (WPA)* 17 (1): 76–89. https://doi.org/10.1002/wps.20492.

Pratt, Travis C., and Francis T. Cullen. 2005. "Assessing Macro-Level Predictors and Theories of Crime: A Meta-Analysis," *Crime and Justice* 32: 373–450.

Remster, Brianna. 2021. "Homelessness Among Formerly Incarcerated Men: Patterns and Predictors," *The ANNALS of the American Academy of Political and Social Science* 693 (1): 141–157. https://doi.org/10.1177/0002716221993447.

———. 2019. "A Life Course Analysis of Homeless Shelter Use among the Formerly Incarcerated," *Justice Quarterly* 36 (3): 437–465. https://doi.org/10.1080/07418825.2017.1401653.

Ritter, Nancy. 2014. "'Cultural Shift' Is Among Findings of Second Chance Act Evaluation," *National Institute of Justice Journal* 273 (March): 28–34.

Rodríguez-Pose, Andrés, and Michael Storper. 2020. "Housing, Urban Growth, and Inequalities: The Limits to Deregulation and Upzoning in Reducing Economic and Spatial Inequality," *Urban Studies* 57 (2): 223–248. https://doi.org/10.1177/0042098019859458.

Semenza, Daniel C., and Nathan W. Link. 2019. "How Does Reentry Get Under the Skin? Cumulative Reintegration Barriers and Health in a Sample of Recently Incarcerated Men," *Social Science and Medicine* (1982) 243 (December): 112618. https://doi.org/10.1016/j.socscimed.2019.112618.

Simmons University School of Social Work. 2016. "The Challenges of Prisoner Re-Entry Into Society," *Simmons University blog*, July 12. https://online.simmons.edu/blog/prisoner-reentry/.

Smoyer, Amy B., Danya E. Keene, Maribel Oyola, and Ashley C. Hampton. 2021. "Ping-Pong Housing: Women's Post-Incarceration Trajectories," *Affilia* 36 (3): 336–356. https://doi.org/10.1177/0886109920954416.

Spaulding, Anne C., Sebastian D. Perez, Ryan M. Seals, Madhura A. Hallman, Ravi Kavasery, and Paul S. Weiss. 2011. "Diversity of Release Patterns for Jail Detainees: Implications for Public Health Interventions," *American Journal of Public Health* 101 (Suppl 1): S347–52. https://doi.org/10.2105/AJPH.2010.300004.

Spaulding, Anne C., Ryan M. Seals, Matthew J. Page, Amanda K. Brzozowski, William Rhodes, and Theodore M. Hammett. 2009. "HIV/AIDS Among Inmates of and Releasees From U.S. Correctional Facilities, 2006: Declining Share of Epidemic but Persistent Public Health Opportunity," *PloS One* 4 (11): e7558. https://doi.org/10.1371/journal.pone.0007558.

Travis, Jeremy, Amy L. Solomon, and Michelle Waul. 2001. *From Prison to Home - The Dimensions and Consequences of Prisoner Reentry*. Washington, DC: Urban Institute. https://www.urban.org/research/publication/prison-home-dimensions-and-consequences-prisoner-reentry.

U.S. Department of Housing and Urban Development (HUD). 2022. "Meeting the Housing Needs of Formerly Incarcerated and Justice-Involved People." https://www.hud.gov/reentry.

Voborníková, Pavla. 2016. "The Transformation of American Public Housing," *Scientific Journal of Humanistic Studies* 8 (14): 75–83.

Western, Bruce, and Catherine Sirois. 2019. "Racialized Re-Entry: Labor Market Inequality After Incarceration," *Social Forces* 97 (4): 1517–1542. https://doi.org/10.1093/sf/soy096.

Williams, Jason M., Sean K. Wilson, and Carrie Bergeson. 2019. "'It's Hard Out Here If You're a Black Felon': A Critical Examination of Black Male Reentry," *The Prison Journal* 99 (4): 437–458. https://doi.org/10.1177/0032885519852088.

Yousefi-Rizi, Leila, Jong-Deuk Baek, Nicole Blumenfeld, and Carleen Stoskopf. 2021. "Impact of Housing Instability and Social Risk Factors on Food Insecurity Among Vulnerable Residents in San Diego County," *Journal of Community Health* 46 (6): 1107–1114. https://doi.org/10.1007/s10900-021-00999-w.

Rental Assistance and a Fresh Start to Spur Criminal Desistance: Evidence From a Pilot Housing Experiment

David S. Kirk
University of Oxford

The Eunice Kennedy Shriver National Institute of Child Health and Human Development of the National Institutes of Health supported the research reported in this article under award number R03HD081515, as did the Leverhulme Trust through the Leverhulme Centre for Demographic Science. The content is solely the responsibility of the author and does not necessarily represent the official views of the National Institutes of Health or the Leverhulme Trust. Similarly, the findings in this article do not reflect the views of the Maryland Department of Public Safety and Correctional Services or its constituent agencies.

Abstract

Much of the research literature on prisoner reentry focuses on the importance of individual determinants of reintegration of the formerly incarcerated back into society, such as education, job training, and addiction treatment. Less studied are the consequences of housing and neighborhood context. Still, research shows that the formerly incarcerated tend to have unstable residential patterns, and their places of residence are often in close proximity to the same locations where they got into trouble with the law in the past. This article argues that stable housing, particularly in an environment that provides an opportunity for a fresh start and a separation from past criminal associates, is a crucial foundation for successful prisoner reentry. Evidence in support of this argument is garnered from a pilot housing mobility program called the Maryland Opportunities through Vouchers Experiment, or MOVE, which aimed at lessening the risk of recidivism by using housing subsidies to provide participants with housing in geographic areas some distance from where they lived in the past. This article reports on the outcome of the pilot, including an assessment of the likelihood of rearrest and a qualitative comparison of the post-release experiences of treatment and control group participants.

Introduction

> I send this letter in the sincere hope that I can obtain your assistance. I am scheduled to be released back into the band of society and I am without a place to stay. I do not desire to return to the area that I lived in the city of Baltimore prior to my incarceration, as this would cause me to jeopardize my probation. I would appreciate your assistance in obtaining a housing voucher in the Prince George's County area, as this would afford me a fresh start toward becoming a good member of the community.
>
> —Charles Dupree
>
> Letter to the Maryland Opportunities through Vouchers Experiment (MOVE), September 15, 2015

Mr. Dupree's (a pseudonym) letter was one of more than 100 the author received from people incarcerated in state prisons in Maryland requesting participation in MOVE, an experimental housing mobility program for the formerly incarcerated that the author piloted in Maryland in 2015 and 2016. As a pilot program, the recruitment and outreach efforts were minimal, consisting solely of contacting the four participating prisons in advance of periodic recruitment visits to the institutions to inquire which individuals were to be released from prison during the next 90 to 180 days. The program was not advertised, yet word of mouth about the program quickly spread. Although the program was implemented in four male institutions, the author received correspondence from individuals housed in prisons throughout the state, including occasional letters from incarcerated women. The steady stream of letters, received even after the pilot had ended, speaks to the intense demand for housing among the incarcerated and formerly incarcerated.

Mr. Dupree's letter touches on two challenges people exiting prison face. First, many individuals do not have a stable place to live. For instance, Harding, Morenoff, and Herbert (2013) observed that parolees in Michigan move an estimated 2.6 times per year for the median parolee. Second, most people exiting prison end up living within a few miles of where they resided prior to incarceration, effectively returning to the very environments where they got into trouble with the law in the past (Glaser, 1969; Harding, Morenoff, and Herbert, 2013; Kirk, 2020). Yet many people exiting prison recognize that returning to familiar settings can be detrimental to their rehabilitation, often leading to a return to criminal behavior. Many express a desire to move to different residential locations to avoid the temptations and troubles associated with familiar neighborhood settings (Visher and Farrell, 2005).

The MOVE program was designed to address these twin challenges by offering subsidized housing to individuals newly released from prison in locations distant from where they resided prior to imprisonment. This article reports on a randomized pilot of MOVE, including a description of the program design, an assessment of rearrest outcomes, and an analysis of participants' experiences post-incarceration via repeated qualitative interviews. Before proceeding with a discussion of the program, the article first provides further background on the theoretical and empirical rationale for the development of MOVE.

Background

The era of mass incarceration since the 1970s in the United States has been characterized by as astonishing likelihood that individuals will serve time in prison at some point in their lives, particularly undereducated males. Roughly 1 in every 4 African-American men in the United States born in the late 1970s served time in prison by age 34, as well as 1 in 8 Latino males and 1 in 20 White males (Western and Pettit, 2010). For African-American male high school dropouts, the figure balloons to 68 percent. In terms of raw counts, approximately 1.2 million individuals were serving time in state and federal prisons and another 636,000 in local jails in 2021, figures that actually represent substantial declines relative to the onset of the COVID-19 pandemic (Carson, 2022; Zeng, 2022).

A rapid increase in the number of individuals exiting prison each year coincided with the rise of hyperincarceration. In 1979, roughly 166,000 prisoners were released from state and federal prisons back into the community. By 2009, that number had reached 740,000, before declining to 614,000 a decade later (BJS, 2023).

The sheer scale of individuals exiting prison each year in the United States strains a deeply oversubscribed system of affordable housing, resulting in the twin challenges addressed at the outset of the article: (1) High levels of housing instability and (2) a return to familiar environments given limited access to housing elsewhere, even if doing so exposes individuals to the criminal peers and criminal opportunities that could undermine one's attempt at desistance. On the first challenge, numerous studies have found that housing instability is common among formerly incarcerated individuals, with evidence of variation by race. For instance, Makarios, Steiner, and Travis (2010) found that Ohio parolees live, on average, in two different residences in the first year after release from prison, and 30 percent lived in three or more locations. Drawing on data from the Fragile Families data collection, Geller and Curtis (2011) found that 31 percent of sampled urban fathers with a history of incarceration experienced housing instability, such as eviction or time in a shelter, versus 14 percent of otherwise similar fathers without an incarceration history. Herbert, Morenoff, and Harding (2015) tracked the residential situations of parolees in Michigan, finding that most periods of residence for the parolees lasted only a few months, with one-half lasting at most 8 weeks. Using nationally representative data from the 1997 National Longitudinal Survey of Youth (NLSY), Warner (2015) found that only for formerly incarcerated African-American individuals is residential instability significantly greater post-imprisonment relative to their preprison experience. Also drawing on NLSY data, Bryan (2022) examined whether housing instability among the population of criminally convicted individuals is attributable to their felon status, even in the absence of incarceration. She concluded that a felony conviction, independent of whether it led to a punishment of incarceration, induces housing instability, and that the association between incarceration and housing stability observed in many studies is likely to be driven by individuals' felony conviction status rather than the actual experience of incarceration.

With respect to the second challenge related to residential location, research focusing on Louisiana found that normally about 75 percent of people exiting from prison originally from the New Orleans metropolitan area return to the same parish (that is, county) where they resided prior to imprisonment (Kirk, 2020). In research in Michigan, Harding, Morenoff, and Herbert (2013) found

that roughly one-third of newly released prisoners resided within 0.5 miles of their preprison place of residence, and that 60 percent resided within 5 miles of their preprison residence. In a study of individuals released from federal prison, Glaser (1969) found that 45 percent returned to the same neighborhood where they resided prior to incarceration, and another 38 percent returned to a different neighborhood in the same metropolitan area where they lived in the past. Only 17 percent of former federal prisoners in his sample moved to different metropolitan areas than where they had resided immediately prior to incarceration, but most of these individuals had at some point in their past resided in the metropolitan area where they returned, even if it was not the location where they were residing immediately prior to incarceration. Hence, people exiting prison do not necessarily return to the exact houses and neighborhoods where they resided prior to incarceration, but it is very common for them to return to familiar environments in close proximity to where they resided in the past.

Thus far, this article has described the twin challenges of housing instability and residence in the familiar environments of one's past. Of what consequence are these challenges for outcomes such as recidivism? A growing body of research has addressed this very question, finding that residential instability increases the likelihood of recidivism, as do periods of homelessness (Makarios, Steiner, and Travis, 2010; Meredith, Speir, and Johnson, 2007; Metraux and Culhane, 2004; Steiner, Makarios, and Travis, 2015). Hence, it reasons that financial housing assistance could lower the likelihood of recidivism by facilitating residential stability, yet relatively little research has rigorously tested this question (see Hamilton, Kigerl, and Hays, 2015; Lutze, Rosky, and Hamilton, 2013).

Similarly, recent research suggests that residential change, away from the geographic locations of one's past, can lead to a reduction in recidivism. For instance, in prior work, the author used the neighborhood destruction in New Orleans following Hurricane Katrina as a natural experiment to investigate the potential effect of residential change on reincarceration (Kirk, 2020, 2012, 2009). He found that individuals who moved away from their former parishes were 13 percentage points less likely to be reincarcerated through 8 years post-release.

Other studies similarly find some benefit to moving, at least when the distance is substantial enough for a fresh start. For instance, in a study of Chicago-area youths, Sharkey and Sampson (2010) found that among adolescents who moved to different neighborhoods within Chicago (that is, a short distance) that their likelihood of violent offending increased. However, moving outside of Chicago reduced violent behavior. Similarly, in a study of delinquency in London, Osborn (1980) found that those who moved away from London were significantly less likely to be reconvicted of a crime than individuals who stayed in London.

Why exactly might moving to a new city or county lead to a change in someone's behavior? Laub and Sampson's (2003) life-course theory provides a theoretical rationale (see also Sampson and Laub, 1993). Among the notable findings from their multidecade project is that individuals desist from criminal activity in response to structurally induced turning points, such as work and marriage. Turning points provide opportunities for individuals to separate from the people and situations that facilitated prior criminal behavior. Moving to a new location, if of sufficient distance away from familiar locations of one's past, may provide helpful separation from nefarious temptations and criminal opportunities and an opportunity to change one's routine activities (Kirk, 2018).

This logic of turning points is intuitively appealing. Indeed, Mr. Dupree, in the opening quote of the article, was implicitly using turning-point logic in describing his hopes for finding housing away from Baltimore, the site of his legal troubles. However, what are the barriers to securing stable housing in a new environment for people exiting prison?

Barriers to Housing

A fundamental challenge to finding secure and stable housing is a lack of income, which is a function of the relatively poor employment prospects of formerly incarcerated individuals and restrictions on welfare benefits to individuals with criminal convictions (Geller and Curtis, 2011; Harding et al., 2014; Herbert, Morenoff, and Harding, 2015; Kirk, 2019). A related challenge is the collateral consequences of punishment, which refer to the "legal and regulatory sanctions and restrictions that limit or prohibit people with criminal records from accessing employment, occupational licensing, housing, voting, education, and other opportunities" (ABA, 2013; see also Kirk and Wakefield, 2018). For instance, individuals convicted of certain felonies may be banned, some permanently, from receiving public housing benefits or vouchers.

Stigma and both legal and illegal discrimination are also barriers to housing. Easy access to criminal background information makes it readily possible for landlords, property owners, and lenders to use such information when evaluating prospective tenants and customers (Evans and Porter, 2015; Lageson, 2020). Moreover, because of the racial and ethnic disproportionality in the use of criminal justice punishments, the use of criminal background information in housing decisions has civil rights implications in accordance with the Fair Housing Act (HUD, 2016, 2015).

Another barrier to housing for the formerly incarcerated is the lack of affordable housing. The Joint Center for Housing Studies of Harvard University (2022) reported that 30 percent of all U.S. households are cost burdened, meaning they pay more than 30 percent of their incomes on housing. Fourteen percent of households spend more than 50 percent of their income on housing. This substantial rate of cost-burdened households is a function of many factors, including soaring costs of housing in the rental and owner-occupied markets and inflation in recent years that has far exceeded average wage growth. Additionally, rental vacancy rates in the apartment stock reached an all-time low of 4.8 percent in the third quarter of 2021, with rates just slightly higher in 2022 (JCHS, 2022). When vacancy rates are low, individuals with criminal records, many of whom also have bad credit histories, are competing with others for relatively few affordable housing options. Federal assistance to offset the cost burden of housing or the lack of supply of affordable units is not nearly adequate to cover need. Indeed, Fischer and Sard (2017) found that only one-fourth of families who are eligible for federal rental assistance actually receive it.

In sum, hyperincarceration and its collateral consequences, in combination with stagnant investment by the federal government in assisted housing and the troubling state of affordable housing development in the United States, have created and perpetuated a housing crisis for individuals with criminal records, with consequences for public safety. To follow, this article presents a model for how to provide a foundation for desistance from crime among formerly incarcerated individuals through the provision of housing assistance. The Discussion section later addresses possibilities for funding the subsidies without a net increase in overall government spending.

MOVE Background and Design

MOVE is a voluntary program designed to incentivize and facilitate opportunities for housing and residential moves among people exiting prison by providing participants a housing subsidy and housing search assistance. The housing subsidies were geographically restricted, such that they could only be used in geographic areas different from where the participant resided prior to incarceration.

Given the two forms of intervention core to the MOVE model—housing subsidies and residential relocation—optimally, an evaluation of the program would include at least three experimental groups (randomly assigned): (1) A group of movers with a housing subsidy, (2) a group of stayers with a housing subsidy, and (3) a group of stayers without a housing subsidy. A comparison of the first two groups would yield an estimate of the effect of moving to a new residential location. A comparison of the latter two groups would yield an estimate of the effect of the offer of a housing subsidy. Although such a design would be advantageous for a full-scale implementation and evaluation, resource constraints prohibited the implementation of a three-group evaluation during the pilot phase of the program.

Two different designs of the program were implemented during the pilot, as exhibit 1 shows. In each design, the treatment group received a housing subsidy equivalent to the U.S. Department of Housing and Urban Development's (HUD) fair market rent, with the aforementioned geographic restriction that it could only be used in a designated geographic area. Specifically, individuals originally from the city of Baltimore were offered a subsidy for housing in Prince George's (PG) County, Maryland, which is adjacent to Washington, D.C., roughly 40 miles from Baltimore. Individuals who resided in PG County prior to their time in prison were offered a housing subsidy for use only in the city of Baltimore. The impetus behind the multilocation design was to guarantee that each jurisdiction would send and receive the same number of individuals, with no net increase in total parolees in any area (that is, the number of formerly incarcerated people moving to Baltimore from PG County would be the same as the number leaving Baltimore).

Exhibit 1

Maryland Opportunities Through Vouchers Experiment Research Designs

	Design A	Design B
Treatment group	6-month housing subsidy to move to a new jurisdiction	6-month housing subsidy to move to a new jurisdiction
Control group	6-month housing subsidy in home jurisdiction	No housing subsidy
Nature of intervention (i.e., difference between treatment and control)	Moving to a new city	Moving to a new city and receiving free housing
Sample size	6 Treatment, 9 Control	8 Treatment, 7 Control
Recruitment period	2015	2016

The rationale for specifying a 40-mile distance between pre and post-prison locations for the treatment group relates to the importance of distance from one's past for facilitating a true change in circumstances. If an individual moved only a short distance, then he or she could easily maintain ties with criminal peers even after a move and still have ready access to criminal

opportunities back in the old neighborhood (Kirk, 2018). Indeed, long-term findings from HUD's Moving to Opportunity (MTO) program, which found no statistically significant difference in the likelihood of arrest or incarceration between experimental group movers and the control group, may be explained by the fact that many, if not most, experimental families moved a relatively short distance from their origin neighborhoods (Rosenbaum and Zuberi, 2010; Sampson, 2008; Sanbonmatsu et al., 2011). Moving to an adjacent neighborhood is likely too short a distance to expect a real change in circumstances or to sever ties with a criminogenic social network. In fact, in their evaluation of MTO, Briggs, Popkin, and Goering (2010: 18) summarized the problem well: "Changing the social relations of participants was not a primary aim of the MTO experiment [...] But many of the hoped-for positive outcomes anticipated changes in exposure to particular kinds of peers, adult role models, and more successful neighbors."

The implication of the MTO studies and research on the Gautreaux housing mobility program and more recent research on forced displacement from public housing demolitions is that residential relocation may foster desistance from crime, but there must be enough distance between the origin and destination locations to provide a true catalyst for change (Chyn, 2018; Keels, 2008; Rosenbaum and Zuberi, 2010). Forty miles is arguably sufficient distance so that an individual is not regularly immersed back in a preprison neighborhood environment, yet not so far that prosocial ties could not be maintained.

Within Design A of the pilot, the control group received a housing subsidy of equivalent value to the treatment group, and the subsidy could be used in the location where they resided immediately prior to incarceration. For instance, individuals who resided in the city of Baltimore prior to incarceration were offered a housing subsidy that could be used in Baltimore.

In Design B, however, the control group did not receive a housing subsidy. With this design, the control group represented the status quo in terms of the typical circumstances that people exiting prison confront. To deliver some benefit to all participants in Design B of the program, both treatment and control group participants received a $100 gift card, which they could use for necessities.

Housing Subsidies

Whereas the housing subsidies in the MOVE program were privately funded by a foundation grant, the program was developed to resemble aspects of HUD's Housing Choice Voucher program (that is, Section 8) so that the housing subsidies were to be used in the private rental market. Another motivation was to design the program similarly enough to existing housing assistance programs so that public housing authorities could replicate the model with relative ease if they wished to do so.

Given the importance of housing search assistance and landlord outreach for the placement of lower-income groups into decent housing, MOVE program staff facilitated residence in private-market dwellings by providing housing location assistance to participants (Bergman et al., 2020). Whereas participating landlords knew that the program guaranteed payment of the rent for a defined period, participants signed their own leases. A key difference with the Housing Choice Voucher program is that MOVE vouchers were time limited because of finite resources for the pilot.

Determining the duration of subsidies for the pilot included balancing available funding resources against research ethics and providing enough incentive for individuals exiting prison to participate in the program and recruiting a sufficient number of prospective landlords. In terms of ethics, as the preceding sections describe, research reveals a positive association between residential instability and the likelihood of reoffending and recidivism, so MOVE sought to avoid contributing to residential instability and, therefore recidivism, which might have happened if the program had provided only very temporary housing (for example, 3 months or less; Makarios, Steiner, and Travis, 2010; Steiner, Makarios, and Travis, 2015; Vogel, Porter, and McCuddy, 2017). Moreover, in outreach efforts to prospective landlords and property owners in the design phase of the pilot, it became apparent that less than 6 months of a housing subsidy was often going to be an insufficient incentive for landlords to rent to participants, given their interest in signing at least a 6-month lease with participants (and ideally a 1-year lease). Prospective landlords were concerned that after the rent subsidy from the MOVE program ended, participants would be unable to pay rent. Hence, for the design MOVE ultimately implemented, the program provided 6 months of free housing up to the HUD fair market rent rate for a one-bedroom dwelling for a geographic area (in 2015, the rate for a one-bedroom dwelling in Baltimore was $985 per month and $1,230 per month in PG County).[1]

Given that a key element of MOVE for the treatment group was residence in a different location relative to where participants lived in the past, it is a legitimate question whether 6 months is sufficient time away from an old environment to produce a turning point in the life-course of crime. The program did not stipulate that participants needed to remain in their new locations after the subsidy ended, although there may be benefits in doing so. Even if criminal opportunities and access to drugs are nearly ubiquitous with little effort, residential change to a new environment may provide a short-term disruption to an individual's access to drugs and criminal opportunities, thereby reducing the likelihood of recidivism. Indeed, Osgood et al. (1996) argued that motivation for crime is situational. An individual's persistence in criminal activity is a function of the situational contingencies that provide opportunities for crime in the absence of social controls. Living in a new environment, even for only 6 months, may promote desistance from crime by disrupting access to illicit temptations and criminal opportunities in the crucial period right after someone exits prison.

Whereas criminological research generally finds that families can be a positive influence and a source of support to the formerly incarcerated, family reunification is not universally beneficial (Harding, Morenoff, and Wyse, 2019; Hassan, Kirk, and Andersen, 2022; La Vigne, Visher, and Castro, 2004; Leverentz, 2014; Visher, La Vigne, and Travis, 2004). Fontaine and Biess (2012: 4) explain—

> Considering that some share of formerly incarcerated persons' family members also struggle with substance abuse issues, their own criminal histories, limited incomes, and other issues, housing with family might be a less-than-ideal housing option for many individuals recently released.

Nevertheless, recognizing the potential benefit of living with family members (and the potential negative consequences of living in isolation), MOVE participants were not required to live alone.

[1] The program also provided a 1-month security deposit if necessary. All subsidy payments were provided directly to landlords, as opposed to a cash transfer to participating individuals.

They had the option and choice to reside with other individuals, including immediate family members. The program also offered a supplemental $100 per month in housing subsidy for individuals residing with dependent children to help offset the cost of renting a larger dwelling.

As noted, in addition to the housing subsidy, participants received housing location assistance from a case manager employed by Quadel Consulting, a housing specialist firm with broad experience working with public housing authorities to administer housing voucher programs. Quadel also offered post-release case management services to participants to help with transition back into the community. One reason to do so was to be aware of any effects of social isolation among the individuals who moved to an unfamiliar area.

Participant Eligibility

For the pilot, MOVE specifically avoided "creaming" the sample to only those individuals most motivated and ready to change their behavior following incarceration. Furthermore, eligibility was not restricted to people with relatively short incarceration histories to the exclusion of individuals with repeated stints of incarceration. Although undoubtedly some individuals might benefit more from the housing and a new environment, the author's prior work in Louisiana revealed that both first-time releases and individuals with multiple incarcerations benefit from residential relocation, as do individuals with a history of addiction and those without (Kirk, 2020). Therefore, MOVE attempted to limit any restrictions on the pilot sample. That said, should a housing authority or other housing provider seek to replicate MOVE, it may be advantageous to use modern risk prediction tools available via data science to target finite resources at those individuals most highly predicted to recidivate in the absence of housing or in the absence of a move to a new location.

In terms of the few eligibility exceptions, because of the two-site design and the goal of producing no net change in the number of parolees in Baltimore or PG County, participants must have been residents of one of those locations immediately prior to incarceration. MOVE excluded those individuals from participation who had a detainer in another jurisdiction that would prevent their actual release from incarceration (for example, if they were required to serve a sentence in another state or the District of Columbia). Per an agreement with the Maryland Department of Public Safety and Correctional Services (DPSCS), felony sex offenders and individuals screened as very high risk of violent recidivism by Maryland's Violence Prevention Initiative forecasting system were ineligible for the program. Finally, the pilot only included men. MOVE excluded women from the pilot phase of the project because of the combination of the small sample size and the relatively small proportion of women among the prison population in Maryland.

Most prisoners in Maryland are released either through a decision by the parole board or mandatory release following the diminution of their sentence through good time credit (The Pew Charitable Trusts, 2015). Although the mandatory release mechanism is not subject to the approval of a parole board, people exiting prison via mandatory release are still supervised by a parole officer in the community until the expiration of their full criminal sentence. For logistical reasons, the MOVE pilot was limited to mandatory releases. It is challenging to plan for the timing of the release of an individual when a parole board makes the decision. It is useful to know when an individual will be released from prison, so that information can be communicated to a potential landlord to

initiate the apartment search process prior to the individual's release. Therefore, the pilot focused on individuals released via mandatory release.

As a final comment about eligibility, with Design A of the pilot, the age range of participants was not restricted, and participants ranged in age from 22 to 53, including 6 (out of the 15 total) participants over 45 and only 2 in their 20s. Many participants were likely well past their crime-prone years. Although a housing subsidy could surely be beneficial, it might be unnecessary for curtailing recidivism if most participants were already well past the ages of typical criminal activity. Accordingly, Design B restricted the age range of participants from 18 to 45 to target participants most at risk of recidivism.

Recruitment, Sample, and Take-Up Rate

For the pilot study, MOVE recruited 30 participants from four Maryland prisons, three in central Maryland and one in southern Maryland. The four particular prisons were chosen because they admit and release a relatively large number of individuals from the city of Baltimore and PG County.

In 2015 MOVE recruited 15 new participants into Design A of the program out of 17 invited to participate (88 percent enrollment). Program staff randomly assigned six participants to the treatment group and nine to the control group. As a reminder, with Design A, the treatment group received a housing subsidy for use only in a jurisdiction that is more than 40 miles from their place of residence prior to prison, and the control group received a housing subsidy back in the same jurisdiction (the city of Baltimore or PG County) where they resided prior to incarceration. In terms of take-up, three of the six treatment group participants (50 percent) and all nine of the control group were placed in housing. The 50 percent take-up rate is lower compared with the performance of the Housing Choice Voucher program, which has an estimated take-up rate of nearly 70 percent (Finkel and Buron, 2001). However, it is comparable with or higher than recent experimental and quasi-experimental programs designed to use housing vouchers to foster residential mobility among lower-income households (Rubinowitz and Rosenbaum, 2000; Sanbonmatsu et al., 2011).

As noted, Design B sought to compare the treatment condition (that is, housing subsidy plus moving) with the status quo (that is, without housing subsidy). MOVE also hoped to increase the take-up rate into housing relative to Design A. Whereas MOVE staff encouraged people to enroll only if they were willing to reside in either the city of Baltimore or PG County, it was possible for a prospective Design A participant to determine that he could sign up in the hopes of getting 6 months of free housing in his preferred location, then just drop out without penalty if he did not get his preference. With Design B, however, which provided no possibility of obtaining free housing back in a home jurisdiction, the program would presumably appeal only to individuals who would at least consider moving to a new area.

For Design B, 15 pilot participants were recruited in 2016. Eight individuals were randomly assigned to the treatment group and seven to the control group, with a 50 percent take-up rate again in the treatment group. Accordingly, it might be concluded that only about one-half of treatment group participants can typically be placed in housing. That said, the 50 percent take-up

rate could be an anomaly of the small pilot sample, and it should, therefore, be investigated further during a full implementation of the program.

Qualitative Interviews

MOVE staff completed up to four interviews with the final nine participants recruited into the program, with one interview prior to release, one within 2 weeks after release from prison, and two more at approximately 3 and 6 months post-release. Six participants completed all four interviews, two participants completed three interviews, and one participant completed two interviews.

The interviews intended to understand the reentry experiences of participants in the program. Specifically, through the interviews, MOVE staff sought to understand whether moving facilitated any change in behavior and, if so, to identify mediating mechanisms that explain why residential change may lead to a reduction in the probability of recidivism. These mechanisms may include a change in routine activities, a change in peer associations, a reduction in criminal opportunities, exposure to more opportunities for employment or social services, identity change, and a decrease in the level of scrutiny by the police. Interviews also sought to examine the role of social supports and the potential consequences of social isolation in a new environment.

Pilot Results

Whereas the main purpose of the Maryland Opportunities through Vouchers Experiment pilot was to verify the procedures and design of the program so that adjustments could be made in advance of a full-scale implementation, this section provides a descriptive summary of rearrest rates among sample participants.[2] Rearrest is defined as an arrest anywhere in the State of Maryland in the 12 months immediately following an individual's release from incarceration. MOVE staff obtained rearrest data from the DPSCS and double-checked these data with online records from the Maryland Judiciary Case Search portal.

For Design A, in which both the treatment and control groups received 6 months of housing and the housing location distinguished the groups, none of the participants in either group were rearrested within the 1-year followup period. The proportion rearrested in both groups (0 percent) is the same whether comparing the full sample (that is, the so-called "intention-to-treat" sample) or the subset with those participants who were able to use the MOVE housing subsidy to take up housing (that is, the three out of six individuals in the treatment group and all nine individuals in the control group). As a point of comparison, the Bureau of Justice Statistics reports that, nationally, an average of 37 percent of people released from prison are arrested within 1 year of their release, and in Maryland, 20 percent are reincarcerated within a year (DPSCS, 2022; Durose and Antenangeli, 2021). Hence, the 0-percent rearrest rate is far from the norm.

Findings could indicate that free housing, offered to both groups in Design A, is a key contributor to reducing the likelihood of recidivism, regardless of the location of that housing. An alternative (or additional) explanation is that because the sample of participants included several individuals well past the typical crime-committing age, the sample may have been filled with some individuals who

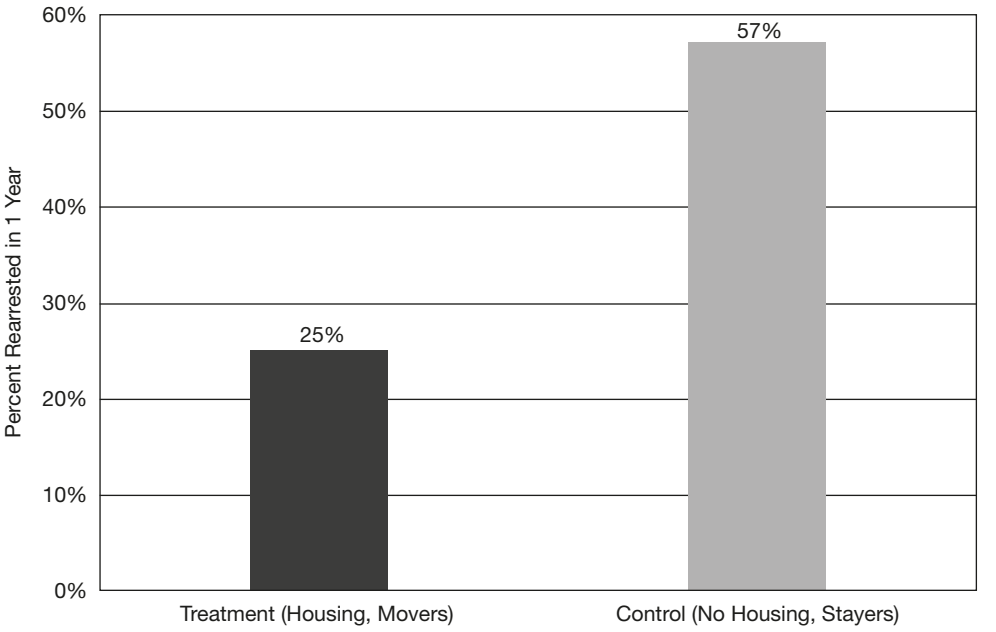
[2] The author is presently exploring opportunities and funding for continued implementation of MOVE, including in locations beyond Maryland.

would not have been rearrested regardless of whether they had received a housing subsidy. In fact, the median age in the treatment group in Design A was 35.5 and 46 in the control group. Hence, particularly among control group participants, age may partially explain why no one was rearrested.

For Design B results, recall that eligibility is capped at age 45. Exhibit 2 reveals that 25 percent of the treatment group were rearrested within 1 year of release from prison versus 57 percent in the control group. As in the results for Design A, the proportion rearrested in both groups is the same whether comparing the full sample (that is, the intention-to-treat sample) or subset with those participants who were able to use the MOVE housing subsidy (that is, the four of eight individuals in the treatment group). Whereas the small sample size means that hypothesis testing lacks statistical power, a one-tailed hypothesis test of the difference in proportions across groups using the intention-to-treat sample yields a z-statistic equal to -1.268, with a p-value equal to 0.102, which is slightly outside the typical range used to denote marginal significance.

Exhibit 2

One-Year Rearrest Rate in Maryland Opportunities Through Vouchers Experiment Design B



Qualitative Findings

Although findings presented thus far are suggestive of the value of housing assistance for reducing the likelihood of recidivism, it is less clear whether residence in a new environment provided sufficient separation from one's past and a new set of routine activities to facilitate desistance from crime (Laub and Sampson, 2003). Still, qualitative interview data can be used to unpack the results. Evidence from participant interviews reveals several reasons underlying the differences in rearrest between treatment and control group members, including housing instability, destructive relationships, and idle time.

Housing Instability

Pierre, a PG County resident prior to incarceration and in his mid-30s as of his release, was a control group member under Design B and, therefore, did not receive a housing subsidy. He was open to the idea of residing somewhere besides PG County, and he attempted to enroll in a different government-sponsored transitional housing program in Baltimore on release. However, he stated that he was denied entry into the housing program because he was not from Baltimore. These types of restrictions on housing program eligibility, presumably stipulated because of finite resources available to house the formerly incarcerated, have the consequence of encouraging individuals to return to the communities from which they came, even if it is detrimental to do so. That is what Pierre did.

Pierre has a sister in PG County where he could stay as a last resort, although she has four children and little room for him. As an alternative, he occasionally scraped together enough money for a night at a motel but tended to stay with friends and acquaintances from PG County a few days at a time. A highly unstable housing situation, embedded in his old surroundings, characterized his limited time out of prison.

Perhaps as a result of his housing instability, Pierre struggled to find work. Without work, he did not have the income to look for stable housing. This situation is the sort of catch-22 that characterizes so many individuals in the period soon after prison release. Because he did not have a place of his own, he felt awkward just hanging around at whoever's house where he was staying. Accordingly, he would find something to do out of the house each day. Sometimes that meant going to the library so that he could access the internet and look for work. Other times, it meant hanging out with friends and acquaintances. None of these individuals were big-time criminal offenders, but the regular drinking and minor drug use caught up to him. He was rearrested approximately 6 weeks after his release from prison on three drug charges.

Destructive Relationships

Eddie's experience, a control group participant in his early 30s at the time of his release, resembles that of Pierre. Eddie resided the bulk of his life in a town just outside the Northeast section of the District of Columbia. He exited prison after serving time on a robbery conviction. On the day of his release, his actual exit was delayed by several hours, and by the time he got out, his mother was busy at her church, so he went to his father's house (his father and his mother had long been divorced), where he resided prior to incarceration. His father lives in the area that had been a frequent site of his criminal activity.

Eddie's release from prison was an occasion for an impromptu party at his father's house. Eddie explained, "They [my father, stepmom, and their friends] was just partying. I drank a few, but I drink one every hour or so, and then I drink water. I'm not trying to get drunk. They're still doing that." Hence, within a couple of hours of his release, Eddie was back in his old neighborhood, reluctantly at a party hosted by his alcoholic father with many of Eddie's acquaintances from the neighborhood.

That party at his father's was the first of several occasions that reconnected Eddie to his old neighborhood and network. At his interview less than 2 weeks after release, he noted that his old

neighborhood peers were already tempting him with drugs, both for use and to sell, which he initially tried to resist. He explained to his friends that he was on parole and subject to urinalysis twice a week, and thus needed to abstain from the drugs offered to him, such as cocaine. Perhaps it is telling that rather than communicate to his peers that he was abstaining from drug use because of a choice to leave that behavior in the past, he mentioned on more than one occasion in the interview that his abstinence was out of necessity to avoid getting caught through the urinalysis.

At his interview roughly 2 weeks post-release, Eddie explained that he was trying to spend as much time as he could with family, particularly his former girlfriend and their 5-year-old son. He described how he did not want to let his son down and did not want him to follow the same path to criminality that he did. Eddie also said that he and his son's mother had begun to rekindle their relationship. Still, during the interview, he also recounted how they had already had a couple of arguments, because he was hanging out with other people rather than her and their son. Before too long, repeatedly confronted with temptations and opportunities to return to his old life, Eddie was rearrested. During the next couple of years, he continued to get in trouble with the law, with several relatively low-level arrests and convictions. These arrests, combined with his criminal history and parole revocations, meant that he continued to be in and out of prison.

Structured Versus Idle Time

Pierre's experience after his release reveals the ways in which housing instability may contribute to poor employment prospects and, therefore, a lot of idle time. And Eddie's experience reveals how easy it can be to return to old relationships and the routines, sometimes criminal, embedded in those relationships. In contrast, Randy's post-incarceration situation reveals that structured time through employment, facilitated by having a stable place to reside, is important for avoiding trouble with the law.

Randy, a 24-year-old treatment group member, lived in PG County prior to incarceration but moved to Baltimore through the MOVE program, with the 6 months of free housing. In contrast to Pierre, whose pre-incarceration friends supported him with places to stay after his release but also served as companions as he returned to drinking and drug use, Randy avoided the social ties of his past once he was released. He explained—

> I cut off almost everybody other than family. The friends that I did have, we weren't really doing what we were supposed to be doing [in the past]. I don't want to go back to old relationships. I don't want to go back to old friendships. I just think it was unhealthy then. I need to focus more on other things now.

In contrast to Pierre, Randy's ability to cut off his negative peers was facilitated by the fact that he had a stable place to live post-release. On the very few occasions he reconnected with his old friends, one of them offered to get him into drug distribution. Randy resisted, which is perhaps easier to do, because he was not immersed in his old environment in PG County.

Randy's post-release neighborhood in Baltimore was not crime free by any means, but he says he was able to keep to himself rather than "hanging in the streets," as he did in his old neighborhood in PG County. By his 3-month interview, he was working at a fast-food restaurant, and by his

6-month interview he had added another job, as a stocking clerk at a discount store. Neither were well-paying jobs, but by working a lot of hours, Randy was trying to save money to continue paying rent after his MOVE housing subsidy ended. Hence, it appears that a very structured life with little idleness facilitated Randy's transition post-incarceration.

When asked about the potential benefits of receiving housing through the MOVE program, Randy replied simply, "it means that there is one less thing I need to worry about." Indeed, that is an intent of the housing first model of social service delivery. Without the worry of securing housing, Randy could then focus on finding gainful employment.

Discussion

On exiting prison, formerly incarcerated individuals tend to lack access to safe and stable housing and, partly as a result, return in proximity to the neighborhoods where they resided before incarceration for opportunities to shelter with family, friends, or acquaintances. Prior research has shown that housing instability and returning to familiar residential environments contribute to the cycle of recidivism (for example, Kirk, 2009; Steiner, Makarios, and Travis, 2015). MOVE was designed to address these twin challenges.

This article described the design of the MOVE program and its pilot evaluation and provided a preliminary assessment of its feasibility and efficacy. With the caveat that findings are based on a small sample and firm inferences are necessarily premature, the descriptive results in this study, including those in exhibit 2, preliminarily suggest that provision of 6 months of housing may lower the likelihood of recidivism, and that the residential moves to a new city or county facilitated by that housing may also reduce the likelihood of recidivism. Qualitative evidence presented in this article suggests that housing subsidies allowed individuals to focus attention on the many other challenges they face when exiting prison, including a quicker transition to employment. Moreover, when housing was away from previous residential locations, it helped MOVE participants avoid the routines and temptations associated with their old environments and peer networks.

Ultimately, if the hypotheses underlying the MOVE program are subsequently supported through full-scale implementations, then strategies to increase access to housing assistance for people exiting prison may be worth pursuing. However, given that only about one-fourth of families who are eligible for federal rental assistance presently receive it (Fischer and Sard, 2017), how would it be possible to fund housing for people coming out of prison?

One idea for funding rental assistance for the formerly incarcerated could be a version of justice reinvestment—for example, reinvest the criminal justice savings from reduced use of incarceration into housing subsidies for formerly incarcerated individuals for some defined time period depending on resource availability. To maximize the benefit of finite resources, one possibility is to use modern risk prediction tools via machine learning to target subsidies at individuals who would be most at risk of recidivism in the absence of stable housing. It is worth noting that the average yearly cost to imprison someone in Maryland in 2015, when MOVE launched, was $44,601 (equivalent to $122 per day per imprisoned individual; Mai and Subramanian, 2017). By comparison, recall that study participants housed in Baltimore received a subsidy of $985

per month, and participants in PG County received $1,230 per month, for an average of slightly more than $1,100 per month in cost (or $13,200 per year). Although a stable place to reside will not resolve everyone's criminal behavior, it is nevertheless far cheaper to house someone in the community than behind bars.

It may be a hard political sell to dramatically increase funding for housing for people coming out of prison, even if it can be shown to enhance public safety. Hence, an alternative idea is to make a concerted effort to expand affordable housing opportunities for low-income households in general, with some formerly incarcerated individuals benefitting from the greater availability of affordable housing. One strategy for doing so is to expand the Low-Income Housing Tax Credit (LIHTC) program. The LIHTC program, which HUD (2018) described as "the most important resource for creating affordable housing in the United States today," provides tax incentives to real estate developers to encourage affordable housing development. Since its inception in 1986, approximately 50,000 LIHTC developments totaling more than 3 million housing units have been placed in service. Research shows that the tax incentives have indeed worked to spur affordable housing development in low-income neighborhoods (Baum-Snow and Marion, 2009). Research also reveals that low-income housing development in impoverished neighborhoods is associated with significant declines in violent crime (Freedman and Owens, 2011). Whereas a variety of routes exist for expanding housing opportunities for people exiting prison, evidence from the MOVE pilot and its intellectual precursors suggests that stable housing for the formerly incarcerated in a location that facilitates a fresh start in life will help break the cycle of recidivism (Kirk, 2020).

Acknowledgments

The author relied heavily on the dedicated employees of the Maryland Department of Public Safety and Correctional Services to implement the MOVE program and is grateful for their support. The author would like to thank Geoff Barnes, Jordan Hyatt, and Quadel Consulting for their assistance with the implementation of the MOVE program. The author would also like to thank Brook Kearley and Dana Segev for their assistance with collecting and initial analysis, respectively, of the qualitative interview data presented in this article.

Author

David S. Kirk is a professor in the Department of Sociology and Professorial Fellow of Nuffield College, University of Oxford.

References

American Bar Association (ABA). 2013. "National Inventory of the Collateral Consequences of Conviction." Chicago, IL: American Bar Association. https://csgjusticecenter.org/publications/the-national-inventory-of-collateral-consequences-of-conviction/.

Baum-Snow, Nathaniel, and Justin Marion. 2009. "The Effects of Low Income Housing Tax Credit Developments on Neighborhoods," *Journal of Public Economics* 93 (5–6): 654–666. https://doi.org/10.1016%2Fj.jpubeco.2009.01.001.

Bergman, Peter, Raj Chetty, Stefanie DeLuca, Nathaniel Hendren, Lawrence F. Katz, and Christopher Palmer. 2020. Creating Moves to Opportunity: Experimental Evidence on Barriers to Neighborhood Choice. NBER Working Paper No. 26164. Cambridge, MA: National Bureau of Economic Research. http://www.nber.org/papers/w26164.

Briggs, Xavier de Souza, Susan J. Popkin, and John Goering. 2010. *Moving to Opportunity: The Story of an American Experiment to Fight Ghetto Poverty*. New York: Oxford University Press.

Bryan, Brielle. 2022. "Housing Instability Following Felony Conviction and Incarceration: Disentangling Being Marked From Being Locked Up," *Journal of Quantitative Criminology*. https://doi.org/10.1007/s10940-022-09550-z.

Bureau of Justice Statistics (BJS). 2023. "Corrections Statistical Analysis Tool (CSAT) – Prisoners." Washington, DC: U.S. Department of Justice. https://csat.bjs.ojp.gov/.

Carson, E. Ann. 2022. *Prisoners in 2021 – Statistical Tables*. Washington, DC: U.S. Department of Justice. https://bjs.ojp.gov/sites/g/files/xyckuh236/files/media/document/p21st.pdf.

Chyn, Eric. 2018. "Moved to Opportunity: The Long-Run Effect of Public Housing Demolition on Children," *American Economic Review* 108 (10): 3028–3056. https://doi.org/10.1257/aer.20161352.

Durose, Matthew R., and Leonardo Antenangeli. 2021. *Recidivism of Prisoners Released in 34 States in 2012: A 5-Year Follow-Up Period (2012–2017)*. Washington, DC: U.S. Department of Justice. https://bjs.ojp.gov/sites/g/files/xyckuh236/files/media/document/rpr34s125yfup1217.pdf.

Evans, Douglas N., and Jeremy R. Porter. 2015. "Criminal History and Landlord Rental Decisions: A New York Quasi-Experimental Study," *Journal of Experimental Criminology* 11: 21–42. https://doi.org/10.1007/s11292-014-9217-4.

Finkel, Meryl, and Larry Buron. 2001. *Study on Section 8 Voucher Success Rates. Volume I. Quantitative Study of Success Rates in Metropolitan Areas*. Cambridge, MA: Abt Associates. https://www.huduser.gov/publications/pdf/sec8success.pdf.

Fischer, Will, and Barbara Sard. 2017. *Chart Book: Federal Housing Spending is Poorly Matched to Need*. Washington, DC: Center on Budget and Policy Priorities. https://www.cbpp.org/research/housing/federal-housing-spending-is-poorly-matched-to-need.

Fontaine, Jocelyn, and Jennifer Biess. 2012. *Housing as a Platform for Formerly Incarcerated Persons*. Washington, DC: Urban Institute. https://www.urban.org/sites/default/files/publication/25321/412552-Housing-as-a-Platform-for-Formerly-Incarcerated-Persons.PDF.

Freedman, Matthew, and Emily G. Owens. 2011. "Low-Income Housing Development and Crime," *Journal of Urban Economics* 70 (2–3): 115–131. https://doi.org/10.1016/j.jue.2011.04.001.

Geller, Amanda, and Marah A. Curtis. 2011. "A Sort of Homecoming: Incarceration and the Housing Security of Urban Men," *Social Science Research* 40 (4): 1196–1213. https://doi.org/10.1016/j.ssresearch.2011.03.008.

Glaser, Daniel. 1969. *The Effectiveness of a Prison and Parole System (Abridged Edition)*. Indianapolis, IN: Bobbs-Merrill.

Hamilton, Zachary, Alex Kigerl, and Zachary Hays. 2015. "Removing Release Impediments and Reducing Correctional Costs: Evaluation of Washington State's Housing Voucher Program," *Justice Quarterly* 32 (2): 255–287. https://doi.org/10.1080/07418825.2012.761720.

Harding, David J., Jeffrey D. Morenoff, and Claire Herbert. 2013. "Home is Hard to Find: Neighborhoods, Institutions, and the Residential Trajectories of Returning Prisoners," *The ANNALS of the American Academy of Political and Social Science* 647 (1): 214–236. https://doi.org/10.1177/0002716213477070.

Harding, David J., Jeffrey D. Morenoff, and Jessica J. B. Wyse. 2019. *On the Outside: Prisoner Reentry and Reintegration*. Chicago: University of Chicago Press.

Harding, David J., Jessica J. B. Wyse, Cheyney Dobson, and Jeffrey D. Morenoff. 2014. "Making Ends Meet After Prison," *Journal of Policy Analysis and Management* 33 (2): 440–470. https://doi.org/10.1002%2Fpam.21741.

Hassan, Said, David S. Kirk, and Lars H. Andersen. 2022. "The Importance of Living Arrangements for Criminal Persistence and Desistance: A Novel Test of Exposure to Convicted Family Members," *Journal of Developmental and Life-Course Criminology* 8: 571–596. https://doi.org/10.1007/s40865-022-00211-0.

Herbert, Claire W., Jeffrey D. Morenoff, and David J. Harding. 2015. "Homelessness and Housing Insecurity among Former Prisoners," *The Russell Sage Foundation Journal* 1: 44–79. https://doi.org/10.7758/rsf.2015.1.2.04.

Joint Center for Housing Studies of Harvard University (JCHS). 2022. *The State of the Nation's Housing: 2022*. Cambridge, MA: Harvard University. https://www.jchs.harvard.edu/state-nations-housing-2022.

Keels, Micere. 2008. "Second-Generation Effects of Chicago's Gautreaux Residential Mobility Program on Children's Participation in Crime," *Journal of Research on Adolescence* 18: 305–352. https://doi.org/10.1111/j.1532-7795.2008.00562.x.

Kirk, David S. 2020. *Home Free: Prisoner Reentry and Residential Change after Hurricane Katrina*. New York: Oxford University Press.

———. 2019. "The Collateral Consequences of Incarceration for Housing." In *Handbook on the Consequences of Sentencing and Punishment Decisions*, edited by Beth M. Huebner and Natasha Frost. New York: Routledge.

———. 2018. "The Effect of Neighborhood Context and Residential Mobility on Criminal Persistence and Desistance." In *The Oxford Handbook of Developmental and Life-Course Criminology*, edited by David P. Farrington, Lila Kazemian, and Alex R. Piquero. New York: Oxford University Press.

———. 2012. "Residential Change as a Turning Point in the Life Course of Crime: Desistance or Temporary Cessation?" *Criminology* 50 (2): 329–358. https://doi.org/10.1111/j.1745-9125.2011.00262.x.

———. 2009. "A Natural Experiment on Residential Change and Recidivism: Lessons from Hurricane Katrina," *American Sociological Review* 74 (3): 484–505. https://doi.org/10.1177/000312240907400308.

Kirk, David S., and Sara Wakefield. 2018. "Collateral Consequences of Punishment: A Critical Review and Path Forward," *Annual Review of Criminology* 1: 171–194. https://doi.org/10.1146/annurev-criminol-032317-092045.

Lageson, Sarah. 2020. *Digital Punishment: Privacy, Stigma, and the Harms of Data-Driven Criminal Justice*. New York: Oxford University Press.

Laub, John H., and Robert J. Sampson. 2003. *Shared Beginnings, Divergent Lives: Delinquent Boys to Age 70*. Cambridge, MA: Harvard University Press.

La Vigne, Nancy G., Christy Visher, and Jennifer Castro. 2004. *Chicago Prisoners' Experiences Returning Home*. Washington, DC: Urban Institute. https://www.urban.org/sites/default/files/publication/42831/311115-Chicago-Prisoners-Experiences-Returning-Home.PDF.

Leverentz, Andrea. 2014. *The Ex-Prisoner's Dilemma: How Women Negotiate Competing Narratives of Reentry and Desistance*. New Brunswick, NJ: Rutgers University Press.

Lutze, Faith E., Jeffrey W. Rosky, and Zachary K. Hamilton. 2013. "Homelessness and Reentry: A Multisite Outcome Evaluation of Washington State's Reentry Housing Program for High Risk Offenders," *Criminal Justice and Behavior* 41 (4): 471–491. https://doi.org/10.1177/0093854813510164.

Mai, Chris, and Ram Subramanian. 2017. *The Price of Prisons: Examining State Spending Trends, 2010-2015*. New York: The Vera Institute of Justice. https://www.vera.org/publications/price-of-prisons-2015-state-spending-trends.

Makarios, Matthew, Benjamin Steiner, and Lawrence Travis, III. 2010. "Examining the Predictors of Recidivism among Men and Women Released from Prison in Ohio," *Criminal Justice and Behavior* 37 (12): 1377–1391. https://doi.org/10.1177/0093854810382876.

Maryland Department of Public Safety and Correctional Services (DPSCS). 2022. *Recidivism Report*. Annapolis, MD: DPSCS. https://dpscs.maryland.gov/publicinfo/publications/pdfs/2022_p157_DPSCS_Recividism%20Report.pdf.

Meredith, Tammy, John C. Speir, and Sharon Johnson. 2007. "Developing and Implementing Automated Risk Assessments in Parole," *Justice Research and Policy* 9 (1): 1–24. https://doi.org/10.3818/JRP.9.1.2007.1.

Metraux, Stephen, and Dennis P. Culhane. 2004. "Homeless Shelter Use and Reincarceration Following Prison Release: Assessing the Risk," *Criminology & Public Policy* 3 (2): 139–160. https://doi.org/10.1111/j.1745-9133.2004.tb00031.x.

Osborn, S. G. 1980. "Moving Home, Leaving London and Delinquent Trends," *British Journal of Criminology* 20 (1): 54–61. https://www.jstor.org/stable/23636282.

Osgood, D. Wayne, Janet K. Wilson, Jerald G. Bachman, Patrick M. O'Malley, and Lloyd D. Johnston. 1996. "Routine Activities and Individual Deviant Behavior," *American Sociological Review* 61 (4): 635–655.

The Pew Charitable Trusts. 2015. "Maryland Data Analysis Part II: Community Corrections Drivers." Presentation to the Justice Reinvestment Coordinating Council, Annapolis, MD, July 29. http://goccp.maryland.gov/jrcc/documents/presentation-20150818-community-corrections.pdf.

Rosenbaum, James E., and Anita Zuberi. 2010. "Comparing Residential Mobility Programs: Design Elements, Neighborhood Placements, and Outcomes in MTO and Gautreaux," *Housing Policy Debate* 20 (1): 27–41. https://doi.org/10.1080/10511481003599845.

Rubinowitz, Leonard S., and James E. Rosenbaum. 2000. *Crossing the Class and Color Lines: From Public Housing to White Suburbia*. Chicago: University of Chicago Press.

Sampson, Robert J. 2008. "Moving to Inequality: Neighborhood Effects and Experiments Meet Social Structure," *American Journal of Sociology* 114 (1): 189–231. https://doi.org/10.1086/589843.

Sampson, Robert J., and John H. Laub. 1993. *Crime in the Making: Pathways and Turning Points Through Life*. Cambridge, MA: Harvard University Press.

Sanbonmatsu, Lisa, Jens Ludwig, Lawrence F. Katz, Lisa A. Gennetian, Greg J. Duncan, Ronald C. Kessler, Emma Adam, Thomas W. McDade, and Stacy Tessler Lindau. 2011. *Moving to Opportunity for Fair Housing Demonstration Program: Final Impacts Evaluation*. Washington, DC: U.S. Department of Housing and Urban Development, Office of Policy Development and Research. https://www.huduser.gov/publications/pdf/mtofhd_fullreport_v2.pdf.

Sharkey, Patrick, and Robert J. Sampson. 2010. "Destination Effects: Residential Mobility and Trajectories of Adolescent Violence in a Stratified Metropolis," *Criminology* 48 (3) 639–681. https://doi.org/10.1111%2Fj.1745-9125.2010.00198.x.

Steiner, Benjamin, Matthew D. Makarios, and Lawrence F. Travis, III. 2015. "Examining the Effects of Residential Situations and Residential Mobility on Offender Recidivism," *Crime and Delinquency* 61 (3): 375–401. https://doi.org/10.1177/0011128711399409.

U.S. Department of Housing and Urban Development (HUD). 2018. "Low-Income Housing Tax Credits." Washington, DC: U.S. Department of Housing and Urban Development. https://www.huduser.gov/portal/datasets/lihtc.html.

———. 2016. *Application of Fair Housing Act Standards to the Use of Criminal Records by Providers of Housing and Real Estate-Related Transactions*. Washington, DC: U.S. Department of Housing and Urban Development. https://www.hud.gov/sites/documents/HUD_OGCGUIDAPPFHASTANDCR.PDF.

———. 2015. *Guidance for Public Housing Agencies (PHAs) and Owners of Federally-Assisted Housing on Excluding the Use of Arrest Records in Housing Decisions*. Washington, DC: U.S. Department of Housing and Urban Development. https://www.hud.gov/sites/documents/PIH2015-19.PDF.

Visher, Christy, and Jill Farrell. 2005. *Chicago Communities and Prisoner Reentry*. Washington, DC: Urban Institute. https://www.urban.org/sites/default/files/publication/42891/311225-Chicago-Communities-and-Prisoner-Reentry.PDF.

Visher, Christy, Nancy La Vigne, and Jeremy Travis. 2004. *Returning Home: Understanding the Challenges of Prisoner Reentry, Maryland Pilot Study: Findings from Baltimore*. Washington, DC: Urban Institute. https://webarchive.urban.org/publications/410974.html.

Vogel, Matt, Lauren C. Porter, and Timothy McCuddy. 2017. "Hypermobility, Destination Effects, and Delinquency: Specifying the Link between Residential Mobility and Offending," *Social Forces* 95 (3): 1261–1284. https://doi.org/10.1093/sf/sow097.

Warner, Cody. 2015. "On the Move: Incarceration, Race, and Residential Mobility," *Social Science Research* 52: 451–464. https://doi.org/10.1016/j.ssresearch.2015.03.009.

Western, Bruce, and Becky Pettit. 2010. "Incarceration & Social Inequality," *Daedalus* 139 (3): 8–19. https://doi.org/10.1162/daed_a_00019.

Zeng, Zhen. 2022. *Jail Inmates in 2021 – Statistical Tables*. Washington, DC: U.S. Department of Justice. https://bjs.ojp.gov/sites/g/files/xyckuh236/files/media/document/ji21st.pdf.

Addressing Homelessness Among People With Justice Involvement: Los Angeles County's Just in Reach Pay for Success Demonstration Project

Sarah B. Hunter
RAND Corporation

Stephanie Mercier
Corporation for Supportive Housing

Abstract

This article provides an overview of the implementation and outcomes of Los Angeles County's first Pay for Success (PFS) initiative. In 2017, the county initiated a program to provide long-term housing and supportive services as an alternative to jail for individuals with a history of homelessness and chronic health conditions using a PFS model. The PFS model included two primary investors, two funding partners, an intermediary team that monitored the implementation and outcome metrics, and an independent evaluation team responsible for evaluating the program's overall effect. The county operated the program with support from a housing rental assistance and navigation service provider and a team of intensive case management service providers. Participants were enrolled during a 2-year period, and outcomes following post-supportive housing placement were observed along with trends among a comparison group of similar individuals who were not enrolled in the program. In this article, the authors bring together information about program operations, the funding model and outcomes from the metric monitoring, and the broader impact evaluation to highlight Los Angeles County's experience of applying PFS to supportive housing provision for people involved with the justice system.

Introduction

According to the latest estimates, more than 69,000 individuals in Los Angeles (LA) County experience homelessness—defined as a lack of a fixed, regular, or adequate nighttime residence (HUD, 2019). Moreover, the number of individuals living unsheltered in LA County, approximately 70 percent of the people experiencing homelessness, is larger than any other region in the United

States. Given the scope of the issue in LA County, new approaches are needed to better address the current trends.

Homelessness is often interrelated with incarceration, in that incarceration may increase the likelihood of experiencing homelessness, and homelessness may increase the likelihood of incarceration (Cusack and Montgomery, 2017). Formerly incarcerated individuals are nearly 10 times more likely to experience homelessness than the general population (Couloute, 2018). According to a recent survey of people experiencing homelessness in LA, 64 percent have been involved with the justice system (HPRI, 2020). Moreover, enforcement of quality-of-life ordinances often results in the "revolving door" between homelessness and jail that reduces an individual's opportunity to become stably housed.

One potential pathway to reducing homelessness in LA County is to provide permanent supportive housing (PSH) for people with chronic health conditions who are currently incarcerated in the LA County jail. PSH combines affordable housing with supportive services to assist people experiencing homelessness who often have one or more disabling conditions to become stably housed. Another potential benefit of a supportive housing provision beyond housing stability is to avoid the unnecessary use of costly public services, including jail stays. Few studies have examined the use of this model for populations that are also incarcerated. Initial work in this area suggests that connecting people who have had frequent jail and shelter stays with PSH may result in a reduction of rearrests and reincarcerations (Aidala et al., 2014; Listwan, Hartman, and LaCourse, 2018; Thomas et al., 2020).

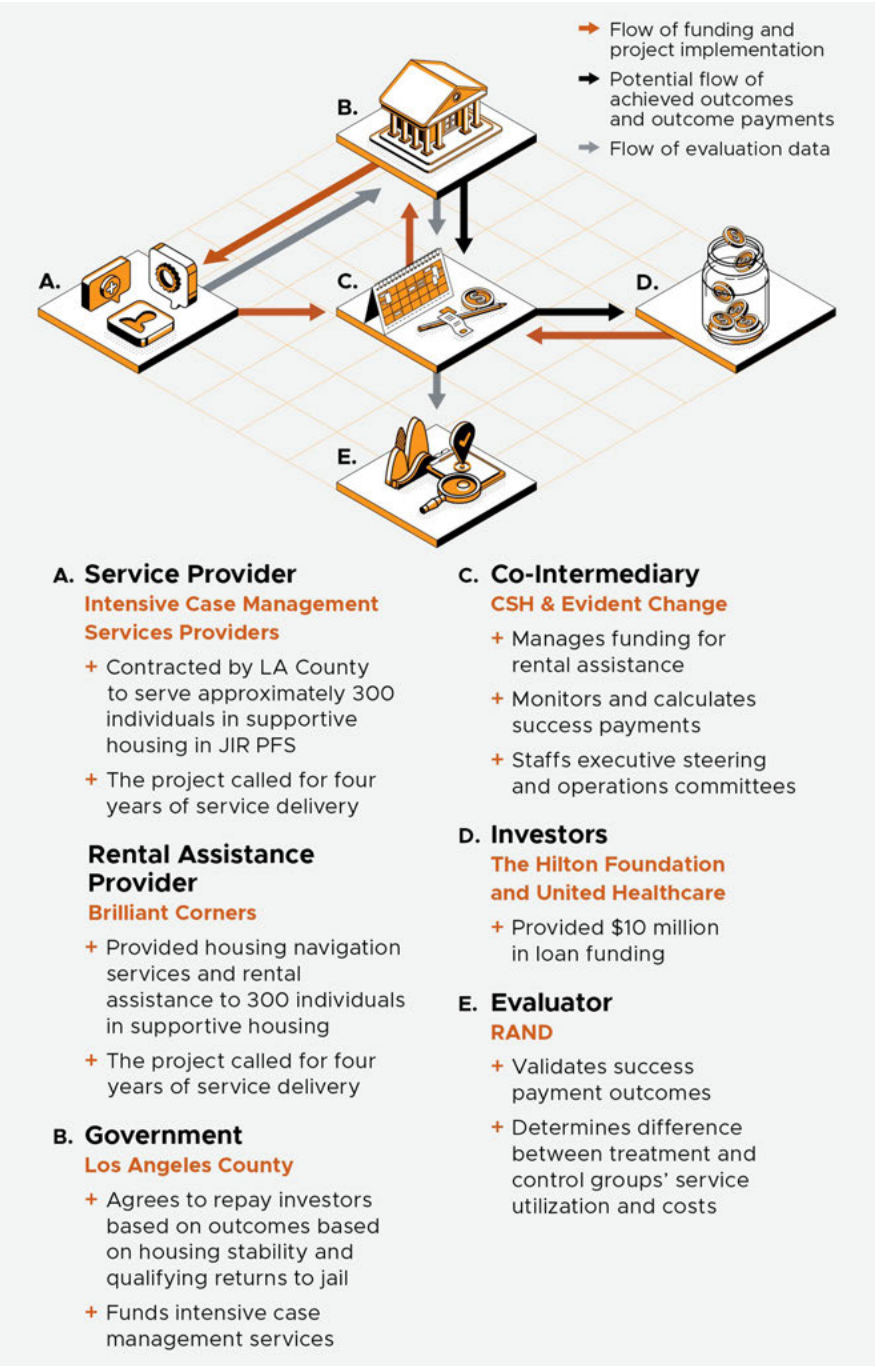
Los Angeles County Just in Reach Pay for Success Initiative

To provide support to individuals in LA County's jail system who were experiencing homelessness and chronic health conditions, the Corporation for Supportive Housing (CSH) designed Just in Reach (JIR), a program that provided holistic supportive services starting when an individual is still incarcerated (that is, the "in reach" component) coupled with PSH on post-release. The program was first piloted in 2008, and a 2.0 version that yielded more robust mental health service connections and greater involvement from the Los Angeles County Sheriff's Department (LASD) and PSH providers began in 2014. Preliminary data from the pilot showed a 20-percent reduction in rearrest rates among participants who received PSH compared with participants who were not housed (Lawrence et al., 2016).

In 2015, the LA County Board of Supervisors approved JIR as the county's first Pay for Success (PFS) initiative. As exhibit 1 outlines, PFS is a funding structure in which one or more private sector entities invest in a public initiative. The government potentially pays back these funds to the initial investors (plus interest) if specific performance metrics are achieved, such as improved participant outcomes. Proponents of the PFS model suggest that it has the potential to create win-win scenarios by which the government needs only to support the costs of the initiative if it is successful, while granting private investors the opportunity to create meaningful social impact (Lantz et al., 2016).

Exhibit 1

Just in Reach Pay for Success Project Structure



CSH = Corporation for Supportive Housing. JIR = Just in Reach. LA = Los Angeles. PFS = Pay for Success.
Source: Adapted from GAO-15-646

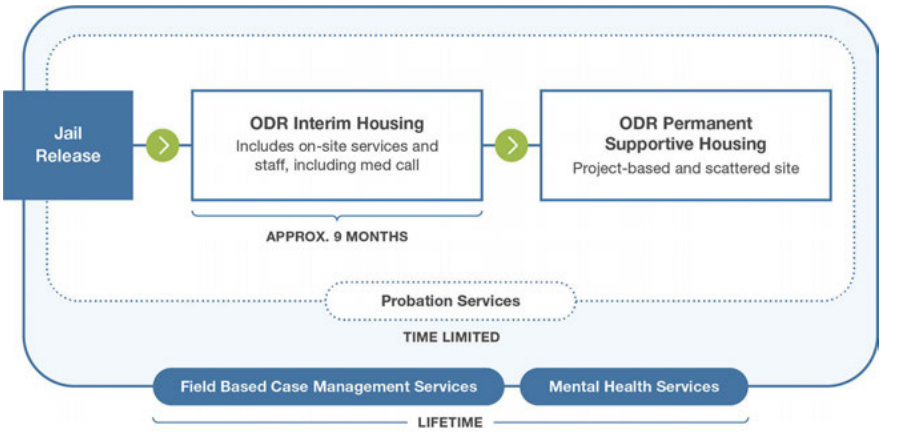
Project Participants and Services Delivered

As noted, the JIR PFS housing program operates within the larger Office of Diversion and Reentry (ODR) portfolio of services that provide housing and related services to people involved with the justice system in LA County. The program was modeled on the LA County Department of Health's "Housing for Health" program, an existing county program for frequent users of the health system. The ODR supportive housing program was further tailored to address the unique needs of the ODR population, including more clinical support, a lower case management load to participant ratio, and communication with legal stakeholders. ODR program participants could be "enrolled" in the JIR PFS initiative at the point they enter PSH.

Individuals are first identified as potential candidates for the program while incarcerated in the LA County jail (exhibit 2). Those eligible for enrollment included individuals with a history of homelessness and one or more diagnosable chronic behavioral or physical health condition, including serious mental health disorder, substance-use disorder, developmental disability, post-traumatic stress disorder, cognitive impairment resulting from a brain injury, or a chronic physical illness or disability. Using a clinical court diversion approach, program staff determine clinical eligibility, and the court system assesses the potential program candidate for legal suitability.[1] Individuals who are found to be both clinically eligible and legally suitable for diversion and who agree to enroll may be conditionally released to ODR and are placed on probation supervision. ODR then assigns the individual to an intensive case management services (ICMS) provider and to an interim housing or residential care facility based on availability, preference, and fit to ensure that participants have a place to go on release. Interim housing is provided in congregate settings with onsite services, including case management, medication monitoring, meals, and other services (for example, laundry). Individuals with mental health disorders also receive mental health services, typically in partnership with the LA County Department of Mental Health's (DMH) Full Service Partnership program.

Exhibit 2

Office of Diversion and Reentry Housing Services



ODR = Office of Diversion and Reentry.
Source: Holliday et al., 2021

[1] More information about program criteria is available in Holliday et al. (2020).

Next, ODR makes a plan for longer-term housing placement in collaboration with ICMS staff and other key stakeholders, including interim housing providers, Full Service Partnership providers, and legal stakeholders. On average, individuals spend around 9 months in interim housing before they are placed in longer-term housing settings, including PSH, which may be provided in project-based or scattered-site settings. Some individuals are not placed in PSH but receive a higher level of care called "enriched residential services" that provides more intensive clinical support than PSH settings. A more detailed overview of the ODR supportive housing program operation, not specific to the JIR PFS initiative, is available (Holliday et al., 2021).

Brilliant Corners is contracted through the county to provide housing navigation services and administer rental assistance through the county's Flexible Housing Subsidy Pool. This pool streamlines the housing process by centralizing core functions, including the housing search and application process, housing unit inspections, and security payments. Then, once an individual is housed, it provides rentals payments, tenancy support services to assist in housing stability, and tenant aftercare, including housing damage mitigation services.

Each participant in the broader ODR housing initiative, inclusive of JIR PFS enrollees, collaborates with their ICMS service provider to develop an individualized service plan. This plan outlines the range of services available to help participants meet needs and goals they have identified. These ongoing supportive services include, but are not limited to, connection to mental health and substance-use treatment services, housing stabilization support, enrollment in income support or other mainstream services benefits, mentoring, and other community support.

Program Implementation

Individuals in ODR's supportive housing program who entered PSH between October 2017 and September 2019 were eligible to be enrolled in the JIR PFS initiative. PFS projects require the establishment of performance metrics that are tied to payments to investors. The performance metrics for this project assumed that at least 300 people would be enrolled in the program between October 2017 and September 2019. The established performance metrics were—

1. Housing retention at 6 and 12 months, defined as participant retaining stable housing at the designated time points as reported by ICMS and ODR.[2]

2. Jail avoidance at 2 years, defined as participant not returning to jail for a qualifying offense, using LASD county data.[3]

As participants were enrolled in the program, they were organized into quarterly cohorts that were tracked on the performance (also called "success") metrics. The JIR PFS program had 300 designated PSH slots available during the 2-year recruitment period. If an individual exited a PSH

[2] Stable housing was defined as continuing to retain a PSH lease or achieving a "good" exit from the program, defined as retaining housing or rental with or without an ongoing subsidy, residing in long-term care, nursing home or other long-term behavioral health facility, or staying with family or friends with permanent tenure.

[3] Qualifying offenses included misdemeanor arrests for which a new criminal filing or violation is in lieu of a new criminal filing, felony arrests in which a finding of probable cause is found through a preliminary hearing or grand jury indictment, convictions of a misdemeanor or felony for an event that occurred after PSH placement, and revocation of community supervision or flash incarceration due to violation of parole conditions.

unit during the recruitment period (October 2017–September 2019), then that slot was opened for another individual to be placed into PSH. It was also the case that if a participant died during the enrollment period, then a new participant could be enrolled to fill that available housing slot.

The CSH and Evident Change calculated the success payments for each cohort based on data they received from the ODR (that is, on housing retention) and from LASD (that is, on jail avoidance). These data were also shared with RAND, the evaluation partner who reviewed the CSH and Evident Change calculations and provided validation of the findings prior to the county making investor payments. Specific payment amounts for achievement of the 6- and 12-month housing retention metrics were outlined in the agreement, along with amounts tied to whether participants achieved zero, one, or two qualifying returns during the 2-year post-enrollment period (no payments were made if participants had three or more qualifying returns).

In concert with the monitoring of the eight quarter cohorts of participants across the project life cycle, CSH and Evident Change also managed quarterly executive steering committee meetings in which key stakeholders from the involved entities met to discuss program implementation, including progress on the performance metrics and quality improvement initiatives that were taking place. Participants in the steering committee included representatives from investors, intermediaries, LA County Department of Health Services Office of Diversion and Reentry and Housing for Health Division, LASD, and the evaluation team. In addition to the steering committee, an operating committee—composed of county, Brilliant Corners, CSH, and Evident Change staff—met regularly to discuss program performance. These meetings were a key part of the continuous quality improvement approach of the project through which the performance data served as a jumping off point for robust conversations about challenges and opportunities.

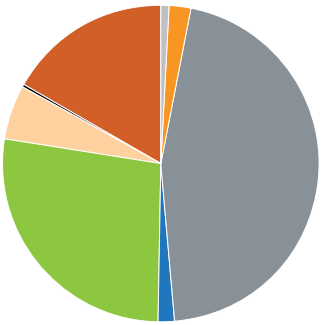
Program Implementation Results

During the project period, 349 individuals were enrolled in the JIR PFS initiative. CSH monitored the demographic composition of participants (CSH, 2022; exhibit 3). Of the group, 67 percent were male, 30 percent were female, and 3 percent were transgender. More than 45 percent of participants were classified as Black or African-American, with nearly 28 percent Hispanic and Latino, and nearly 17 percent White, Non-Hispanic or Latino. Of note, these data reflect an overrepresentation of African-American people compared with the Los Angeles County population (that is, approximately 8 percent) and are consistent with previous reporting of this racial and ethnic disparity (Appel et al., 2020).

Exhibit 3

Racial and Ethnic Background of Just in Reach Pay for Success Participants (n = 349)

Race/Ethnicity (Group)	Number of Persons	Percentage of Persons
American Indian or Alaska Native	3	0.9%
Asian	8	2.3%
Black or African American	159	45.6%
Don't Know/Refused	6	1.7%
Hispanic/Latino	95	27.2%
Multiracial	19	5.4%
Native Hawaiian or Other Pacific Islander	1	0.3%
White, Non-Hispanic/Latino	58	16.6%
	349	100%



Source: Corporation for Supportive Housing, 2022

The findings from the program metric calculations showed that 92 percent of JIR PFS program participants achieved the 6-month housing stability criteria. The overall 12-month housing stability metric was 78 percent; however, it increased during the project lifecycle with the last cohort achieving an 86-percent, 12-month housing stability rate. In terms of the qualifying returns metric, 56 percent of participants achieved zero returns during the 2-year period, with 21 percent having one return to jail, 8 percent having two returns to jail, and 15 percent with three or more returns to jail. These findings were seen as particularly impressive given that some data suggest that the recidivism rate among similar populations is likely to be more than 70 percent (CDCR, 2019, 2015). Based on this performance, investors were repaid their entire $10 million investment and earned approximately 2.9 percent in blended interest.

Impact Evaluation

The project supported a broader impact evaluation that was not specifically tied to the success metrics. The impact evaluation included an estimation of the PSH effect on usage of a spectrum of publicly funded health, housing, and justice services and the costs of those services using a quasi-experimental design. In addition, the impact evaluation considered the PSH costs to answer whether the program resulted in overall costs or cost offsets to the county. This section provides an overview of the methods used.

RAND obtained information about demographics, service use, and associated costs from administrative data that participating agencies shared and from the Chief Information Office of LA County, which manages an enterprise data warehouse across the different county departments, including the data sources in this analysis (that is, LA County Departments of Health, Public Health, Mental Health, and Los Angeles Homeless Services Authority and LASD).[4] These data were organized using unique individual identifier numbers. ODR provided a list of participants' names

[4] RAND received data from the Los Angeles County Department of Public Health on the use of treatment services for substance use, but the data were not at the individual level, so they were not incorporated into the main outcome analyses. Group-level analyses are in Hunter et al., 2022.

and jail release dates to the Chief Information Office to assist with creating the treatment group dataset (that is, JIR PFS participants). Exhibit 4 outlines the different services and cost estimates in this analysis.

Exhibit 4

Service Cost Estimates (Fiscal Year 2019–20)

Department	Category	Response Source	Unit Cost Estimates
Los Angeles County Department of Health Services	Healthcare	Primary[a]	• Inpatient, medical: $5,588 per day • Emergency room, medical: $1,784 per encounter • Outpatient, medical: $1,356 per encounter • Inpatient, psychiatric: $2,804 per day • Emergency room, psychiatric: $4,506 per encounter • Outpatient, psychiatric: $1,202 per encounter
Los Angeles County Department of Mental Health	Healthcare	Primary[b]	• Inpatient: $802 per day; residential $280 per day • Outpatient: Variable[b] • Crisis stabilization: Variable[b]
Los Angeles Homeless Services Authority	Housing	Primary[c]	• All costs per unit per night: ○ Crisis housing and emergency shelter: $65 ○ Interim housing, including hotel and motel vouchers: $105 ○ Housing choice voucher, tenant-based supportive housing, project-based voucher: $35 ○ HUD-VASH: $28 ○ (Non-ODR) permanent supportive housing: $43 ○ Rapid Re-Housing: $40 ○ Shelter Plus Care: $26 ○ Transitional housing: $101
ODR	Housing	Primary[d]	• Housing subsidy: $1,842 per unit per month (FY 2019–20) • Intensive case management: $734 per client per month (FY 2019–20)
LASD	Justice	Secondary[e]	• Booking fee: $266 per booking (FY 2019–20) • Jail maintenance fee: $389 per jailee per day (FY 2019–20)
Los Angeles County Probation Department	Justice	Primary[f]	• Probation supervision: $174 per month (FY 2019–20)

FY = fiscal year. HUD-VASH = U.S. Department of Housing and Urban Development-Veteran Affairs Supportive Housing. LASD = Los Angeles County Sheriff's Department. ODR = Office of Diversion and Reentry.

[a] Cost estimates represent mean values across eight facilities within the network, primarily affiliated with academic medical centers. The Los Angeles County Department of Health Services provided these facility-level cost estimates.

[b] Inpatient costs represented as average fee for service for psychiatric inpatient hospital contract rate. Residential costs represented as average Institute for Mental Disease contract rate. Outpatient, emergency, and crisis stabilization costs were unique to individual encounters and reported directly by the Chief Information Office.

[c] Cost estimates provided by the Los Angeles Homeless Services Authority.

[d] Cost estimates provided by ODR based on service provision in 2021. Service components varied for the duration of the project (2015–2021) and were reflected in cost estimates during this period.

[e] Cost estimate for jail maintenance fee includes the composite average of high and moderate observation housing at Twin Towers and Century Regional Detention Facility as a proxy for maintenance fees at facilities throughout Los Angeles County that provide care for those with moderate and serious mental illness. This cost estimate is conservative, as it does not include the cost of correctional health services. Cost estimates provided by the Chief Information Office.

[f] Cost estimate provided by the Los Angeles County Probation Department for fiscal years 2015 through 2019.

Notes: All cost estimates adjusted for inflation to 2021 dollars. In cases with missing cost estimates for fiscal years 2014 through 2021, the team performed linear interpolation.

Of the 349 JIR PFS participants enrolled, 13 were excluded from the evaluation for one of the following reasons, leaving the total treatment group sample size at 336.

- Five participants had a release date in 2015; the outcomes data spanned from roughly 2015–2020, meaning that a full year of prerelease information was not available for these individuals.
- Ten participants had an ODR release date that conflicted with the release date in the Chief Information Office dataset.
- Two participants met both criteria.

RAND used propensity methods to create a matched comparison group to examine whether the program had effects on service use and associated costs. A matched comparison group of 672 was identified (using a two-to-one matching strategy) from a larger pool of roughly 5,400 individuals who met the following criteria:

- Had received a service for individuals experiencing homelessness recorded in the Los Angeles Homeless Services Authority (LAHSA) data between January 2016 and October 2019.
- Had at least one continuous jail stay of 30 days or longer recorded in the LASD data between January 2016 and April 2019.
- Had a serious mental, behavioral, or chronic health condition identified by a service record in the Los Angeles County Department of Health Services or the DMH.
- Did not receive a permanent form of housing through the JIR PFS program or other housing program recorded in the LAHSA data—that is, Housing Choice Voucher, project-based voucher, tenant-based supportive housing, Shelter Plus Care, permanent supportive housing, or the U.S. Department of Housing and Urban Development-Veteran Affairs Supportive Housing—in the post-release period.

RAND used regression analyses with propensity score matching—commonly referred to as propensity score analyses—as the primary analytic technique for identifying the program effect (Austin, 2011). Propensity score approaches allow for an observational, nonrandomized design to mimic a randomized controlled trial by seeking a balance between individuals in the treatment and comparison groups on a set of predefined characteristics that could plausibly be associated with the outcomes. In this case, RAND sought balance on a number of demographic characteristics, including age, gender, race, and ethnicity, as well as prior health, homeless, and justice service use (that is, 12 months prior to jail release) and associated costs.

Prior to performing the outcome analyses, it was necessary to define a baseline period for the comparison group members, corresponding to their ODR release data among the JIR PFS participants. For each potential comparison group member, hypothetical "release to ODR custody" data were selected at random from the set of all jail release dates observed in the LASD data corresponding to a jail stay of 30 days or more to calculate the service use metrics for the comparison group.

RAND used the "twang" package in the statistical software program R to calculate the propensity scores via generalized boosted regression (The Comprehensive R Archive Network, 2021; Ridgeway et al., 2014). RAND selected a 2-to-1 nearest-neighbor matched comparison group based on the scores in the MatchIt package in R (Ho et al., 2011). RAND assessed the quality of the comparison group by examining the covariate values between the treatment group to the weighted comparison group.

Next, RAND assigned hypothetical PSH move-in dates for the comparison group to define the JIR PFS analytic period. RAND did this by taking each comparison group member's selected ODR release date and the number of days from ODR release to PSH move-in corresponding to the treatment group individual to which the comparison group member was matched.[5]

RAND examined the JIR PFS program effects on service use and costs using regression models on the differences in 12-month pre-ODR release and 12-month post-PSH entry outcomes for each treatment and comparison group member.[6] RAND modeled average changes in use and costs as a linear function of treatment assignment, demographics (age, gender, race, and ethnicity), and other selected variables to determine whether program enrollment was associated with more (or less) service use and costs relative to the matched comparison group.[7]

Evaluation Findings

Exhibit 5 provides the estimated average treatment effects on service use and associated service costs for JIR PFS participants during the 12-month PSH period.

Exhibit 5

Estimated Average Treatment Effects During the 12-Month Post-Housing Period (1 of 2)

	Service Use		Service Cost	
Service Characteristic	**Point Estimate (SE)**	**Significance (95% CI)**	**Point Estimate (SE)**	**Significance (95% CI)**
Justice				
Los Angeles County Sheriff's Department (days)	– 23.84 (7.73)	0.002 (– 39.01, – 8.67)	– $16,891 ($4,609)	< 0.001 (– $25,935, – $7,846)
Probation (days)	124.51 (13.38)	< 0.001 (98.25, 150.77)	$672 ($72)	< 0.001 ($529, $814)
Homeless services				
Homeless services (proportion receiving)	– 0.32 (0.04)	< 0.001 (– 0.41, 0.23)	NA	NA
Shelter and temporary housing (proportion receiving)	– 0.22 (0.03)	< 0.001 (– 0.28, – 0.16)	– $1,643 ($334)	< 0.001 (– $2,298, – $988)

[5] More details about this process and the comparison group members are in Hunter et al., 2022.

[6] Outcomes from the interim housing periods and the 2-year post-PSH entry periods are reported in Hunter et al., 2022.

[7] The team also modeled binary outcomes for the homeless service outcomes using logistic regression. The results were consistent with the linear model, and for simplicity and consistency, the team presents the results from the linear models. The team also explored whether adjusting for the model's p-values to account for multiple testing changed the statistical significance, finding no evidence to that effect. For simplicity, unadjusted values are reported.

Exhibit 5

Estimated Average Treatment Effects During the 12-Month Post-Housing Period (2 of 2)

Service Characteristic	Service Use		Service Cost	
	Point Estimate (SE)	Significance (95% CI)	Point Estimate (SE)	Significance (95% CI)
ODR housing				
Permanent supportive housing (days)	336.42 (2.82)	< 0.001 (330.88, 341.96)	$27,295 ($233)	< 0.001 ($26,838, $27,753)
Los Angeles County Department of Health Services				
Outpatient (visits)	0.09 (0.13)	0.47 (– 0.16, 0.35)	$132 ($147)	0.37 (– $157, $420)
Inpatient (days)	– 0.78 (0.36)	0.03 (– 1.49, – 0.06)	– $3,308 ($1,575)	0.04 (– $6,399, – $217)
Emergency (visits)	– 0.31 (0.11)	0.004 (– 0.53, – 0.10)	– $691 ($246)	0.005 (– $1,174, – $208)
Los Angeles County Department of Mental Health				
Outpatient (visits)	20.85 (2.69)	< 0.001 (15.58, 26.12)	$2,512 ($381)	< 0.001 ($1,764, $3,259)
Inpatient (days)	– 2.36 (0.97)	0.01 (– 4.27, – 0.47)	– $1,275 ($470)	0.007 (– $2,197, – $352)
Crisis stabilization (visits)	– 0.17 (0.11)	0.11 (– 0.39, 0.04)	– $470 ($253)	0.06 (– $966, $27)
Total			$6,202 ($4,966)	0.21 (– $3,543, $15,947)

CI = confidence interval. NA = not available. ODR = Office of Diversion and Reentry. SE = standard error.
Source: Hunter et al., 2022

Justice System Services. RAND estimated that JIR PFS participation was associated with a statistically significant decrease of 24 days in jail per participant relative to the comparison group during the 12-month post-housing period. This estimate was associated with a statistically significant decrease in jail service costs of $16,891 per JIR PFS participant. RAND also found a significantly greater number of average probation days—125 more days—among JIR PFS participants relative to the comparison group during the 12-month post-housing period and an associated increased cost of $672 per participant.

Housing and Homeless Services. RAND found that JIR PFS participants had an average 22-percent reduction in the use of shelter and temporary housing services, with a corresponding cost savings of $1,643 per participant. RAND also found a significant increase among JIR PFS participants related to the PSH costs. Specifically, in the first year of the program, the treatment group had an average increase of 336 days of PSH relative to those in the comparison group. This increase in PSH days among the treatment group translated to an average increased cost of $27,295

per participant, given that the comparison group was restricted to individuals who did not obtain any form of permanent housing in the post-housing period.[8]

Healthcare Services. Regarding the Los Angeles County Department of Health service use, JIR PFS program participants had an average of 0.8 fewer days of inpatient care and 0.3 fewer emergency department visits relative to the comparison group, resulting in average cost savings of $3,308 and $691 per participant, respectively. Outpatient visits were not different among the two groups. Regarding Department of Mental Health service use, RAND found that the JIR PFS group had on average an additional 21 mental health outpatient visits per participant relative to the comparison group during the 12-month post-housing period, translating to an average increase in service use costs of $2,512 per participant. In addition, RAND observed an average decrease of 2.36 days in inpatient mental healthcare that the DMH provided to JIR PFS participants relative to the comparison group, resulting in an average savings of $1,275 per participant.

Total Cost. RAND also quantified the total cost of service use during the 12-month post-housing period among those in the JIR PFS group relative to those in the comparison group. Although RAND estimated a positive net cost of $6,202 for the JIR PFS group, this estimate has a high degree of uncertainty, and ultimately, RAND found no statistically significant difference between the two groups. This lack of significant difference between the two groups on overall service costs implies that, despite program costs associated with PSH and more frequent use of mental health outpatient care and probation services among those in the JIR PFS group, cost savings in other areas—most notably, less county jail time, fewer inpatient stays and emergency department visits, and less shelter and temporary housing use relative to the comparison group—potentially offset these higher costs. In other words, it remains plausible that the PSH program may entirely pay for itself in terms of reductions in overall service costs.

Summary

The LA County Just in Reach (JIR) Pay for Success (PFS) initiative successfully enrolled more than 300 participants in supportive housing during a 2-year period, achieving its enrollment goal. Furthermore, 6- and 12-month housing stability rates were high, 92 and 78 percent, respectively. At 2 years, more than one-half of participants had not experienced a qualifying return to jail, and only 23 percent had experienced two or more qualifying returns. Given these results, investors received a return on their initial investment plus interest, demonstrating the "win-win scenario" portrayed in the literature surrounding PFS approaches. The results from the evaluation demonstrated that the costs of providing permanent supportive housing (PSH) could plausibly lead to a neutral effect on the overall county budget, given that the reductions in jail and inpatient or emergency health services offset supportive housing costs. This demonstration project creates a significant opportunity for the county to both sustain and scale this initiative, bolstering its diversion efforts and increasing the availability of supportive housing for this population. It also serves as a model for other regions to consider using to address chronic homelessness.

[8] The team conducted sensitivity analyses in which comparison group members were allowed to have obtained subsidized housing in the post-period. Only 3 percent of the matched comparison group (23 individuals) received some form of subsidized housing, and therefore, it did not result in any large differences in the outcomes or overall results. For further details, see appendix E in Hunter et al., 2022.

Limitations

Several limitations to the project are worth noting. The JIR PFS participants were diverse in background, and the team was not given the information to determine how well it generalized to others in LA County jail with a background of homelessness and a chronic condition. However, the Office of Diversion and Reentry has served and continues to serve thousands of individuals through its supportive housing program. The impact analyses used a quasi-experimental design indicating that it is always possible that unmeasured (that is, unobserved) variables may influence the study results. Although the propensity weighted approach was successful in identifying comparison group members that were similar to the treatment group members,[9] the possibility remains that the two groups may have important differences that are not accounted for in this analyses. RAND excluded comparison group participants who obtained subsidized housing in the post-period from the primary analyses, but when the team conducted sensitivity analysis with their inclusion, it did not substantively change the overall findings. This lack of substantive change in results between the two sets of analyses is consistent with what is known about subsidized housing options in Los Angeles County in that the demand greatly outweighs the supply, and many people who may be appropriate for subsidized housing do not receive it (Mazzella and Rosenfeld, 2021). Also, it was recognized that program participants may access other services that are not accounted for in this study, including, for example, court costs, law enforcement costs related to the arrest and booking charges in the field, and homeless and health services received from noncounty-funded entities that are not included in these analyses. For example, other studies have shown that supportive housing may increase pharmacy costs, but the team did not have access to such data to examine this association as part of the study (DeLia et al., 2021).

Conclusions

Los Angeles County's PFS demonstration project successfully achieved its projected goals. More than 300 people were successfully diverted from the criminal justice system into PSH during a 2-year period, meeting the performance metrics regarding housing stability and recidivism. A broader impact evaluation demonstrated that the program led to substantial reductions in costly county service use that offset the PSH program costs. Ongoing collaborations among key stakeholders throughout the program's implementation led to improvements over time that contributed to achieving the project's goals. Other regions may want to consider adopting this approach to address chronic homelessness in their communities.

Acknowledgments

The authors would like to thank the many organizations that were instrumental to the successful implementation of this initiative. These include the Los Angeles County Department of Health Services (DHS) and the Office of Diversion and Reentry (ODR), Los Angeles County Sheriff's Department (LASD), Los Angeles County Chief Executive Office, Evident Change, Conrad N. Hilton Foundation, UnitedHealthcare, Amity Foundation, Special Services for Groups LLC (SSG), Telecare, The People Concern, Volunteers of America, Brilliant Corners, and Department of

[9] More details on the results from the propensity weighting are available in Hunter et al., 2022.

Housing and Urban Development (HUD)/ Department of Justice (DOJ) Pay for Success Permanent Supportive Housing Demonstration Program; the California Board of State and Community Corrections (BSCC) Pay for Success provided additional grant funding for this initiative. The work that provided the basis for this publication was supported by funding under an award with HUD. The substance and findings of the work are dedicated to the public.

Authors

Sarah B. Hunter is a senior behavioral scientist at the RAND Corporation. Stephanie Mercier is director of impact investment at the Corporation for Supportive Housing.

References

Aidala, Angela A., William McAllister, Maiko Yomogida, and Virginia Shubert. 2014. *Frequent Users Service Enhancement 'Fuse' Initiative. New York City Fuse II Evaluation Report*. New York: Columbia University, Mailman School of Public Health.

Appel, Oona, Dustin Stephens, Sonya M. Shadravan, Justin Key, and Kristen Ochoa. 2020. "Differential Incarceration by Race-Ethnicity and Mental Health Service Status in the Los Angeles County Jail System," *Psychiatric Services* 71 (8): 843–846.

Austin, Peter C. 2011. "An Introduction to Propensity Score Methods for Reducing the Effects of Confounding in Observational Studies," *Multivariate Behavioral Research* 46 (3): 399–424.

California Department of Corrections and Rehabilitation (CDCR). 2019. *Several Poor Administrative Practices Have Hindered Reductions in Recidivism and Denied Inmates Access to in-Prison Rehabilitation Programs*. Sacramento, CA: California State Auditor.

———. 2015. *2014 Outcome Evaluation Report*. Sacramento, CA: CDCR.

The Comprehensive R Archive Network. 2021. "twang: Toolkit for Weighting and Analysis of Nonequivalent Groups." https://cran.r-project.org/package=twang.

Corporation for Supportive Housing (CSH). 2022. *Just in Reach Pay for Success: Final Report*. Los Angeles, CA: Corporation for Supportive Housing.

Couloute, Lucius. 2018. *Nowhere to Go: Homelessness Among Formerly Incarcerated People*. Northampton, MA: Prison Policy Initiative.

Cusack, Meagan, and Ann Elizabeth Montgomery. 2017. "Examining the Bidirectional Association Between Veteran Homelessness and Incarceration Within the Context of Permanent Supportive Housing," *Psychological Services* 14 (2): 250–256.

DeLia, Derek, Jose Nova, Sujoy Chakravarty, Emmy Tiderington, Taiisa Kelly, and Joel C. Cantor. 2021. "Effects of Permanent Supportive Housing on Health Care Utilization and Spending Among New Jersey Medicaid Enrollees Experiencing Homelessness," *Medical Care* 59: S199–S205.

Ho, Daniel, Kosuke Imai, Gary King, and Elizabeth A. Stuart. 2011. "MatchIt: Nonparametric Preprocessing for Parametric Causal Inference," *Journal of Statistical Software* 42 (8): 1–28.

Holliday, Stephanie Brooks, Alex R. Dopp, Mallika Bhandarkar, and Sarah B. Hunter. 2021. *Examining Implementation of the Los Angeles County Office of Diversion and Reentry Supportive Housing Program*. Santa Monica, CA: RAND.

Holliday, Stephanie Brooks, Nicholas M. Pace, Neil Gowensmith, Ira Packer, Daniel Murrie, Alicia Virani, Bing Han, and Sarah B. Hunter. 2020. *Estimating the Size of the Los Angeles County Jail Mental Health Population Appropriate for Release into Community Services*. Santa Monica, CA: RAND.

Homelessness Policy Research Institute (HPRI). 2020. *Homelessness and the Criminal Justice System*. Los Angeles: University of Southern California, Sol Price Center for Social Innovation.

Hunter, Sarah B., Adam Scherling, Matthew Cefalu, and Ryan K. McBain. 2022. *Just in Reach Pay for Success: Impact Evaluation and Cost Analysis of a Permanent Supportive Housing Program*. Santa Monica, CA: RAND.

Lantz, Paula M., Sara Rosenbaum, Leighton Ku, and Samantha Iovan. 2016. "Pay for Success and Population Health: Early Results from Eleven Projects Reveal Challenges and Promise," *Health Affairs* 35 (11): 2053–2061.

Lawrence, Whitney, Corrin Buchanan, Tyler Fong, and Brian Ford. 2016. "The Intersection of Housing and Reentry in Los Angeles County." Presentation at the Housing First Partners Conference, Seattle, WA, March 23. http://static1.squarespace.com/static/513e08bfe4b0b5df0ec24cda/t/57094fcfc2ea5138c5514716/1460228049372/Workshop+101b_Lawrence.pdf.

Listwan, Shelley J., Jennifer L. Hartman, and Ashleigh LaCourse. 2018. "Impact of the Meckfuse Pilot Project: Recidivism Among the Chronically Homeless," *Justice Evaluation Journal* 1 (1): 96–108.

Mazzella, Danielle M., and Lindsay Rosenfeld. 2021. *Los Angeles County Housing Need Report 2021*. San Francisco: California Housing Partnership.

Ridgeway, Greg, Daniel F. McCaffrey, Andrew R. Morral, Lane F. Burgette, and Beth Ann Griffin. 2014. *Toolkit for Weighting and Analysis of Nonequivalent Groups: A Tutorial for the R Twang Package*. Santa Monica, CA: RAND.

Thomas, M. Lori, Jenny Hutchison, Justin Lane, Joanne Carman, and Lisa Schulkind. 2020. *Housing First Charlotte-Mecklenburg Research and Evaluation Project: Final Report*. Charlotte, NC: Mecklenburg County; UNC Charlotte College of Health and Human Services, School of Social Work; Urban Institute.

U.S. Department of Housing and Urban Development (HUD). 2019. "Homeless Definition." https://www.hudexchange.info/news/huds-definition-of-homelessness-resources-and-guidance/.

Public Housing Eligibility for People with Conviction Histories

Niloufer Taber
Jacqueline Altamirano Marin
John Bae
Vera Institute of Justice

The views expressed in this article are those of the authors and do not represent the official positions or policies of the Office of Policy Development and Research, the U.S. Department of Housing and Urban Development, or the U.S. Government.

Abstract

Housing is a basic need for all people, but one that is too often denied for those who have a conviction history because of policies that exclude this population from renting or joining a lease. This study estimates the number of people in Michigan and Oklahoma who are potentially excluded from public housing and who may regain public housing eligibility if public housing authorities (PHAs) change the time a conviction history can be considered for admissions decisions, commonly known as a lookback period. Results show that more than 3.5 percent of all adult Michiganders and 7.6 percent of all adult Oklahomans are potentially excluded from public housing. These percentages are low estimates for both states due to the study's simplified assumptions and the omission of the impact that such rules have on family members of people with a conviction history.

Introduction

Housing is foundational for everyone's health and well-being. Access to housing is a social determinant of health and is used as an intervention to improve health outcomes (Feinberg et al., 2014; Milaney et al., 2022; Wolitski et al., 2010). Safe and affordable housing also promotes economic mobility and helps families exit poverty (Ramakrishnan et al., 2021). In essence, housing is a basic need and a right for every person and family. For people who become involved in the criminal legal system, housing is equally critical and contributes to the successful transition from system involvement to the community.

However, barriers are put in place that bar people with conviction histories from obtaining housing. These barriers include discriminatory policies that deny housing to people with conviction histories, the use of criminal background checks, and community and societal stigma (Crowell, 2017; Ehman and Reosti, 2015; Prisoner Reentry Institute at John Jay College of Criminal Justice et al., 2017). Across the country, there are 1,300 documented local and state barriers to housing for people with conviction histories and 26 federal barriers (Lake, 2021). These laws are frequently implemented for fear that people with prior criminal histories will reengage in crime. However, success is more likely than recidivism—most people with conviction histories never have another conviction (Bushway et al., 2022).

Additionally, there is no evidence that housing policies that exclude people with conviction histories make housing complexes safer or that people with conviction histories have different tenancy outcomes than others without a history of arrests or convictions (Johnson, 2022). These restrictions create barriers for the millions of people that transition out of jails and prisons every year and struggle to find safe and affordable housing (U.S. Department of Health and Human Services, n.d.).[1] It is unclear, however, just how many people are excluded from housing because of their conviction histories. Past studies have surveyed people with a conviction history on their ability to secure housing (deVuono-powell et al., 2015). Others have surveyed people experiencing homelessness to determine the number of people with a past conviction or arrest history (Dean, 2011). Researchers have cataloged housing providers' exclusionary policies, but there have been no studies that examine the impact of exclusionary public housing policies on people with conviction histories (Tran-Leung, 2011).

This study by the Vera Institute of Justice (Vera) estimates the number of people who are excluded from public housing in two states, Michigan and Oklahoma, based on conviction history. Vera selected these two states for this analysis because both states have recently passed local and state-level criminal justice reform laws (e.g., Michigan's Clean Slate Act) that were signed into law during the past 2 years. In both states, there is momentum to remove the barriers for people with conviction histories to thrive after their involvement with the criminal legal system. This study contributes to the momentum, identifying the challenges and opportunities for housing people with conviction histories.

Specifically, access to public housing was evaluated because—unlike other housing providers in the private market—admissions policies for PHAs are published, public, and detail exclusionary criteria for people with conviction histories. The availability of these policies allows for the analysis and determination of the number of people who may be excluded from public housing because of their conviction histories.

Housing for People with Conviction Histories

It is estimated that more than 100 million people—nearly one out of every three American adults—have some sort of criminal record, including a history of arrest, conviction, and incarceration (Greenspan and DeBacco, 2014). People with a criminal history face challenges

[1] More than 600,000 people are released from state and federal prisons each year. Another 9 million cycle through local jails.

securing employment, education, government services, and housing because of their conviction—yet it is exactly these supports that reduce recidivism and promote health and wellbeing for these people, their families, and their communities (Rosenfeld and Grigg, 2022).

Safe, stable housing often serves as the gateway for accessing further services and support. Housing makes it more likely that a person returning to their community finds and keeps employment; gets connected to medical, mental, and behavioral healthcare; rebuilds supportive and prosocial networks within their community; and is able to reestablish mutually supportive bonds with family (Lebel, 2017; Metreaux and Culhane, 2004). However, people with conviction histories frequently face challenges finding housing in the private market because landlords are often reluctant to rent to people with any criminal background, and because people with conviction histories are more likely to have lower incomes than the general public (Evans and Porter, 2015; Leasure and Martin, 2017; Looney and Turner, 2018; Thacher, 2008; Western and Pettit, 2010).

Finding housing has proven to be exceedingly difficult due to affordability, lack of housing supply, the absence of transitional housing, a shortage of capacity, and hazardous conditions in shelters. People with criminal records also struggle to obtain housing because of the stigma associated with a criminal record and the aftereffects of a conviction (Bradley et al., 2001). These barriers contribute to a high rate of housing insecurity and homelessness for this population; formerly incarcerated people are 10 times more likely than the general public to be homeless (Couloute, 2018).

Public Housing and People with Conviction Histories

There are nearly 3,350 public housing authorities (PHAs) in the United States serving 1.3 million families, and public housing is a resource available in virtually every community (U.S. Department of Housing and Urban Development, 2017). Federally assisted housing is intended to provide access to affordable housing as a public service. In determining who is allowed to live in public housing, PHAs have broad discretion over their own admissions criteria. By law, PHAs are required to deny people who have two types of convictions: convictions for manufacturing methamphetamines in public housing and convictions that require lifetime sex offender registration. For all other conviction types, PHAs have broad discretion in setting admissions criteria.

Criminal convictions did not always have an impact on a person's ability to obtain public housing. Policies that denied people access to public housing grew out of public safety and crime concerns starting in the mid-1980s. In response to growing concerns about violent crime and drugs in public housing neighborhoods, several federal regulations were passed. In 1988, the Anti-Drug Abuse Act authorized PHA funding from the U.S. Department of Housing and Urban Development (HUD) Secretary for initiatives to eliminate drug crimes. In 1990, the Cranston-Gonzalez National Affordable Housing Act was passed, allowing PHAs to use criminal records for admissions determinations, and the Housing Opportunity Program Extension Act (1996) required law enforcement agencies to comply with criminal background requests from PHAs. Before the turn of the century, the Quality Housing and Work Responsibility Act (1998) expanded PHA discretion to establish admissions eligibility and permanently banned people with a lifetime sex offense registry requirement, and the Independent Agencies Appropriations Act (1999) established the exclusion for people convicted of producing methamphetamines in federally subsidized housing (Silva, 2015).

Public Housing in Michigan and Oklahoma

There are 116 public housing authorities in Michigan administering 145,436 subsidized housing units. Traditional public housing makes up 13.0 percent of the units; 83.0 percent are either Project Based Section 8 or Housing Choice Vouchers, and 3.5 percent are financed under other arrangements. These PHAs are currently estimated to serve nearly 240,000 people across Michigan's 83 counties, with about 51 percent of residents identifying themselves as Black, non-Hispanic; about 42 percent White, non-Hispanic; 3 percent Hispanic; and the remaining 4 percent Native American, Asian/Pacific Islander (API), multiracial, or another race. However, Black, non-Hispanic residents are more heavily represented among those who use Housing Choice Vouchers than those who live in traditional public housing or Project Based Section 8, compared with other racial and ethnic groups.

The state of Oklahoma has 101 public housing authorities that administer 52,479 subsidized housing units. Of these PHAs, 22 percent (11,377) are traditional public housing, 50 percent (26,193) are Housing Choice Vouchers, 25 percent (13,024) are Project Based Section 8, and under 4 percent (1,885) are financed under other arrangements. Nearly 95,000 people across 77 counties reside in federally subsidized affordable housing in Oklahoma, with 40 percent of residents identifying as Black, non-Hispanic, 46 percent White, non-Hispanic, 1 percent API, 5 percent Hispanic, 7 percent Native American, and 1 percent multiracial or another category. As in Michigan, Black, non-Hispanic residents form the majority of residents of the Housing Choice Vouchers program.

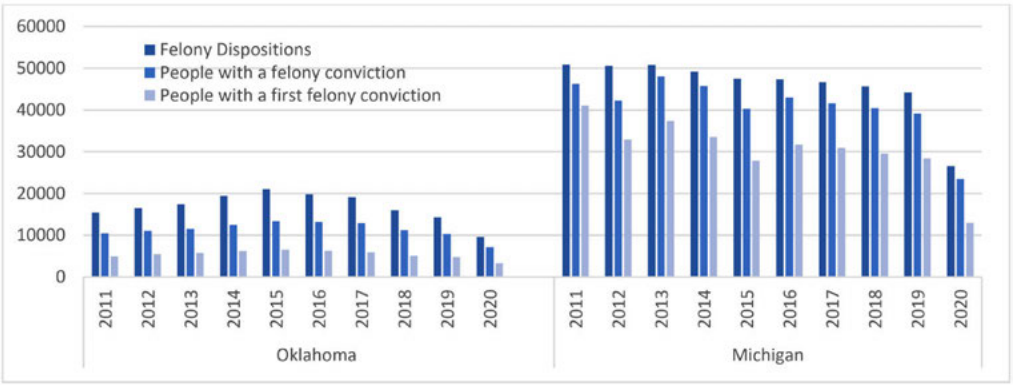
Convictions in Michigan and Oklahoma

This study estimates that between 40,000 to 50,000 people are convicted of a felony in Michigan each year, and between 10,000 to 18,000 people are convicted of a felony in Oklahoma annually (exhibit 1).[2] These statistics give a conviction–*not imprisonment*–rate of 392 people per 100,000 in Michigan and 259 people per 100,000 in Oklahoma, with the differences in raw numbers at least partially explained by the size of Michigan's population, which is nearly 2.5 times that of Oklahoma (United States Census Bureau, 2021). In both states, nonviolent offenses make up the vast majority of all dispositions (see exhibit 2).

[2] The exception to this statistic was 2020, the first year of the COVID-19 pandemic and the most recent year for which data are available in Michigan, which saw a dramatic drop in the number of convictions. This drop may be due to multiple reasons, such as a delay in reporting data to a central location, or an overall slowdown in court processing, preventing arrests from becoming convictions.

Exhibit 1

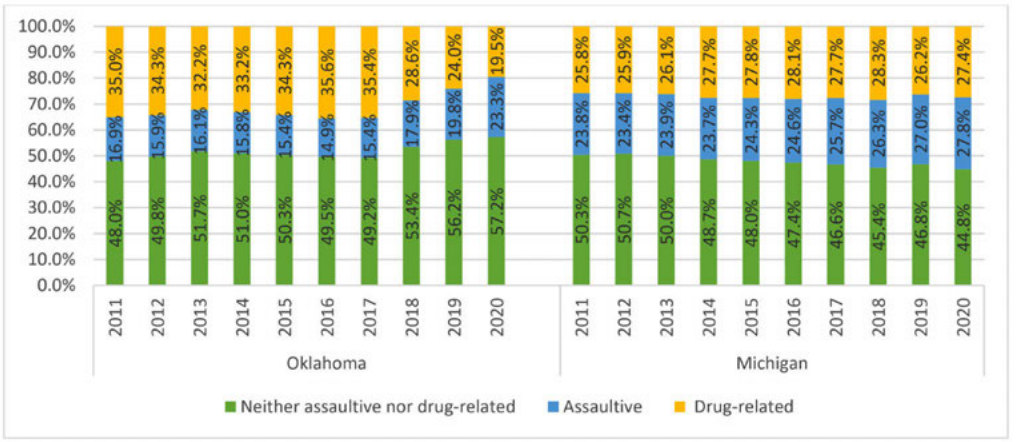
Total Felony Dispositions, Individuals Convicted of a Felony, and Individuals Convicted of a First Felony, by State and Year of Disposition



Sources: Felony dispositions, people with a felony disposition, and people with a first felony disposition in Oklahoma were calculated through an analysis of publicly available data from the Oklahoma Department of Corrections (Oklahoma Department of Corrections. 2022. Public Inmate Data*). Felony dispositions were available from the Michigan Department of Corrections. (Michigan Department of Corrections. 2022.* Statistical Reports *https://www.michigan.gov/corrections/public-information/statistics-and-reports/statistical-reports). From these data, using state published recidivism rates and research on recidivism from the Bureau of Justice Statistics, Vera estimated the numbers of people with felony conviction and people with a first felony conviction*

Exhibit 2

Type of Felony Disposition Over Years: Percent of Total Dispositions



Sources: Using publicly available data from the Oklahoma Department of Corrections, felony dispositions were coded for whether they were assaultive, drug-related, or neither, by year of disposition (Oklahoma Department of Corrections. 2022. Public Inmate Data*). Felony dispositions by type were available from the Michigan Department of Corrections. (Michigan Department of Corrections. 2022.* Statistical Reports *https://www.michigan.gov/corrections/public-information/statistics-and-reports/statistical-reports)*

Aims of the Present Study

This study estimates the number of people with a conviction history who are potentially excluded from public housing in two states—Michigan and Oklahoma—and projects the number of people who might regain eligibility for public housing if PHAs change their lookback periods, the span of

time in which conviction history can be considered for admissions decisions. In both states, these figures are likely to be minimum estimates due to simplifying assumptions and the exclusion of the effect that such policies have on family members of people with a conviction history who wish to remain united as households.

Methods

To estimate the number of people living in Michigan and Oklahoma with conviction histories that could make them ineligible for public housing, Vera researchers compiled the following pieces of information:

1. The lookback periods used by public housing authorities in each state by type of conviction.
2. The number of people in each state with a conviction by year, county, severity (misdemeanor or felony), and type (violent, drug-related, or other).
3. The number of people reentering and living in the community with a conviction by county, offense severity, type of conviction (violent, drug-related, or other), and year of conviction or release for those with a custodial sentence.
4. The number of people excluded from public housing due to federal mandates.
5. The proportion of people with a conviction who met income limits for public housing eligibility, disaggregated by year since conviction or release from incarceration.

Lookback Periods

In both states, Vera visited each PHA's websites to obtain Admissions and Continued Occupancy Plans and/or Administrative Plans. Some PHAs did not have their documents available online or did not have a website. For these PHAs, Vera contacted the PHAs to obtain either a written or verbal description of its policy regarding eligibility for housing based on criminal history or conduct. Verbal confirmation of policies took place over the phone. Several PHAs either did not have the resources to provide written policies or were unwilling to provide a verbal description of their policy. To obtain verbal policies, researchers used a strategy common to Fair Housing Centers: assuming the role of a friend or neighbor of a prospective tenant with a conviction history and requesting information about eligibility policies and background check procedures on behalf of this nonexistent person. Through these methods, researchers obtained 31 written policies in Michigan, and 32 written policies and 24 verbal descriptions of policies in Oklahoma.

Several written or verbally described policies did not specify the types of convictions that were potentially excludable or the timeframe the PHA would use to look back for a conviction. The research team assumed that PHAs with ambiguous or missing policies are following guidance from HUD on the use of criminal background checks, which has suggested a lookback period of 5 years from the date of application for serious crimes—including felony convictions for drug-related crime and violent crime—and prohibiting the use of arrest data alone from being used as a basis for a denial (Kanovsky, 2016). In Oklahoma, some counties had more than one PHA.

Because conviction and release information are available at the county level, the research team applied a single policy to the entire county. In most cases, PHA policies within a county did not conflict. In cases where there was a conflict or lack of clarity, the team applied a written policy in preference over a verbal description for the county; if both policies were verbal or written, the team used the least restrictive policy. This approach maintained a minimum or conservative estimate of the number of people potentially excluded from public housing due to their conviction histories. In both states, several PHAs described potential exclusions of individuals based not only on a conviction, but an eviction for criminal activity, a pattern of arrests, or other evidence. This study used only information about convictions in each state, rather than data on arrests or evictions related to crime, due to the challenges of obtaining and interpreting such data and to ensure that estimates of people excluded due to a conviction history would be conservative.

The Type, Timing, and Location of Convictions and Releases

Data sources and methods for estimating the number of people potentially excluded from public housing due to a misdemeanor conviction or a federal felony were common in both states. However, data sources and methods for estimating the number of people potentially excluded due to a state felony differed between Michigan and Oklahoma.

Michigan: State Felony Convictions

Publicly available statistical reports were used to estimate the number of people in Michigan who were potentially ineligible for public housing due to PHA policies and to make projections of how many Michiganders could regain eligibility for public housing if lookback periods were changed. These projections required several simplifying assumptions, which were made based on existing research about housing and criminal legal systems and to ensure that estimates were conservative wherever possible. The research team gathered aggregated data on state felony convictions from the Michigan Department of Corrections (MDOC) Statistical Reports from 2011 to 2020. These reports describe the number of convictions by county of disposition and type of conviction (violent, drug-related, or other) within the year (Michigan Department of Corrections, 2022). These counts of felony convictions, however, represent court proceedings rather than individuals, because a person may have more than one court proceeding in a given year. To estimate the number of people with a conviction, the study factored into the analysis the possibility of multiple felony convictions per person within a single year (*intra*-year recidivism) and multiple convictions per person in different years (*inter*-year recidivism).

Michigan: Accounting for Intra-Year Felony Recidivism

The number of convictions in a jurisdiction exceeds the number of people with a conviction within a given year due to intra-year recidivism, and a person may face multiple proceedings within a year. This study sought to estimate the ratio of convictions to people with a conviction. By doing so, the ratio would be used to scale down the number of convictions to the number of people with a conviction. To make this estimate, the team used another ratio of events to people in the court system in Michigan, where not all convictions lead to a term of incarceration, making convictions

with a custodial sentence a subset of all convictions. MDOC Statistical Reports, in addition to the aggregate data described previously, also provide data points on the number of convictions with a custodial sentence and the number of prison intakes. From these two numbers, the team was able to calculate a ratio of convictions with a custodial sentence (events) to individuals admitted to prison (people) within each year. The study assumed that this ratio of events to people among those with a custodial sentence was the same as the ratio of events to people among those without a custodial sentence. This simplifying assumption is grounded in research showing that custodial sentences are not more effective at reducing recidivism than non-custodial sentences (Villettaz et al., 2015). The team then divided the number of total convictions by this ratio (a ratio of convictions that carried a custodial sentence to people with a custodial sentence) in order to estimate the number of people with a conviction in a given year.

Michigan: Accounting for Inter-Year Felony Recidivism

Individuals may have convictions in several years that are within a PHA's lookback period. To avoid counting people more than once, we scaled down the number of unique people convicted each year by an inter-year reconviction rate, using return to incarceration as a proxy for reconviction. Although MDOC produces estimates of the cumulative 3-year return to incarceration rate, reconviction and reincarceration rates are not constant over time, they are highest in the year immediately following release from incarceration, with increasingly smaller proportions of people returning to incarceration in each subsequent year (Durose and Antenangeli, 2021). Therefore, the research team distributed the Michigan cumulative return to incarceration rate unevenly across years from prison release based on research from the Bureau of Justice Statistics describing the shape of the recidivism curve over time from the point of release from incarceration (Durose and Antenangeli, 2021).

Michigan: Number of People Returning from Prison and Living in Communities

Two situations occur in which someone with a conviction would be living in their community following their conviction: if their sentence did not include a term of incarceration or if they were released from incarceration within that year. The team assumed that all people with a misdemeanor conviction were living in the community for at least part of the year of their conviction, because misdemeanor custodial sentences are typically less than a year. The team also assumed that individuals convicted of a felony but not incarcerated were living in the county of their conviction. Finally, the team assumed that people convicted of a felony and admitted to prison were ineligible for public housing in the year of their conviction, because felony sentences are typically a year or longer.

MDOC Statistical Reports provided the number of people released from incarceration each year. The research team assumed that the total number of releases each year followed the same distribution of convictions by county and type for the same year. The team did not have information on Michiganders with an out-of-state criminal conviction who may also become eligible for public housing through changes in lookback periods, and so did not add these people to the estimates.

Oklahoma: State Felony Convictions

In Oklahoma, data on each person's complete criminal history are publicly available, including the year of conviction, statute code and a short description of the offense, the sentence type (incarceration or probation) and length, whether the person is currently incarcerated or living in the community, and the county from which they were convicted. These data are updated regularly; the team downloaded these data on November 3, 2022. The team classified each conviction in the publicly available data as violent, drug-related, or neither by reviewing Oklahoma criminal statutes and coding each offense for each person, and noting whether the offense was for a felony or a misdemeanor.

Several situations occurred in which assumptions were necessary. First, some statutes exist under which a violation could result in a misdemeanor or a felony, depending on the severity of the offense (such as theft of property being above or below a certain value threshold). In these cases, the researchers assumed the offense was for a misdemeanor. This approach was taken to minimize the number of people estimated to be potentially excluded from public housing, because fewer PHAs have policies to exclude individuals with misdemeanors, thus minimizing the number of people potentially restored through changes in PHA policies. Second, for people currently on probation or parole, Vera researchers assumed they lived in the county where their probation office was located, but for people who had completed all requirements related to their convictions, the team assumed they lived in the county of their most recent conviction. Third, 20,324 people did not have a year attached to their single offense and were not subject to a federally mandated ban from public housing. To avoid overestimating the number of people currently excluded from public housing, the team assumed that all these individuals would not be excluded from public housing due to their conviction status and did not include any of them in the estimates.

County-Level Misdemeanor Convictions

Vera researchers used statistical reports that provided aggregate information in Michigan and publicly available, individual-level data in Oklahoma to estimate the number of people with state-level offenses of the type, timing, and location that could make them ineligible for public housing. However, no similar data source for county-level misdemeanors exists. To estimate the number of people with a misdemeanor conviction per year, the team counted jail admissions for a sentence as a proxy for a misdemeanor conviction. Jail admissions for a sentence serve as a minimum estimate for misdemeanor convictions because many misdemeanor sentences do not include incarceration or set the sentence as time already served. The team used Vera's Incarceration Trends estimates of jail admissions for sentences by county and year. The Incarceration Trends uses data from the Bureau of Justice Statistics Annual Survey of Jails, Census of Jails, and Mortality in Correctional Institutions (Vera Institute of Justice, 2022). Vera researchers then accounted for intra- and inter-year misdemeanor recidivism within each PHA's lookback period using estimates for misdemeanor recidivism from the Brennan Center for Justice (Craigie et al., 2020).

In Oklahoma, there were several public housing authorities that might deny housing to people who were currently serving a term of probation. For state felony convictions, the available data indicated whether a person was on probation. However, the same was not possible for aggregate data available on county misdemeanors. Vera, therefore, assumed there were no people on

probation for county misdemeanors to minimize the estimated number of people potentially excluded from housing and the numbers potentially restored should there be changes in admission policies. As mentioned, considering only misdemeanor convictions with a custodial sentence promotes a conservative estimate.

Federal Felony Convictions

The research team retrieved information on federal convictions and releases from the Bureau of Justice Statistics Federal Criminal Case Processing Statistics and the Federal Bureau of Prisons (Federal Bureau of Prisons, 2022; U.S. Department of Justice, 2020). In both states, the team assumed the county-level distribution of convictions and reentries for federal felonies followed the distribution for state felonies, which the researchers obtained through statistical reports in Michigan or through an analysis of publicly available data in Oklahoma.

People Excluded From Public Housing Due to Federal Mandates

People who have a mandated lifetime sexual offender registry requirement and those convicted of manufacturing methamphetamine in public housing are ineligible for federally subsidized housing. In Michigan, the team took data on the number of people meeting these criteria from MDOC's statistical reports and data published by the Michigan State Police (Michigan State Police, 2017). Michigan has three "tiers" (levels of severity) of registrants that determine the length of time people must remain on the registry, how often they must report in person to law enforcement, and the restrictions with which they must comply. Only Tier 3 registrants must remain on the registry for their lifetime and are therefore excluded from public housing under federal law. Because data on the number of Tier 3 registrants were unavailable, all people on the sex offense registry were excluded from eligibility for public housing.

Similarly, although federal law prohibits people convicted for having manufactured methamphetamine in public housing from ever living in public housing again, data on the location of manufacture for people convicted for this offense were not available. Vera researchers, therefore, assumed that all convictions for methamphetamine manufacturing in Michigan arose from incidents in public housing, and all such people are excluded from public housing eligibility. In Michigan, because no available estimate on recidivism rates for people with convictions for manufacturing methamphetamine exists, the team assumed that each relevant disposition within and across years represents a new person permanently excluded from public housing.

In Oklahoma, the names and Oklahoma Department of Corrections (ODOC) identifying numbers for people whose convictions were for offenses that would result in a lifetime sex offender registration requirement were publicly available in separate databases. The team matched these ODOC numbers against the November 3, 2022, conviction dataset to exclude these people from eligibility for public housing. As in Michigan, the location of methamphetamine manufacturing convictions was not available, so the team assumed all convictions under statutes that referred to people manufacturing or possessing, selling, or distributing precursors for the manufacture of methamphetamine took place

on public housing property, and all people with such convictions were permanently excluded from public housing and unable to be restored through changes in state legislation.

These assumptions maximize the number of people with a conviction who are permanently excluded from public housing, minimizing estimates of those excluded due to PHA discretionary policies.

Income Limits

People and households are eligible for public housing if they do not exceed certain income limitations. People with a conviction whose incomes exceed those limits would not gain eligibility for public housing through changes in admissions policies based on conviction histories and were excluded from Vera's estimates. The team took data on Area Median Income and eligibility thresholds under the Low Income (LI), Very Low Income (VLI), and Extremely Low Income (ELI) thresholds from HUD's Fair Market Rents and Income Limits data for 2021 (U.S. Department of Housing and Urban Development, 2023). The team produced estimates of the incomes of people leaving incarceration and those with a conviction history in the years following contact with the criminal legal system. The estimates were based on research from the Brookings Institute and the Brennan Center for Justice; these institutions based their research on data from the National Longitudinal Survey of Youth, 1997 (NLSY97) (Bureau of Labor Statistics, 1997; Craigie et al., 2020; Looney and Turner, 2018). Because the NLSY97 survey captures income distributions for people with a conviction history as a categorical variable for each year following release from incarceration, Vera assumed that income followed a stepwise function with a uniform distribution within each income category.[3]

To estimate the number of people leaving incarceration who would be eligible for public housing, the team assumed that people leaving incarceration will live alone in public housing. This assumption reduces the amount of income the person may earn before they lose income eligibility for public housing, because income thresholds for public housing increase with the size of the household in a non-linear fashion. Although many people may live with family members in the period following their release from incarceration, it was not possible to make reasonable assumptions about household size or the income of other potential household members.

This assumption also meant that researchers did not consider the number of people who might be affected by a change in policy due to their status as family and household members of people with conviction histories. If one member of a family is ineligible for public housing, the whole family will be denied unless the person with a conviction history leaves the household.[4] Not attempting to count family members likely minimizes Vera's estimates of the number of people currently excluded from public housing due to exclusionary rules.

[3] For example, if the income threshold for public housing in a county was $37,500, Vera researchers assumed that one-half of the people in the $25,000 to $50,000 income category were at or below $37,500 and the other one-half were above it, as $37,500 is the midpoint between the minimum and maximum value of the category.

[4] Many PHAs have rules requiring that all adults living in a home undergo background checks, with some PHAs screening tenants as young as 13. If it is determined that a person is ineligible because of a conviction or arrest record, they are not allowed to reside in that unit. A whole family may be denied if a parent or caregiver is proven to be ineligible.

Results

Vera estimates that a minimum of 284,000 adults in Michigan and 233,000 adults in Oklahoma have conviction histories that make them potentially ineligible for public housing or housing choice vouchers due to the policies of public housing authorities in the state. To put these numbers in context, more than 3.5 percent of all adult Michiganders and 7.6 percent of all adult Oklahomans are potentially excluded from public housing due to the eligibility rules of public housing authorities. In both states, these percentages are likely to be minimum estimates due to both simplifying assumptions and excluding the effect that such policies have on family members of people with a conviction history who wish to remain united as households. At a minimum, more than one-half million (517,000) Americans in just these two states are potentially excluded from federally assisted housing due to the application of discretionary policies by public housing authorities.

In Michigan, if PHAs were to look only at the past 2 years of convictions and releases from incarceration, at least 139,000 people would automatically regain their eligibility for public housing; if PHAs were to look back only at the past 6 months, a minimum of 230,000 Michiganders would regain their eligibility. Policies to increase housing access in Michigan could affect at least 1.7 to 2.9 percent of the adult population in the state. In Oklahoma, if PHAs were to reduce lookbacks to 2 years of convictions and releases from incarceration, at least 125,000 people, or 3.1 percent of all Oklahomans, could have their eligibility for public housing restored; if lookbacks were restricted to 6 months, more than 160,000 could have their eligibility restored, representing 4.0 percent of all Oklahomans.

These numbers are a minimum of the number of people affected. Most importantly, the researchers do not consider family and household members of people with conviction histories who may be affected. If one member of a family is ineligible for public housing, the whole family may be denied unless the person with a conviction history leaves the household. Some families may be unwilling to live apart; for others, it may be financially impossible to maintain more than one household; or the person with a conviction history may be a single parent whose ineligibility renders their children ineligible as well, by default.

Second, Vera assumed PHAs that do not have or do not publish explicit policies are following guidance from HUD and only considering serious convictions for the past 5 years; however, this practice is unlikely to be the case, as many PHAs across the country have indicated that they consider significantly longer timescales for a criminal background check, up to and including entire lifetimes; that minor convictions are also considered; or a history of arrest alone is sufficient to reject an application for tenancy (Tran-Leung, 2015).

Third, Vera researchers have included the year 2020 in estimates of the number of people potentially excluded from federally assisted affordable housing due to a conviction in Michigan and the years 2020–2022 in Oklahoma. Due to the COVID-19 pandemic, the years 2020–2022 added far fewer people to the list of those facing exclusions from public housing due to a criminal conviction than in a typical year. Although some jurisdictions have made conscious policy efforts in

the past few years to reduce the rate at which people are convicted and incarcerated, some rebound in the reach of the criminal legal system following the pandemic will likely occur.

Discussion

There is an absence of evidence that policies that deny housing to people with conviction histories contribute to safer housing complexes and communities. The information that is used to make the determination about the danger and risk a person may pose has some limitations. Criminal background checks provide information about a person at the time of their most recent conviction, but nothing is revealed about what has happened with them in the time since, such as success in employment and connections forged in the community (Bushway et al., 2022). If a criminal background is used during the admissions process, an individualized assessment should accompany the background investigation that considers mitigating factors such as "the facts or circumstances surrounding the criminal conduct; the age of the individual at the time of the conduct; evidence that the individual has maintained a good tenant history before and/or after the conviction or conduct; and evidence of rehabilitation efforts" (Kanovsky, 2016). Using an individualized assessment when making housing decisions may decrease the discriminatory impact of exclusions absent the consideration of mitigating evidence (Kanovsky, 2016). Although people with conviction histories are not a protected class under the Fair Housing Act, guidance released by HUD suggests that the use of arrest and conviction histories for the basis of housing denials may violate the Fair Housing Act under the following theories of liability: disparate treatment, disparate impact, and refusals to make reasonable accommodations (McCain, 2022). Recently settled cases in Hesperia, California, and New York City test the applicability of these theories. In both cities, legal filings claimed that crime-free ordinances and blanket exclusions for people with arrest and conviction histories had a disparate impact on people of color and violated the Fair Housing Act (The United States Department of Justice, 2023; U.S. District for Eastern District of New York, 2019). Both cases were settled before trial.

In recent years, several jurisdictions have changed their policies to increase housing access for people with conviction histories. In 2020, the Champaign Housing Authority in Illinois announced that it would no longer use criminal background checks in admissions decisions outside of the federal requirements. Several states have also started to limit how landlords may consider a conviction history when determining an applicant's eligibility. In Colorado, the Rental Application Fairness Act (2019) prevents landlords from considering arrests that do not lead to a conviction and convictions older than 5 years, with some exceptions.[5] In Illinois, the Public Housing Access Bill (2021) limits the lookback period of PHAs to 6 months.[6] In New Jersey, the Fair Chance in Housing Act (2021) limits the use of criminal background checks to after an offer of housing has been made and limits the types of convictions that can be used for admission decisions (New Jersey Office of Attorney General, 2021). Since passing these laws, more states and local municipalities are considering similar changes.

[5] Rental Application Fairness Act, H.B. 19-1106, 2019 Reg. Sess. (Co. 2019).

[6] The Housing Authorities Act, 101 General Assembly, H.B. 5574, 2019 Reg. Sess. (Il. 2019).

Conclusion

Housing is a foundational and basic building block of civic life. For people returning to communities after involvement in the criminal legal system, housing is often the most important tenet of successful reentry. Communities are beginning to explore different strategies to remove housing barriers for people with conviction histories. PHAs, as leaders in providing safe, stable, and affordable housing, have a role and an opportunity to strengthen communities and provide an essential need for one of our most vulnerable populations. The effort starts with ensuring that all doors to housing are open for everyone.

Acknowledgements

The authors thank Eurielle Kiki, Asha Muralidharan, and Celia Strumph for their support; Cindy Reed for providing feedback; and our anonymous reviewers.

Authors

Niloufer Taber is the associate director for research for initiatives focused on postsecondary education in prison and connecting people returning to their communities with housing at the Vera Institute of Justice (Vera). Jacqueline Altamirano Marin is a program associate for Vera's Opening Doors to Housing project. John Bae is a program manager with Vera's Opening Doors to Housing project.

References

Bradley, Katharine H., R.B. Michael Oliver, Noel C. Richardson, and Elspeth M. Slayter. 2001. *No Place Like Home: Housing and the Ex-Prisoner*. Boston: Community Resources for Justice. https://www.cjinstitute.org/assets/sites/2/2001/05/54_No_Place_Like_Home.pdf.

Bureau of Labor Statistics. 1997. "National Longitudinal Survey of Youth 1997." Washington, D.C.: U.S. Department of Labor. https://www.bls.gov/nls/nlsy97.htm.

Bushway, Shawn D., Brian G. Vegetabile, Nidhi Kalra, Lee Remi, and Greg Baumann. 2022. *Providing Another Chance: Resetting Recidivism Risk in Criminal Background Checks*. Santa Monica, CA: RAND Corporation. https://doi.org/10.7249/RRA1360-1.

Couloute, Lucius. 2018. *Nowhere to Go: Homelessness Among Formerly Incarcerated People*. Easthampton, MA: Prison Policy Initiative. https://www.prisonpolicy.org/reports/housing.html.

Craigie, Terry-Ann, Ames Grawert, Cameron Kimble, and Joseph E. Stiglitz. 2020. *Conviction, Imprisonment, and Lost Earnings: How Involvement with the Criminal Justice System Deepens Inequality*. New York, NY: New York University School of Law, Brennan Center for Justice.

https://www.brennancenter.org/our-work/research-reports/conviction-imprisonment-and-lost-earnings-how-involvement-criminal.

Crowell, Hensleigh. 2017. "A Home of One's Own: The Fight against Illegal Housing Discrimination Based on Criminal Convictions, and Those Who Are Still Left Behind," *Texas Law Review* 95: 1103 https://heinonline.org/HOL/Page?handle=hein.journals/tlr95&id=1149&div=&collection=.

Dean, Carson. 2011. *Criminal History Among Homeless Men*. Charlotte, NC: Men's Shelter of Charlotte. http://www.mensshelterofcharlotte.org/wp-content/uploads/2014/01/Criminal_History_2011.pdf.

deVuono-powell, Saneta, Chris Schweidler, Alicia Walters, and Azadeh Zohrabi. 2015. *Who Pays? The True Cost of Incarceration on Families*. Oakland, CA: Ella Baker Center for Human Rights, Forward Together, and Research Action Design. https://www.whopaysreport.org/wp-content/uploads/2015/09/Who-Pays-FINAL.pdf.

Durose, Matthew R., and Leonardo Antenangeli. 2021. *Recidivism of Prisoners Released in 34 States in 2012: A 5-Year Follow-Up Period (2012–2017)*. U.S. Department of Justice. https://bjs.ojp.gov/sites/g/files/xyckuh236/files/media/document/rpr34s125yfup1217.pdf.

Ehman, Merf, and Anna Reosti. 2015. "Tenant Screening in an Era of Mass Incarceration," *New York University Journal of Legislation & Public Policy Quorum* 1 (109): 1–28, https://nyujlpp.org/wp-content/uploads/2013/03/Ehman-Reosti-2015-nyujlpp-quorum-1.pdf.

Evans, Douglas N., and Jeremy R. Porter. 2015. "Criminal History and Landlord Rental Decisions: A New York Quasi-Experimental Study," *Journal of Experimental Criminology* 11 (1): 21–42, https://doi.org/10.1007/s11292-014-9217-4.

Federal Bureau of Prisons. 2022. "Inmate Statistics: Release Numbers." Washington, D.C.: U.S. Department of Justice. https://www.bop.gov/about/statistics/statistics_inmate_releases.jsp.

Feinberg, Emily, Bricia Trejo, Brianna Sullivan, and Zhandra Ferreira-Cesar Suarez. 2014. "Healthy Start in Housing: A Case Study of a Public Health and Housing Partnership to Improve Birth Outcomes," *Cityscape* 16 (1): 141–164.

Greenspan, Owen M., and Dennis A. DeBacco. 2014. *Survey of State Criminal History Information Systems, 2012*. U.S. Department of Justice Office of Justice Programs, Bureau of Justice Statistics. https://www.ojp.gov/pdffiles1/bjs/grants/244563.pdf.

Johnson, Calvin. 2022. "Tenant Screening with Criminal Background Checks: Predictions And Perceptions Are Not Causality," *PD&R Edge*. https://www.huduser.gov/portal/pdredge/pdr-edge-frm-asst-sec-051722.html.

Kanovsky, Helen R. 2016. *Office of General Counsel Guidance on Application of Fair Housing Act Standards to the Use of Criminal Records by Providers of Housing and Real Estate-Related Transactions*. Washington, D.C.: U.S. Department of Housing and Urban Development. https://www.hud.gov/sites/documents/HUD_OGCGUIDAPPFHASTANDCR.PDF.

Lake, Jaboa. 2021. "Preventing and Removing Barriers to Housing Security for People With Criminal Convictions," The Center for American Progress. https://www.americanprogress.org/article/preventing-removing-barriers-housing-security-people-criminal-convictions/.

Leasure, Peter, and Tara Martin. 2017. "Criminal Records and Housing: An Experimental Study," *Journal of Experimental Criminology* 13 (4): 527–35. https://doi.org/10.1007/s11292-017-9289-z.

Lebel, Thomas P. 2017. "Housing as the Tip of the Iceberg in Successfully Navigating Prisoner Reentry," *Criminology and Public Policy* 16: 889. https://heinonline.org/HOL/Page?handle=hein.journals/crpp16&id=891&div=&collection=.

Looney, Adam, and Nicholas Turner. 2018. "Work and Opportunity Before and After Incarceration." Economic Studies at Brookings.

McCain, Demetria. 2022. *Implementation of the Office of General Counsel's Guidance on Application of Fair Housing Act Standards to the Use of Criminal Records by Providers of Housing and Real Estate-Related Transactions*. U.S. Department of Housing and Urban Development (HUD). https://www.hud.gov/sites/dfiles/FHEO/documents/Implementation%20of%20OGC%20Guidance%20on%20Application%20of%20FHA%20Standards%20to%20the%20Use%20of%20Criminal%20Records%20-%20June%2010%202022.pdf.

Metraux, Stephen, and Dennis P. Culhane. 2004. "Homeless Shelter Use and Reincarceration Following Prison Release," *Criminology and Public Policy* 3 (2): 139–160. https://repository.upenn.edu/spp_papers/116.

Michigan Department of Corrections. 2022. Statistical Reports https://www.michigan.gov/corrections/public-information/statistics-and-reports/statistical-reports.

Michigan State Police. 2017. "Michigan Sex Offender Registry Backgrounder." Michigan: Michigan Department of State Police. https://www.michigan.gov/msp/services/sex-offender-reg.

Milaney, Katrina, Bell Meaghan, Kaylee Ramage, Christina Screpnechuk, and Courtney Petruik. 2022. "Examining Housing as a Determinant of Health: Closing the 'Poverty Gap' to Improve Outcomes for Women in Affordable Housing," *The Open Public Health Journal* 15. https://doi.org/10.2174/18749445-v15-e2202080.

New Jersey Office of Attorney General. 2021. "Fair Chance in Housing Act," https://www.njoag.gov/about/divisions-and-offices/division-on-civil-rights-home/fcha/.

Prisoner Reentry Institute at John Jay College of Criminal Justice, The Fortune Society, Corporation for Supportive Housing, and The Supportive Housing Network of New York. 2017. *A Place to Call Home: A Vision for Safe, Supportive and Affordable Housing for People with Justice System Involvement*. https://www.csh.org/wp-content/uploads/2017/10/Place_to_Call_Home_FINAL-08142017.pdf.

Ramakrishnan, Kriti, Elizabeth Champion, Megan Gallagher, and Keith Fudge. 2021. *Why Housing Matters for Upward Mobility*. Washington, D.C.: Urban Institute. https://www.urban.org/sites/default/

files/publication/103472/why-housing-matters-for-upward-mobility-evidence-and-indicators-for-practitioners-and-policymakers.pdf.

Rosenfeld, Richard, and Amanda Grigg, eds. 2022. *The Limits of Recidivism: Measuring Success After Prison*. Washington, D.C.: National Academies Press. https://doi.org/10.17226/26459.

Silva, Lahny R. 2015. "Collateral Damage: A Public Housing Consequence of the 'War on Drugs'." https://scholarworks.iupui.edu/handle/1805/9998.

Thacher, David. 2008. "The Rise of Criminal Background Screening in Rental Housing," *Law & Social Inquiry* 33 (1): 5–30, https://doi.org/10.1111/j.1747-4469.2008.00092.x.

Tran-Leung, M. C. 2015. *When Discretion Means Denial: A National Perspective on Criminal Records Barriers to Federally Subsidized Housing*. Chicago, IL: Sargent Shriver National Center on Poverty Law. https://www.povertylaw.org/article/when-discretion-means-denial.

Tran-Leung, Marie Claire. 2011. *When Discretion Means Denial: The Use of Criminal Records to Deny Low-Income People Access to Federally Subsidized Housing in Illinois*. Chicago, IL: Sargent Shriver National Center on Poverty Law. https://www.nhlp.org/wp-content/uploads/Tran-Leung-When-Discretion-Means-Denial.pdf.

U.S. Census Bureau. 2021. "Annual Population Estimates, Estimated Components of Resident Population Change, and Rates of the Components of Resident Population Change for the United States, States, the District of Columbia, and Puerto Rico: April 1, 2010 to July 1, 2020 (NST-EST2020-alldata)." https://www2.census.gov/programs-surveys/popest/datasets/2010-2020/national/totals/nst-est2020-alldata.csv.

U.S. Department of Health and Human Services. n.d. "Incarceration & Reentry." Washington, D.C.: Office of the Assistant Secretary for Planning and Evaluation. https://aspe.hhs.gov/topics/human-services/incarceration-reentry-0.

U.S. Department of Housing and Urban Development (HUD), Office of Policy Development and Research (PD&R). 2023. "Income Limits." https://www.huduser.gov/portal/datasets/il.html.

U.S. Department of Housing and Urban Development (HUD). 2017. "Questions and Answers About HUD." https://www.hud.gov/about/qaintro.

U.S. Department of Justice. 2023. "Assistant Attorney General Kristen Clarke Delivers Remarks to Announce Landmark Agreement with City and Police Department Ending 'Crime-Free' Rental Housing Program in Hesperia, California." https://www.justice.gov/opa/speech/assistant-attorney-general-kristen-clarke-delivers-remarks-announce-landmark-agreement#:~:text=%E2%80%9CCrime%2Dfree%E2%80%9D%20ordinances%20are,any%20arrest%2C%20charge%20or%20conviction; *The Fortune Society, Inc. v. Sandcastle Towers Housing Development Fund, Inc.*, No. 1:14-cv-6410 (E.D.N.Y.) (U.S. District for Eastern District of New York 2019).

U.S. Department of Justice, Bureau of Justice Statistics. 2020. *Federal Criminal Case Processing Statistics*. Washington, D.C.: https://bjs.ojp.gov/library/publications/federal-justice-statistics-2020.

Vera Institute of Justice. 2022. "Incarceration Trends." New York: Vera Institute of Justice. https://trends.vera.org/.

Villettaz, Patrice, Gwladys Gillieron, and Martin Killias. 2015. "The Effects on Re-Offending of Custodial vs. Non-Custodial Sanctions: An Updated Systematic Review of the State of Knowledge," *Campbell Systematic Reviews* 11 (1): 1–92. https://doi.org/10.4073/csr.2015.1.

Western, Bruce, and Becky Pettit. 2010. *Collateral Costs: Incarceration's Effect on Economic Mobility*. Philadelphia, PA: The Pew Charitable Trusts.

Wolitski, R.J., D.P. Kidder, S.L. Pals, S. Royal, A. Aidala, R. Stall, D. R. Holtgrave, D. Harre, and C. Courtenay-Quirk. 2010. "Randomized Trial of the Effects of Housing Assistance on the Health and Risk Behaviors of Homeless and Unstably Housed People Living with HIV," *AIDS and Behavior* 14 (3): 493–503. https://doi.org/10.1007/s10461-009-9643-x.

Symposium

Recent Reforms in Zoning
Guest Editor: Noah M. Kazis

Guest Editor's Introduction

Learning From Land Use Reforms: Housing Outcomes and Regulatory Change

Noah M. Kazis
University of Michigan Law School

Introduction

Zoning is changing. Paradigms that have stood for a century—like the predominance of single-family-only residential zoning—are being questioned and, in some places, abandoned. Political sacred cows, like regulatory mandates for new construction to provide that most valued of amenities, off-street parking, have been gored. Major reforms to loosen zoning and increase the supply of housing have taken place in cities big and small, in state houses and city halls, from coast to coast. Without overstating the case—in most places, the status quo remains unchanged, and even in the few, change has been incremental—there has been a groundswell of support for rethinking the restrictiveness of the American land use system.

Indeed, interest in zoning reform is a rare spot of bipartisan agreement. Legislation to promote housing supply has been enacted by states as blue as California and Massachusetts and as red as Montana and Utah. At the federal level, leading legislation comes from Indiana Republicans and New Jersey Democrats. Concerns about regulatory barriers to housing production have been trumpeted, at least for a time, by the Obama, Trump, and Biden White Houses (White House, 2022, 2016).[1] This is a moment of ferment—and experimentation—in land use policy.

That experimentation demands careful policy evaluation: rigorous research exploring why land use reforms have or have not worked; which policy levers matter most and how they interact; how different tools function in different housing market contexts; and overall, how policymakers can incrementally learn from the experiences of their neighbors. This article series helps build this knowledge base. Gathering authors from multiple disciplines—economics, law, urban planning, and public policy—and using both quantitative and qualitative empirical methods, this collection

[1] Executive Office of the President. 2019. Executive Order 13878, *Establishing a White House Council on Eliminating Regulatory Barriers to Affordable Housing*. https://www.federalregister.gov/documents/2019/06/28/2019-14016/establishing-a-white-house-council-on-eliminating-regulatory-barriers-to-affordable-housing.

of seven articles offers new insights (and raises new questions) for policymakers exploring land use reforms to increase housing supply.

This series comes at an auspicious moment. Housing policy experts have warned of the regulatory barriers to housing production without much interruption for a half-century. But two factors have pushed the issue into the spotlight—and even allowed reformers to notch some victories. First, the politics have changed. The housing shortage has simply gotten much more acute, especially in states like California and New York. Even if lower-income households ultimately suffer the most from a housing shortage, today, middle-class Americans—and even some rather affluent ones—are feeling the bite of restrictive zoning, particularly as rent burdens have increasingly hit higher-income households over time (Dougherty, 2021; Ellen, Lubell, and Willis, 2021). This has produced a far broader and more powerful political coalition for reform. The politics of affordability has also been bolstered by renewed attention on racial equity—which has long been the basis for concerns about exclusionary zoning—and new concerns about climate change. In many places, after all, zoning limitations preclude the most environmentally friendly forms of development—like dense, multifamily housing; housing near transit; and housing in climate-friendly locations like coastal California—while pushing growth instead to the sprawling periphery (Jones and Kammen, 2013).

At the same time, a steady stream of research has bolstered the case for zoning reform, suggesting that restrictive land use policies lead not only to problems in the housing market but also contribute to serious macroeconomic harms and racial injustice. Economists have shown how overly-restrictive zoning has dramatically increased the cost of housing, especially in California and metro areas along the Northeast Corridor (Gyourko and Molloy, 2015). They have shown how zoning has limited household mobility to rich regions with better opportunities, costing the economy as much as 9 percent of the gross domestic product—or over a trillion dollars (Ganong and Shoag, 2017; Hsieh and Moretti, 2019). Scholars have connected restrictive zoning to increased racial segregation (Resseger, 2013; Rothwell and Massey, 2009). They have traced how frequently this was the intent of those enacting zoning regulations (Rothstein, 2017; Trounstine, 2018). They have connected limitations on access to high-opportunity neighborhoods, a downstream effect of exclusionary land use rules, to a slew of important long-term social outcomes for children (Chetty and Hendren, 2017). Moreover, a new strand of research has brought these findings from the macro level down to the level of the neighborhood, tracing the effects of the construction of individual buildings and providing an improved understanding of the mechanisms at play (Li, 2022; Mast, 2021).

Even given the increasing magnitude of the housing supply shortage and the ever-increasing body of research pointing to the need for regulatory reforms, it is somewhat remarkable how much political action has been taken to reform land use in recent years. As Ellickson (2022) demonstrated, American zoning is characterized by its basic stasis: once neighborhoods are built as single-family residential neighborhoods, they overwhelmingly tend to stay that way. In some sense, this long-term stability is to be expected. Leading theories of land use politics all agree: people hate change. They bought their neighborhood in a bundle with their house, and whether for economic or psychological reasons, they are distinctly, and perhaps unreasonably, averse to the risks brought

by any change (Fennell, 2009; Fischel, 2005). Whether voters fear new development will increase housing costs (pricing them out of their neighborhoods) or decrease them (reducing the value of their homes) they are against it.

Indeed, to a surprising extent, not just land use policies, but land use politics, too, are little changed over a period of decades. Many accounts of zoning law and politics written more than a half-century ago could be republished today with only limited amendments. Richard Babcock's 1966 *The Zoning Game* remains the witty and conversational tour guide for so many observers of land use, while reexamining the still-vital warnings of 1968's Kerner and Douglas Commissions serves to remind any reader how little progress has been made toward racial and economic equality in housing. It is difficult to think of many important regulatory systems that have changed so little over so long: imagine environmental law without climate change or cap-and-trade, or telecom under Ma Bell. Of course, land use law has evolved over this period, but too often by leaning into its preexisting shortcomings: imposing tighter controls, more delay, and more discretion. (Sometimes, as with new environmental laws, this brought important benefits—but the direction remains consistent.)

This long-term stability has shaped the research base guiding land use reform. Quite simply, there have been too few examples of land use reforms intended to promote housing supply, and as a result, there is too little evidence on what reforms accomplish. Much of the leading empirical research uses creative ways to estimate what the effects of land use reforms *would* be, based on existing variations across places: how wages might rise *if* New York City and San Francisco loosened their zoning; how housing affordability would improve *if* Connecticut allowed smaller lot sizes; how Greater Boston might be less segregated *if* it had permitted more multifamily housing (Glaeser, Gyourko, and Saks, 2005; Resseger, 2013; Song, 2021). These articles are methodologically sophisticated and offer extremely important insights into the harms of overly-restrictive land use regulations. But of course, those counterfactuals never happened.

Accordingly, there is a need for more high-quality research evaluating the reforms that did, in fact, occur. Given the messiness of the real world, what research exists in this vein is often ambiguous and contested (Freemark, 2020). Unsurprisingly, it is often the older interventions where researchers have been most able to pin down what has worked and what has not. For example, important and influential studies have evaluated California's decades-long struggles to successfully implement either the legalization of accessory dwelling units (ADUs) or its "fair share" system for allocating regional housing-need obligations to localities (Brinig and Garnett, 2013; Lewis, 2005). Similarly, researchers have relatively stronger understandings of New Jersey's famous Mount Laurel doctrine and Massachusetts' analogous "40B" fair share process (Marantz and Zheng, 2020; Massey et al., 2013).

This collection is meant to help fill that gap. The articles in this series look at places that have made policy-relevant reforms and try to draw policy-relevant conclusions. These are lessons about policy design in the real world—and often in real-time. As a result, they focus more on descriptive analysis and less on the hard work of definitively disentangling all the causal mechanisms. This approach certainly has its limits, but it has payoffs as well. In some sense, the articles in this series are meant to be the second drafts of history, coming after initial journalistic coverage and adding

scholarly rigor and empirical analysis, but before the authoritative accounts of a deep qualitative history or a dot-every-i social scientific causal analysis are possible. More time—perhaps decades—will be needed for all outcomes to unfold and all data to be available.

This focus shaped the scope of this article series. Some of the most splashy, well-covered reforms—Minneapolis' legalization of two- and three-unit homes citywide, or Oregon's similar elimination of single-family-only zoning across much of the state—were too nascent to be adequately evaluated for the outcomes of greatest interest.[2] The evaluations are worth waiting on. Likewise, the constraints of timing shifted these articles toward studying outcomes like housing production and away from outcomes like segregation, which might change more slowly (and where early effects might not reflect a longer-term equilibrium). Issues like segregation—or climate emissions, rent burdens, homelessness, or social mobility—of course remain the ultimate reasons one would care about land use reform, the ends toward which housing production is a means, but this series was not intended to measure them.

The scope of this collection is limited in at least two other important ways. First, it is focused on questions of residential development and housing supply. Given the acuteness of the housing crisis today, those issues seem especially timely, and many recent innovations in land use policy have been addressed to residential supply. Other land use matters, whether attempts to revitalize distressed neighborhoods or the planning of commercial and industrial areas and its effect on labor markets, are well-worth further investigation elsewhere.

Second, this series sticks to an orthodox land use policy paradigm that sees adequate housing supply as important and land use restrictions as costly barriers to that supply. This paradigm is consistent with a wide range of ideological perspectives and policy approaches to land use reform. Some articles in this series, for example, examine policies to facilitate market-rate housing production, and others focus on subsidized housing development; some involve state-level intervention into local control of land use, whereas others examine bottom-up policies crafted by localities themselves. Recognizing the costs of land use regulation is also consistent with a range of perspectives on the benefits of zoning to be weighed against those costs, and the policy recommendation of removing costly barriers to production can be mixed-and-matched with any number of non-land-use housing policies, from community ownership and social housing models to rental assistance, homeownership subsidies, and mortgage market reforms. Land use liberalization is not a panacea, even if it is the topic of this symposium.

But this collection does not include the voices of "supply skeptics" who hold that increased supply will do little to improve, and may even hurt, overall housing affordability (Been, Ellen, and O'Regan, 2019). Such perspectives remain fairly popular among the public at large and with a small-and-declining number of scholars (Nall, Elmendorf, and Oklobdzija, 2022). However, this "supply skepticism" is not backed by the weight of the evidence. Nor does this collection spend undue time with more traditional arguments against development: that it leads to overcrowding or a poor quality of life. Where substantiated, these are important concerns—and ones grappled with in this collection—but the articles proceed with the recognition that the United States has room to grow and a need to grow, and moreover, that such concerns have often undergirded

[2] Important preliminary results in Minneapolis are provided by Kuhlmann (2021).

or excused exclusionary land use policies. In other words, these articles all proceed on the shared understanding that land use law ought, somehow, to facilitate adequate—and therefore, additional—housing supply. The questions concern how to do so.

Within this defined scope, the collection covers a broad range of topics. The articles cover changes to the substance of land use law and to its procedures. The authors study regulatory changes that applied in select neighborhoods, citywide, and at the state level. Close attention is paid to the ongoing reform efforts in California, the current epicenter of both the housing affordability crisis and efforts to tackle it through land use changes. Three of the seven articles examine different elements of that state's recent reforms—and these only cover a fraction of the ongoing efforts.[3]

There is still much more to study. This collection fails to include coverage of the Mountain West—a region facing unique challenges as remote work and other shifts helped suddenly drive up housing costs during the COVID-19 pandemic—or of the Rust Belt. There has been renewed interest in understanding how building codes can act as an important regulatory barrier to housing; this is another important topic for future research.

Even so, these articles should prove useful in thinking through an array of policy options for promoting housing production across a range of types of place. The results will not generalize directly. Different cities will face different patterns housing demand, different legal backdrops, and different political interests. Indeed, in at least one of the articles here—concerning neighborhoods in Ramapo, New York, populated by ultra-Orthodox Jews—the uniqueness of the place is very much the point. Rather, the hope is that these case studies point to the kinds of questions that policymakers need to ask about the mechanisms before them: How does a particular policy play out in neighborhoods of different incomes or with different preexisting lot sizes? What tradeoffs apply when cities attempt to mandate affordable housing be included in new construction, and how might they be evaluated?

Symposium Articles

The series includes seven articles. A first set of articles examines some of California's recent interventions into local land use. Nicholas Marantz, Christopher Elmendorf, and Youjin Kim (2023) study one of California's most-heralded reforms: the state's efforts to legalize ADUs across most single-family neighborhoods. Given ADUs' relatively low costs and compatibility with the existing built environment, they have been widely touted as a promising reform. California, after decades of unsuccessful attempts to force local governments to permit ADU construction, enacted a slew of statutes between 2016 and 2020, repeatedly limiting localities' ability to block ADUs and effectively permitting the construction of ADUs smaller than 800 square feet as-of-right. Marantz, Elmendorf, and Kim offer two important sets of insights about these latest reforms. First, they quantify ADU production, showing it to be a considerable share of California's total housing growth in the last few years: around 13 percent of permits in the Bay Area and 19 percent in Southern California. Second, they show what kinds of parcels are mostly likely to have an ADU, such as

[3] Future research will certainly be needed to explore two of the state's more ambitious experiments, its provisions for as-of-right lot splits and duplexes and for higher density along commercial corridors, which were too recently enacted to be evaluated in this series.

those that are larger, those that are in neighborhoods with moderate rents (i.e. relatively low, but not the lowest, rents), and those closer to job centers. These findings help to identify where this type of reform is likely to be most efficacious.

Paavo Monkkonen, Michael Manville, Michael Lens, Aaron Barrall, and Olivia Arena (2023) examine another of California's attempts to make a long-ineffective effort to produce housing more functional, specifically, recent reforms to the state's Regional Housing Needs Assessment (RHNA) process. Under longstanding state law, California localities are required to develop plans, called Housing Elements, for how they will meet the need for new housing at various income levels, as projected by state and regional bodies. The RHNA process is meant to ensure that all municipalities do their "fair share" in meeting that housing need. But housing need has historically been miscalculated and misallocated, and the state has failed to scrutinize local plans for bad-faith (or inadvertent) evasion of local responsibilities. Again, between 2017 and 2019, the state enacted a suite of reforms to tighten policy and address each of those problems. The authors find those reforms to be substantial, though incomplete, successes. Under the most recent planning cycle, Southern California cities have engaged in dramatically more land use changes to meet their RHNA obligations, including in the high-demand locations where such rezonings are most needed. Indeed, just the 93 first Southern California cities to have compliant housing elements—representing just one-fifth of the state's population—have rezoned to add space for over 250,000 units. In contrast, in the previous, prereform cycle, rezonings *statewide* only created space for 35,430 units and, moreover, concentrated those rezonings where they were least needed. Although the system is still slow and labor-intensive—and seems still to provide some mechanisms for not-in-my-backyard politics to reduce the obligations of Whiter and wealthier localities—the improvements appear to be marked.

The third investigation of state-level reform in California comes from Moira O'Neill and Ivy Wang (2023). They examine Senate Bill 35 (SB 35), a 2017 law that targets not the substance of local zoning but its procedures. In cities that have not met their housing production obligations under RHNA, certain mixed-income or fully-affordable multifamily housing developments can avoid local discretionary review. Instead, these SB 35 projects may use a state-provided ministerial process to receive their permits. These projects must comply with the bulk and use requirements of local zoning; only the process changes. Gathering project-level data on the approval process and rich context on individual city's implementation of SB 35, O'Neill and Wang find preliminary evidence that SB 35 is making the development process faster and more predictable—and therefore, cheaper and more attractive for affordable housing developers. Comparing the kinds of developments that would have been eligible for SB 35 before its enactment to those that used it subsequently, O'Neill and Wang find, for example, that approval timelines were cut by more than half in Los Angeles and San Francisco. Although such reforms are inherently limited to places that, on paper, allow for dense development, this research highlights the independent importance of procedure in any land use reform agenda.

Although state-level reforms, in California and elsewhere, are especially high-profile (and potentially high-impact) changes, land use remains primarily a local prerogative, and much innovation in this space comes at the local level. Jake Wegmann, Aabiya Noman Baqai, and Josh Conrad (2023) study

an important land use reform in Houston (*not*, as Houstonians would remind you, a rezoning, because technically the city lacks zoning). Changes to the city's mandatory minimum lot size, first enacted in 1998 and then extended in 2013, permitted the widespread development of what Houstonians call "townhouses," skinny, single-family homes (whether attached or detached) on lots as small as 1,400 square feet. Past research has catalogued the scale of the townhouse boom, which has produced tens of thousands of units, and the neighborhoods where growth has been fastest (Gray and Millsap, 2020). Wegmann, Baqai, and Conrad add to this literature by focusing on an especially important set of townhouse redevelopments: those which replace existing single-family housing. Given the political inviolability of such lots in many places and the especially high barriers to their redevelopment, it is especially valuable to understand under what conditions such single-family lots might be densified. The authors find that single-family redevelopment accounts for about one-fifth of total townhouse developments—whether this is a lot or a little is a matter of perspective—and that it tends to occur when large lots near the urban core are occupied by small, old homes. Notably, this redevelopment tends to occur in areas with higher-than-average housing prices, yet it provides relatively affordable and spacious housing options.

Although Houston's liberal land use rules and sustained growth have received much attention, Joseph Huennekens (2023) points to a much more unusual case study: the Monsey section of suburban Ramapo, New York. Monsey is home to a fast-growing ultra-Orthodox Jewish population, a group which, unlike most suburbanites, is extremely supportive of housing development. Whereas most land use reforms take place in a political context that is, at best, apprehensive about growth, Monsey illustrates what an enthusiastic embrace of density might look like in a traditional suburban setting. Mixing qualitative and quantitative techniques, Huennekens traces the area's sustained efforts to permit housing development, which have transformed it from predominantly single-family to primarily multifamily housing, and identifies what worked in this unique setting. He finds, for example, more sustained housing production in 6–12 unit buildings and less success with ADUs, and he pinpoints the importance in this context of allowing condominiums in addition to rentals. Huennekens also examines the impact of this growth on suburban service provision, exploring the most common complaints around water, sewer, and fire provision.

Jacob Krimmel and Betty Wang (2023) study Seattle to shed light on a common proposal for land use reforms: mandatory inclusionary zoning. In 2017 and 2019, Seattle rezoned 33 of its neighborhoods for greater density, while also requiring that all new development in those areas either set aside units as below-market-rate housing or pay into a citywide affordable housing fund. By using a difference-in-differences approach to compare the pace of housing production just inside the rezoned areas to those just outside them, Krimmel and Wang find that Seattle's policy reduced development along the upzoned side of these borders. Instead, development shifted to parcels just outside the rezoned area. In Seattle, it seems, the cost of the affordability component outweighed the benefit of the relatively modest upzonings (at least during this period), but neighboring areas had zoned capacity sufficient to allow continued housing production.

Finally, Leah Brooks and Jenny Schuetz (2023) flip the script in their article. Rather than ask whether a given zoning change generated additional housing production, they ask whether, in Washington, D.C., housing production was preceded by zoning changes. Washington, D.C.,

they show, is a city that has experienced meaningful amounts of infill development—but not especially as a result of rezonings. The District's rezonings over the past two decades largely left bulk and density rules unchanged, especially in single-family residential neighborhoods, and the neighborhoods that grew did not usually do so because they had been rezoned. Brooks and Schuetz find no association between the change in a neighborhood's housing units and the percentage of land in that neighborhood that was rezoned. Instead, they identify as critical the fact that high-growth neighborhoods began with relatively few single-family homes (many were nonresidential to begin with). Their work points to the likeliest path forward for infill housing production *absent* regulatory reform: finding underutilized commercial and industrial neighborhoods (with limited political opposition to housing from residents) to convert to large-scale multifamily housing.

Symposium Themes

Despite the disparate institutional, political, and economic contexts for the reforms studied, some common themes and sharp contrasts emerge across the seven articles. At the most basic level—but still worth saying—these articles refute the idea that zoning reform is futile, as some scholars have suggested, or that it is unnecessary given popular demand for the existing, low-density built environment (Schragger, 2021). Both city and state reforms can facilitate the production of new housing supply. Both changes to the substance and the procedures of zoning can contribute. Indeed, as Monkkonen, et al. (2023) show, even legal strategies which had seemed utterly ineffective—like mandates for local governments to plan for housing growth—can be reworked into powerful levers for change.

Perhaps more to the point, reforms have achieved two more difficult tasks. Reforms have successfully facilitated subsidized housing development, as seen most clearly in O'Neill and Wang's (2023) research finding faster development times for the affordable projects aided by California's SB 35. And new housing production is possible even in established single-family residential areas, which are widely understood to be especially resistant to redevelopment (indeed, this understanding is confirmed by Brooks and Schuetz [2023] in their study of Washington, D.C.). As illustrated by Houston townhouses, Ramapo's growth, and California's ADU development, even single-family neighborhoods can change. Densification is not easy and not without policy tradeoffs. Nor is it an inevitable result of regulatory liberalization. Factors ranging from demand and location to the ease of site assembly are critical. But well-designed reforms can promote the development of new housing: at many income levels and in many kinds of neighborhoods.

The collection also points to the kinds of neighborhoods most affected by some contemporary zoning reforms. In Houston, townhouse redevelopment is taking off in higher-income, non-gentrifying neighborhoods. ADU construction in California has been concentrated in census tracts with slightly lower median rents compared to their larger regions and not very-low-income areas. It appears that, in general, zoning reforms may have smaller effects in the lowest-income neighborhoods, where future development would bear relatively low prices, and in the very highest-income neighborhoods, where wealthy residents either retain tools to inhibit redevelopment or place such a high value on the amenities of low density that they (for now)

eschew the returns to redevelopment. Whether this pattern holds for all types of reform is an important question, but as a rough rule of thumb, it provides useful guidance for those concerned with gentrification and displacement in low-income neighborhoods. Those neighborhoods appear not to be the primary places affected by these reforms.

This collection also highlights the importance of forms of tenure and ownership. In Ramapo, for example, permitting multifamily units to be sold separately, as condominiums, was necessary for significant levels of investment, echoing the Houston experience, where density has been built through a townhouse form that allows not just condominium ownership but ownership in fee simple. While rentals play a critical role in the housing system, in certain contexts—perhaps especially in more suburban settings—the ability to own one's unit remains something of economic, practical, and cultural value. Relatedly, California's experience with ADUs indicates the lasting importance of covenants and homeowners associations in limiting housing production, even when those covenants are no longer legally enforceable. This echoes past research on the longer-term effects of racial covenants after their being ruled illegal in *Shelley v. Kraemer*, and it points to the need for close consideration of the private law devices in play (Brooks and Rose, 2013).

A long literature has considered the merits of pairing upzoning with affordability requirements (Hamilton, 2021; Schuetz, Meltzer, and Been, 2009). This series of articles adds to that discussion, though it hardly resolves it. Krimmel and Wang's (2023) study of Seattle adds a note of caution, showing how miscalibrated deals can leave the cost of affordability requirements higher than the benefits of the added density—potentially impeding rather than promoting development. Ramapo, too, abandoned its affordability requirements for similar reasons. At the same time, though, California's RHNA law—and its strengthened enforcement, both through SB 35's ministerial process and through the reforms to the target-setting and local rezoning processes—points in another direction. A path exists for zoning reforms that specifically target below-market-rate units. This path may not be an inclusionary zoning requirement in all cases, but the alignment of land use reforms with subsidized housing programs remains an important opportunity for continued policy innovation.

There are no silver bullets here—as there so rarely are. Where California has attempted to restructure the local zoning process, its successes have only been partial, as the articles studying those state-level reforms show. Many cities have had no projects proceed under SB 35, and many have found ways to keep their housing targets under RHNA lower than they ought to be. Ramapo has struggled to upgrade its infrastructure as it grows. Progress and meaningful policy successes have occurred, however, in an area where, historically, many interventions have fallen short. Moreover, as both Krimmel and Wang's (2023) account of Seattle and Huennekens' (2023) story of Ramapo make clear—not to mention the decades-long sagas of California's various housing production strategies—there is always a need for tinkering and iterative improvement. In Seattle, for example, the same broad policy framework would have had quite different implications with different levels of affordability required, different amounts of density granted, or a different drawing of the geographic boundaries.

There is much more to learn about what interventions work—and especially about how to pair the right reforms with particular places. Case studies cannot show every conceivable permutation of

policy detail, political context, and market conditions. This series of articles helps to build out the body of evidence for policymakers looking to understand the current wave of reforms. But there is more to learn about what cities and states have done—and much more importantly, more for cities and states still to try. At a high level, the need for zoning reform remains clear. The hard questions remain: How to select from an ever-growing menu of reform options? How to tailor those strategies to local conditions? How to mix-and-match, and how to innovate further?

Then, perhaps the hardest question of all: How to get those reforms passed?

Acknowledgments

My greatest thanks go to the authors in this series, who worked diligently, creatively, collaboratively, and flexibly to put this series together. It has been a pleasure to see these articles grow from ideas to drafts to completion—and, I hope, to have helped along the way. I am also indebted to my colleagues at the NYU Furman Center who aided at every stage of the editorial process and, in particular, to Vicki Been, Ingrid Gould Ellen, and Matthew Murphy. Finally, thanks are due to the Pew Charitable Trusts for their funding of, and active engagement with, this project.

Guest Editor

Noah M. Kazis is an assistant professor of law at the University of Michigan Law School.

References

Been, Vicki, Ingrid Gould Ellen, and Katherine O'Regan. 2019. "Supply Skepticism: Housing Supply and Affordability," *Housing Policy Debate* 29 (1): 25–40.

Brinig, Margaret F., and Nicole S. Garnett. 2013. "A Room of One's Own? Accessory Dwelling Unit Reforms and Local Parochialism," *Urban Lawyer* 45: 519–569.

Brooks, Leah, and Jenny Schuetz. 2023. "Does Housing Growth in Washington, D.C., Reflect Land Use Policy Changes?" *Cityscape* 25 (2): 203–223.

Brooks, Richard R.W., and Carol M. Rose. 2013. *Saving the Neighborhood: Racially Restrictive Covenants, Law, and Social Norms*. Cambridge, MA: Harvard University Press.

Chetty, Raj, and Nathaniel Hendren. 2017. "The Impacts of Neighborhoods on Intergenerational Mobility I: Childhood Exposure Effects," *Quarterly Journal of Economics* 133 (3): 1107–1162.

Dougherty, Conor. 2021. *Golden Gates: The Housing Crisis and a Reckoning for the American Dream*. New York City, NY: Penguin Press.

Ellen, Ingrid Gould, Jeffrey Lubell, and Mark A. Willis. 2021. *Through the Roof: What Communities Can Do About the High Cost of Rental Housing in America*. Cambridge, MA: Lincoln Institute of Land Policy. https://www.lincolninst.edu/sites/default/files/pubfiles/through-the-roof-full-v3.pdf.

Ellickson, Robert. 2022. *America's Frozen Neighborhoods: The Abuse of Zoning*. New Haven, CT: Yale University Press.

Fennell, Lee Anne. 2009. *The Unbounded Home: Property Values Beyond Property Lines*. New Haven, CT: Yale University Press.

Fischel, William A. 2005. *The Homevoter Hypothesis*. Cambridge, MA: Harvard University Press.

Freemark, Yonah. 2020. "Upzoning Chicago: Impacts of a Zoning Reform on Property Values and Housing Construction," *Urban Affairs Review* 56 (3): 758–789.

Ganong, Peter, and Daniel W. Shoag. 2017. "Why Has Regional Income Convergence in the U.S. Declined?" *Journal of Urban Economics* 102: 76–90.

Glaeser, Edward L., Joseph Gyourko, and Raven Saks. 2005. "Why Is Manhattan So Expensive? Regulation and the Rise in Housing Prices," *The Journal of Law and Economics* 48 (2): 331–351.

Gray, M. Nolan, and Adam A. Millsap. 2020. "Subdividing the Unzoned City: An Analysis of the Causes and Effects of Houston's 1998 Subdivision Reform," *Journal of Planning Education and Research* 0 (0).

Gyourko, Joseph, and Raven Molloy. 2015. "Regulation and Housing Supply," *Handbook of Regional and Urban Economics* 5: 1289–1337.

Hamilton, Emily. 2021. "Inclusionary Zoning and Housing Market Outcomes," *Cityscape* 23 (1): 161–194.

Hsieh, Chang-Tai, and Enrico Moretti. 2019. "Housing Constraints and Spatial Misallocation," *American Economic Journal: Macroeconomics* 11 (2): 1–39.

Huennekens, Joseph Weil. 2023. "Learning from Land Use Reforms: The Case of Ramapo, New York," *Cityscape* 25 (2): 225–256.

Jones, Christopher M., and Daniel M. Kammen. 2013. "Spatial Distribution of U.S. Household Carbon Footprints Reveals Suburbanization Undermines Greenhouse Gas Benefits of Urban Population Density," *Environmental Science & Technology* 48 (2): 895–902.

Krimmel, Jacob, and Betty Wang. 2023. "Upzoning With Strings Attached: Evidence From Seattle's Affordable Housing Mandate," *Cityscape* 25 (2): 257–277.

Kuhlmann, Daniel. 2021. "Upzoning and Single-Family Housing Prices," *Journal of the American Planning Association* 87 (3): 383–395.

Lewis, Paul G. 2005. "Can State Review of Local Planning Increase Housing Production?" *Housing Policy Debate* 16 (2): 173–200.

Li, Xiaodi. 2022. "Do New Housing Units in Your Backyard Raise Your Rents?" *Journal of Economic Geography* 22 (6): 1309–1352.

Marantz, Nicholas J., Christopher S. Elmendorf, and Youjin B. Kim. 2023. "Where Will Accessory Dwelling Units Sprout Up When a State Lets Them Grow? Evidence From California," *Cityscape* 25 (2): 107–118.

Marantz, Nicholas J., and Huixin Zheng. 2020. "State Affordable Housing Appeals Systems and Access to Opportunity: Evidence From the Northeastern United States," *Housing Policy Debate* 30 (3): 370–395.

Massey, Douglas S., Len Albright, Rebecca Casciano, Elizabeth Derickson, and David N. Kinsey. 2013. *Climbing Mount Laurel*. Princeton, NJ: Princeton University Press.

Mast, Evan. 2021. "JUE Insight: The Effect of New Market-Rate Housing Construction on the Low-Income Housing Market," *Journal of Urban Economics* 133.

Monkkonen, Paavo, Michael Manville, Michael Lens, Aaron Barrall, and Olivia Arena. 2023. "California's Strengthened Housing Element Law: Early Evidence on Higher Housing Targets and Rezoning" *Cityscape* 25 (2): 119–142.

Nall, Clayton, Christopher S. Elmendorf, and Stan Oklobdzija. 2022. *Folk Economics and the Persistence of Political Opposition to New Housing*. https://ssrn.com/abstract=4266459.

O'Neill, Moira, and Ivy Wang. 2023. "How Can Procedural Reform Support Fair Share Housing Production? Assessing the Effects of California's Senate Bill 35," *Cityscape* 25 (2): 143–170.

Resseger, Matthew. 2013. The Impact of Land Use Regulation on Racial Segregation: Evidence from Massachusetts Zoning Borders. Working paper. Harvard University. https://scholar.harvard.edu/files/resseger/files/resseger_jmp_11_25.pdf.

Rothstein, Richard. 2017. *The Color of Law: A Forgotten History of How Our Government Segregated America*. New York City, NY: Liveright Publishing.

Rothwell, Jonathan, and Douglas S. Massey. 2009. "The Effect of Density Zoning on Racial Segregation in U.S. Urban Areas," *Urban Affairs Review* 44 (6): 779–806.

Schragger, Richard C. 2021. "The Perils of Land Use Deregulation," *University of Pennsylvania Law Review* 170 (1): 125–205.

Schuetz, Jenny, Rachel Meltzer, and Vicki Been. 2009. "31 Flavors of Inclusionary Zoning: Comparing Policies From San Francisco, Washington, DC, and Suburban Boston," *Journal of the American Planning Association* 75 (4): 441–456.

Song, Jaehee. 2021. The Effects of Residential Zoning in U.S. Housing Markets. Job market paper. https://static1.squarespace.com/static/6160e89a75cba2217fc14866/t/61a3f4ea1898562e22cf38d8/1638135020614/Jaehee_Song_JMP_share.pdf.

Trounstine, Jessica. 2018. *Segregation by Design: Local Politics and Inequality in American Cities*. New York City, NY: Cambridge University Press.

Wegmann, Jake, Aabiya Noman Baqai, and Josh Conrad. 2023. "Here Come the Tall Skinny Houses: Assessing Single-Family to Townhouse Redevelopment in Houston, 2007–2020," *Cityscape* 25 (2): 171–202.

White House. 2022. *President Biden Announces New Actions to Ease the Burden of Housing Costs*. Press release. https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/16/president-biden-announces-new-actions-to-ease-the-burden-of-housing-costs/.

———. 2016. *Housing Policy Toolkit*. https://obamawhitehouse.archives.gov/sites/whitehouse.gov/files/images/Housing_Development_Toolkit%20f.2.pdf.

Additional Reading

Babcock, Richard. 1966. *The Zoning Game: Municipal Practices and Policies*. Madison, WI: University of Wisconsin Press.

Kerner, Otto Jr. 1968. *Report of the National Advisory Commission on Civil Disorders*. Washington, DC: Government Printing Office. https://www.ojp.gov/ncjrs/virtual-library/abstracts/national-advisory-commission-civil-disorders-report.

National Commission on Urban Problems. 1969. *Building the American City: Report of the National Commission on Urban Problems to the Congress and to the President of the United States*. Washington, DC: Government Printing Office.

Where Will Accessory Dwelling Units Sprout Up When a State Lets Them Grow? Evidence From California

Nicholas J. Marantz
University of California Irvine, School of Social Ecology

Christopher S. Elmendorf
University of California Davis, School of Law

Youjin B. Kim
University of California Irvine, School of Social Ecology

Abstract

Since 2016, California has adopted several laws to facilitate the development of accessory dwelling units (ADUs), which are secondary units on residential parcels. This article analyzes ADU permitting in the Bay Area and southern California under the newly liberalized legal regime using data collected by the state. The analyses indicate that ADUs represent a substantial share of recent housing permits, that ADUs are typically permitted on parcels with relatively good access to jobs, and that the relationship between a neighborhood's ethnoracial composition and the prevalence of ADU permitting varies by county. These findings provide guidance for state and local governments seeking to understand where ADUs might be permitted following the liberalization of ADU regulation.

Introduction

Housing advocates have long touted accessory dwelling units (ADUs)—secondary units on residential parcels—as a potential tool to address soaring housing costs in coastal metropolitan areas. As compared with denser forms of infill development, ADUs have several potentially appealing characteristics. First, ADUs are frequently invisible from the street; they are in backyards, existing secondary structures, or converted interior spaces, such as attached garages. Thus, as compared with multifamily housing, ADUs may be a more politically palatable way to add much-needed housing supply in single-family neighborhoods of high-cost metropolitan areas. Second, in any given neighborhood, ADUs tend to be more affordable than single-family housing because the

units are relatively small and typically have fewer amenities (e.g., lower ceiling heights, less natural light). Third, ADUs provide an opportunity for multigenerational households to enable family members to age in place.

Although ADUs may be a *relatively* politically palatable form of new development, they have engendered plenty of opposition too. In 1982, California passed its first state law limiting local governments' authority to restrict ADU development, and in 2002 the legislature made cities permit ADUs "ministerially," that is, without subjecting project applications to any discretionary standards or conditions of approval. But, even after the 2002 reforms, many cities still found ways to thwart the state's pro-ADU policy (Brinig and Garnett, 2013). Between 2016 and 2020, the legislature enacted multiple statutes, again strengthening state ADU law, and it appears that the new reforms are finally unlocking ADU development opportunities.

This article analyzes ADU permitting under the newly liberalized California regime to shed light on the prevalence and geography of ADU permitting in the nine-county San Francisco Bay Area and in five southern California counties (Los Angeles, Orange, Riverside, San Bernardino, and Ventura). Collectively, these counties represent 67 percent of the state's population and 82 percent of the parcels receiving ADU permits from 2018 through 2021. The analysis is restricted to parcels zoned for single-family development because these were the parcels that the California Legislature targeted for regulatory relief. As detailed below, we find that ADUs represent a substantial share of recent housing permits, that ADUs are typically permitted on parcels with relatively good access to jobs, and that there are heterogenous relationships between a neighborhood's ethnoracial composition and the prevalence of ADU permitting.

Background

California has a significant housing affordability problem, which ADU development could mitigate. As of January 2023, the median rent in California was roughly 41 percent higher than the national median, and rents in the state's high-cost cities were far higher (Zillow, 2023a). For example, in the Silicon Valley city of Palo Alto, the median rent was 89 percent higher than the national median (Zillow, 2023b). The high cost of housing in California stems largely from supply constraints, including barriers to greater density in existing residential neighborhoods.

Moreover, California faces serious pressures to reduce the need for development at the urban fringe, necessitating policies that can help to produce housing by intensifying residential densities in areas that are already urbanized. The state confronts an increased risk of wildfires at the wildland-urban interface and has adopted ambitious goals to reduce greenhouse gas emissions, in part by cutting per capita vehicle miles traveled (VMT). In addition, as noted above, ADUs provide an opportunity for multigenerational households to enable family members to age in place. ADUs could thus respond to several pressing needs by facilitating more intense development of already-developed places and providing a relatively affordable type of housing. Nevertheless, the same forms of neighborhood opposition that frequently thwart efforts to build townhomes and apartments have also, in the past, limited options for ADUs.

California legislators have long recognized the potential benefits of ADUs and the need to address localized opposition. In 1982, the state adopted a law explicitly authorizing municipalities to allow ADUs and prohibiting municipalities from barring ADUs, with some exceptions.[1] Municipalities, however, could still limit ADU development by imposing cumbersome and unpredictable discretionary review requirements on applications for ADUs.[2] As a result, the legislature revised the relevant statute in 2002 to compel nondiscretionary review processes for ADUs, among other provisions.[3]

Nevertheless, a survey of local regulatory responses found that "most California cities appeared to comply with the state mandate by amending their zoning rules to permit ADUs, but they imbedded many costly regulatory requirements within the 'authorization' that dramatically curtail[ed] the likelihood that ADUs [would] actually be developed" (Brinig and Garnett, 2013: 547). Local constraints included "costly off-street parking and minimum lot size requirements, . . . restrictions on the maximum size of the ADU[,] . . . [and] limits on the ability of owners to lease ADUs" (Brinig and Garnett, 2013: 547).

To address such restrictions, the California Legislature again revised the relevant statute in 2016 and 2017. As described in a companion article:

> The revisions capped the fees local governments could impose, limited the stringency of dimensional standards (such as setback requirements), and established a strict timeline for reviews of applications (Senate Bill [SB] 1069, 2016 Cal. Stat. 4945; Assembly Bill [AB] 2299, 2016 Cal. Stat. 5044; AB 494, 2017 Cal. Stat. 4725; SB 229, 2017 Cal. Stat. 4688). Moreover, these laws limited (and in many cases eliminated) the authority of local governments to impose parking requirements on ADUs. In 2019, the legislature shortened the approval timeline, prohibited municipalities from restricting the right to build ADUs to owner-occupiers, tightened the dimensional standards (e.g., by establishing minimum and maximum square footage requirements for ADUs), and prohibited the imposition of fees on ADUs of less than 750 square feet (SB 13, 2019 Cal. Stat. 5559). [Another 2019 bill entitled homeowners to add both an 800 square foot ADU and a smaller "junior ADU" (AB 68, 2019 Cal. Stat. 655).] The Legislature also barred homeowners associations (HOAs) from imposing any covenant, condition, or restriction (CCR) that either "effectively prohibits or unreasonably restricts the construction or use of an accessory dwelling unit . . . on a lot zoned for single-family residential use" (AB 670, 2019 Cal. Stat. 2515, 2515), and, in 2020, prevented HOAs from restricting the rental of ADUs (AB 3182, 2020 Cal. Stat. 3068). In sum, as of 2020, ADUs should have been allowed as-of-right, provided that they were under 800 square feet, no more than 16 feet tall, and had 4-foot setbacks (Marantz et al., under review).

[1] 1982 Cal. Stat. 5500.

[2] For examples, see *Desmond v. County of Contra Costa*, 25 Cal. Rptr.2d 842 (Ct. App. 1993) (denying ADU permit based on perceived architectural incompatibility); *Harris v. City of Costa Mesa*, 31 Cal. Rptr.2d 1 (Ct. App. 1994) (denying ADU permit based on concerns with height and neighborhood character).

[3] 2002 Cal. Stat. 6847.

This article analyzes data collected by the state to understand the prevalence of ADUs in five southern California counties and the nine-county Bay Area since ADU liberalization. It compares the ADU permit rate across counties, and it analyzes parcel sizes to test whether ADUs tend to be built on larger parcels (where there is more physical space for another structure). It then examines the characteristics of areas where ADUs are being built, including ethnoracial composition, median rent, and jobs accessibility.

Patterns of Accessory Dwelling Unit Permitting in the Bay Area and Southern California

The data on ADU permitting comes from the annual progress reports compiled by the California Department of Housing and Community Development (HCD). Although cities in California have long been required to submit information about their housing plans to HCD, a state law adopted in 2017 significantly enhanced the reporting requirements. Most relevant to this study, cities must annually submit a spreadsheet including new housing units that received an entitlement, a building permit, a certificate of occupancy, or any "other form of readiness that was issued during the reporting year" (HCD, n.d.: 9). A process described in the appendix identified 43,160 parcels in the Bay Area and southern California with at least one ADU permit.

The dataset used for analysis merges the ADU permit data with tract-level data on jobs accessibility, median rent, and ethnoracial characteristics. The latter two measures come from the 2012–2016 American Community Survey (ACS). Both the measure of jobs accessibility, described in detail in the appendix, and the ACS data predate the first year of ADU data (2018), mitigating concerns about endogeneity. This article compares jobs accessibility, median rent, and the size of parcels with and without ADUs. It then analyzes the relationship between ADU permitting and ethnoracial composition by county with tract-level pairwise correlations.

Exhibit 1 reports counts of parcels with at least one ADU permitted from 2018 through 2021 (in the column marked "ADUs") and the results of the U.S. Census Bureau's Building Permits Survey (BPS) for incorporated municipalities in the study area during the same period. The BPS data, which come from surveys of jurisdictions, include 275 of the 280 municipalities in the sample analyzed in this article. The survey instructions direct respondents to report all detached ADUs and some attached ADUs.[4] ADUs are not separately reported in the BPS data, so a detached ADU, for example, would be placed in the "1-unit" structure category along with detached single-family houses.

Given that the BPS count of permits should include a significant (albeit indeterminate) proportion of permitted ADUs, exhibit 1 suggests that ADUs represent about 13 percent of permits in the Bay Area and around 19 percent of permits in the southern California study area. Within both regions, there is significant variation. In the Bay Area, Marin County, located on the other side of the Golden Gate Bridge from San Francisco, has the highest proportion of ADUs. That proportion

[4] Jurisdictions are instructed to report ADUs that are "detached and built on same lot as existing main structure[;] attached and built at the same time the main structure is being constructed[;] attached to main structure via a walkway[;] detached from existing structure but share utilities with main structure[; or] built over an existing detached garage - using the detached garage as the foundation for the ADU." Jurisdictions should not report ADUs that are additions, that require alterations (e.g., a changed roof line in the main structure), or "conversions" (U.S. Census Bureau, 2021).

is driven by the low number of total units permitted from 2018 through 2021 per capita in Marin County (3 units per 1,000 people) as compared with the Bay Area region as a whole (11 units per 1,000 people).[5] In Alameda, Contra Costa, and Santa Clara Counties, all of which have relatively large numbers of total permits, ADUs account for roughly 12 percent to 15 percent of newly permitted units. San Francisco, which had relatively high per capita permitting (15 units per 1,000 people), had a relatively low proportion of ADUs, perhaps because its housing stock predominantly consists of multiunit buildings.

Exhibit 1

New Units Permitted in Incorporated Areas, 2018–21, by County

		Units by Structure Type (Census Bureau)						
	Pop. (2018)	ADUs	1 unit	2 units	3–4 units	5+ units	Census Tot.	ADUs/ Census Tot. (%)
Bay Area	**7,734,987**	**11,575**	**29,830**	**736**	**700**	**56,391**	**87,657**	**13**
Alameda	1,651,760	2,927	6,444	200	363	16,287	23,294	13
Contra Costa	1,143,188	1,143	5,412	132	28	3,615	9,187	12
Marin	262,179	495	418	54	3	204	679	73
Napa	140,340	245	443	4	20	2,433	2,900	8
San Francisco	885,716	840	104	154	102	12,541	12,901	7
San Mateo	770,927	1,899	1,371	38	28	3,619	5,056	38
Santa Clara	1,943,579	3,269	6,757	84	93	14,786	21,720	15
Solano	436,813	257	3,968	4	0	960	4,932	5
Sonoma	500,485	500	4,913	66	63	1,946	6,988	7
Southern California	**18,774,638**	**31,585**	**77,550**	**6,346**	**2,674**	**81,725**	**168,295**	**19**
Los Angeles	10,192,593	26,383	23,623	4,654	669	54,694	83,640	32
Orange	3,186,254	3,032	13,059	738	926	14,310	29,033	10
Riverside	2,397,662	668	23,764	128	491	5,473	29,856	2
San Bernardino	2,150,017	669	14,734	692	448	4,783	20,657	3
Ventura	848,112	833	2,370	134	140	2,465	5,109	16

ADU = accessory dwelling unit.

Notes: The Census Bureau aggregates building permit data for the Bay Area municipalities of Clayton, Hercules, Lafayette, Orinda, and Moraga with unincorporated Contra Costa County. This exhibit omits these jurisdictions and all unincorporated areas.

Sources: ADU data: *California Department of Housing and Community Development (2022);* Building Permit Survey data*: U.S. Census Bureau (2022);* Population data: *State of California, Department of Finance (2021)*

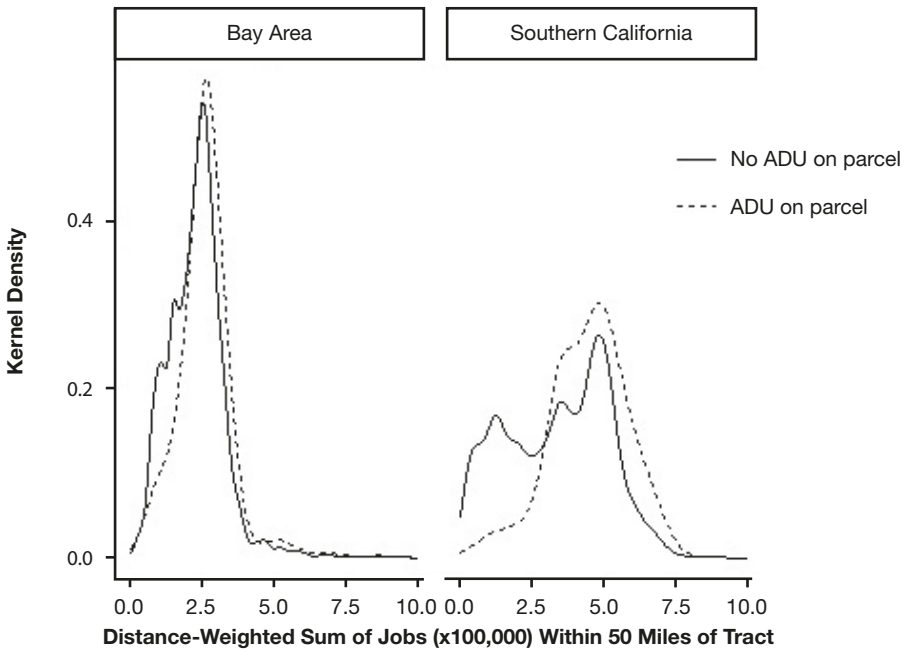
As is the case in the Bay Area, in southern California ADU permitting was higher in the coastal counties (Los Angeles, Orange, and Ventura), where undeveloped, unprotected land is scarcer, and rents are higher than in the inland counties of Riverside and San Bernardino. Within Los Angeles County, the City of Los Angeles accounts for 70 percent of ADU permits (and thus 59 percent of total ADU permits in the southern California study area), even though it accounts for only 40 percent of the population of Los Angeles County and only 21 percent of the southern California study area population.

[5] The denominator for the per capita statistics is measured as of 2018, based on estimates from State of California, Department of Finance (2021).

The data indicate that ADUs in the study areas are typically sited on parcels with good access to jobs and with acreage sizes comparable to other parcels. ADUs generally receive permits in tracts with slightly lower median rents compared to the region as a whole. Exhibit 2 displays the distribution of tract-level jobs accessibility for the 4,797,176 residential parcels in the Bay Area and the southern California study area. The x-axes indicate a measure of jobs accessibility: the distance-weighted sum of jobs within 50 miles of the centroid for the tract in which a parcel is located. This distance-weighted measure, detailed in the appendix, means that closer jobs are more heavily weighted than jobs that are farther away. The y-axis indicates the proportion of parcels at each level of jobs accessibility. The distribution of parcels by jobs accessibility differs substantially between the Bay Area and the more sprawling southern California region, but in both regions, ADUs are more likely to be built on parcels with good jobs accessibility.

Exhibit 2

Distribution of Jobs Accessibility for Residential Parcels by Accessory Dwelling Unit Status



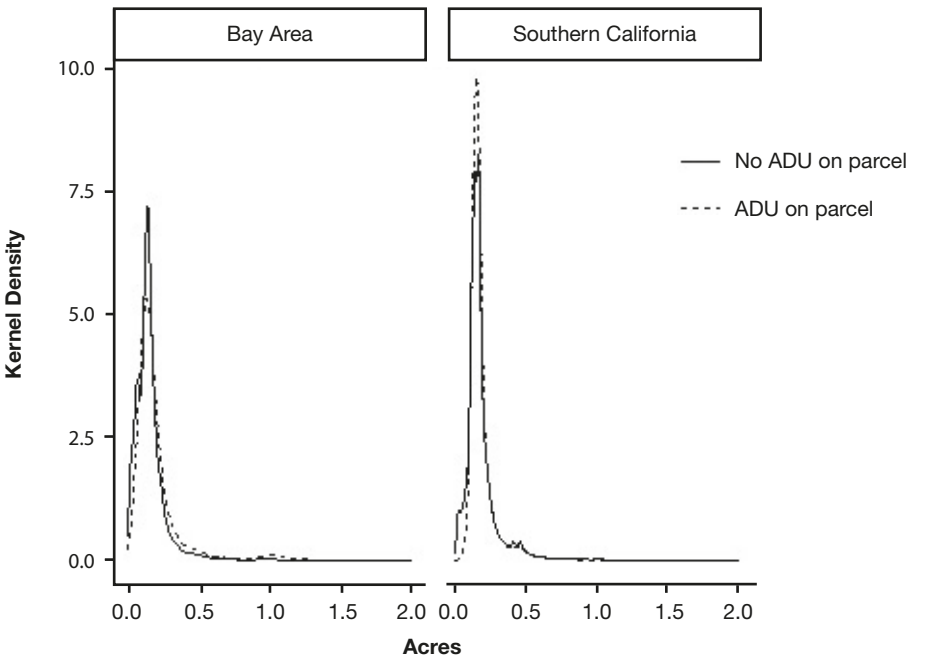
ADU = accessory dwelling unit.
Source: See appendix

Exhibit 3 shows that the size of parcels where ADUs have been permitted generally mirrors that of all other residential parcels, although the smallest residential parcels are relatively unlikely to include an ADU. Exhibit 4 shows that, in both the Bay Area and southern California, ADU permits tend to be issued in census tracts that have relatively low rents, although not the lowest rents. At first glance, this is surprising since the rental or for-sale value of an ADU is obviously higher in places with higher rents. The disamenity value of an ADU to the occupant of a parcel's primary

residence (loss of privacy or yard space) may be greater in markets with higher rents.[6] A separate companion article (Marantz et al., under review), uses a regression model to assess whether different city-, tract-, and parcel-level attributes are related to ADU permitting, finding that the relationship illustrated in exhibit 4 is robust with the inclusion of other variables. Notably, this finding contrasts with earlier research by Chapple et al. (2020), who examine ADU permitting through 2019 and find that most permits were issued in tracts with median household incomes in the top two quartiles statewide. (The findings are inconsistent with those of Chapple et al. even when the analysis is restricted to 2018 and 2019.)

Exhibit 3

Distribution of Residential Parcel Acreage by Accessory Dwelling Unit Status



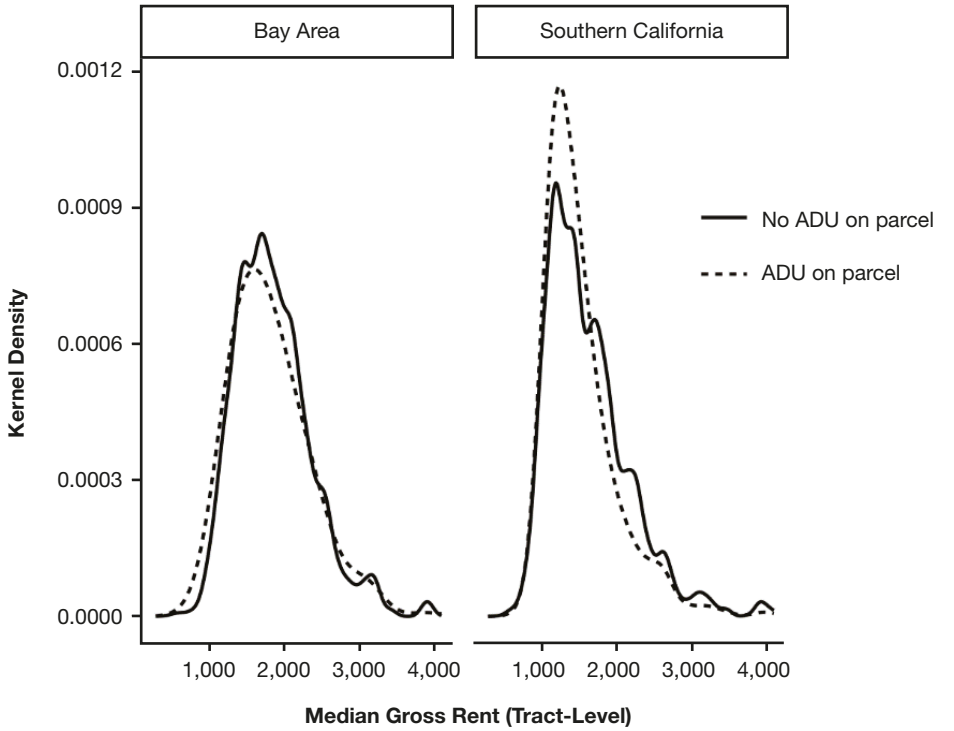
ADU = accessory dwelling unit.

Sources: ADU data: *California Department of Housing and Community Development (2022);* Parcel size data: *Southern California Association of Governments (2021) and Boundary Solutions (2022)*

[6] It is also possible that some owners of single-family homes in high-rent locations are opting not to develop ADUs because they anticipate that their parcels will be rezoned for denser, more valuable forms of development in the future, such as fourplexes or small apartment buildings. In 2021, California passed a law authorizing lot splits and duplexes in lieu of ADUs on most single-family home parcels (Senate Bill 9), and a state policy to affirmatively further fair housing is also putting some pressure on local governments to allow multifamily housing in neighborhoods where it has been excluded in the past (HCD, 2021). Given the longstanding resistance to dense development in single-family home neighborhoods, it would be surprising if homeowner expectations about future multifamily development opportunities accounted for the lack of ADU development in high-rent areas. (The lot-split and duplex bill has generated very little development activity thus far [Garcia and Alameldin, 2023].)

Exhibit 4

Distribution of Tract-Level Median Gross Rent by Accessory Dwelling Unit Status for Residential Parcels



ADU = accessory dwelling unit.

Sources: ADU data: *California Department of Housing and Community Development (2022);* Median rent data: *2012–2016 American Community Survey*

Exhibit 5 presents statistical relationships between the ethnoracial characteristics of neighborhoods (census tracts) and the prevalence of ADU permitting. In most of the counties in the sample, there is a negative correlation between a census tract's proportion of parcels with an ADU and the percentage of the tract's population identifying as Asian. Conversely, tracts that have relatively large populations identifying as Hispanic or Latino tend to have more ADUs, although this relationship is more prevalent in southern California than in the Bay Area. No consistent relationship exists between ADU permitting and Black or White population shares.

Exhibit 5

Tract-Level Pairwise Correlations Between the Proportion of Residents in Ethnoracial Categories and the Proportion of Single-Family Parcels With Accessory Dwelling Unit Permits

	% Asian	% Black or African American	% Hispanic or Latino	% White
Bay Area Counties				
Alameda	– 0.32	0.19		0.20
Contra Costa				
Marin	– 0.46			
Napa	– 0.37			
San Francisco				
San Mateo	– 0.19			
Santa Clara	– 0.16			0.16
Solano		0.43	0.22	– 0.30
Sonoma	– 0.33			
Southern California Counties				
Los Angeles	– 0.08		0.08	
Orange	0.35		0.22	– 0.42
Riverside	– 0.13	– 0.14	0.17	
San Bernardino		– 0.12	0.26	– 0.18
Ventura	– 0.24		0.38	– 0.33

Note: This chart displays only coefficients that are statistically significant at $p < 0.05$.
Sources: ADU data: *California Department of Housing and Community Development (2022);* Ethnoracial characteristics: *2012–2016 American Community Survey*

As noted above, a separate companion article (Marantz et al., under review) uses a regression model to assess whether different city-, tract-, and parcel-level attributes are related to ADU permitting. The attributes are lot size, number of structures on a lot, tract-level median rent, the proportion of vacant land in a tract, the log of city population, the proportion of occupied housing units in a city that are owner-occupied, and HOA density (i.e., the proportion of mortgaged housing units in a city that are covered by an HOA's CCRs). The regression model indicates that larger lot sizes and additional structures on a parcel are associated with increased odds of an ADU permit after controlling for other variables. Those results are sensible. Homeowners may perceive converting an existing structure to be the least expensive option for creating an ADU, or one which minimally impinges on their yard space. (A larger yard naturally means that there is more room to accommodate a new structure.) In addition, city-level HOA density is negatively associated with ADU permitting, even in the years after state law prohibited HOAs from restricting the construction or rental of ADUs.

Conclusion

The above analyses indicate where ADUs are now in greater supply: in coastal counties, on parcels of average size, and in jobs-accessible neighborhoods with relatively low median rents (but not the lowest rents). The relationship between neighborhood ethnoracial composition and ADU permitting varies by region and, within regions, by county. The only relatively consistent relationship is that tracts with more residents identifying as Hispanic or Latino generally have

more ADUs, although even this relationship varies by region and is more prevalent in southern California than in the Bay Area. This analysis demonstrates that state laws liberalizing ADUs can have differential effects across a state, suggesting that such a state intervention may be a more powerful tool in some places than in others. Mandates for local governments to liberalize ADU permitting should be accompanied by data collection requirements, as has been the case in California, so that researchers and policymakers can assess those differential effects.

Appendix A[7]

Accessory Dwelling Unit Data

The data on accessory dwelling unit (ADU) permitting come from the annual progress reports (APRs) compiled by the California Department of Housing and Community Development (HCD). Each city's APR must include the current assessor parcel number (APN) and street address for every reported development project. A city's APR must also report the type of project based on a list that includes ADUs. A single project may appear multiple times in HCD's compiled APR dataset if, for example, the project receives a building permit in one year and a certificate of occupancy in a subsequent year. In addition, HCD does not validate the APR data, and, as a result, the dataset includes some erroneous APNs.

The process for generating an unduplicated count of parcels on which at least one ADU was approved from 2018 through 2021 involves filtering the compiled APR data from HCD to include only ADUs in the study counties; selecting rows that are uniquely identified by jurisdiction, APN, and street address; and merging this dataset with parcel data from the Southern California Association of Governments (SCAG) (2021) and Boundary Solutions (2022), which maintains a proprietary database of digitized parcel boundaries. SCAG parcel data include consistent information on zoning and land use as of 2016, but the Boundary Solutions data (which covers the Bay Area) do not. Thus, the process for the Bay Area data involves the additional step of combining geodata compiled by the Othering and Belonging Institute (Menendian et al., 2020), which categorizes residential zoning as of 2020. The merge rate is 96 percent (i.e., 52,480 of the 54,584 ADU observations from HCD). The final step involves creating a unique ID for each parcel and reducing the dataset to one observation per unique ID, yielding an unduplicated count of 43,160 parcels with at least one ADU permit.

Jobs Accessibility Measure

The measure of jobs accessibility is generated by calculating the distance-weighted sum of jobs within 50 miles of census tract centroids. The distance-weighting is derived using a linear decay function, following Salon (2014: 18), who notes that weighting by inverse distance squared "quickly renders jobs beyond 10 miles to have little effect on the [jobs accessibility] variable," which is problematic in the California context. The census tract and block group distances come from the National Bureau of Economic Research (2014), and the job counts come from the 2016 vintage of the Workplace Area Characteristics dataset from the Longitudinal Employer-Household Dynamics database (U.S. Census Bureau, n.d.).

[7] This appendix draws extensively on Marantz et al. (under review).

Acknowledgments

The authors thank Tom Brinkhuis of the California Department of Housing and Community Development for answering questions about the agency's data on accessory dwelling units; Noah Kazis, Ingrid Ellen, and Betty Wang for helpful comments; and the Pew Charitable Trusts and the Furman Center for Real Estate and Urban Policy for financial support for this project.

Authors

Nicholas J. Marantz is an associate professor of urban planning and public policy at the University of California Irvine, School of Social Ecology. Christopher S. Elmendorf is a Martin Luther King, Jr. Professor of Law at the University of California Davis, School of Law. Youjin B. Kim is a Ph.D. candidate in Urban and Environmental Planning and Policy at the University of California Irvine, School of Social Ecology.

References

Boundary Solutions. 2022. "ParcelAtlas."

Brinig, Margaret F., and Nicole Stelle Garnett. 2013. "A Room of One's Own? Accessory Dwelling Unit Reforms and Local Parochialism," *Urban Lawyer* 45: 519–69.

California Department of Housing and Community Development (HCD). n.d. *Housing Element Annual Progress Report Instructions*. Sacramento, CA. https://perma.cc/F8XV-A3FE.

———. 2022. "Housing Element Annual Progress Report (APR) Data by Jurisdiction and Year." https://data.ca.gov/dataset/housing-element-annual-progress-report-apr-data-by-jurisdiction-and-year.

———. 2021. *Affirmatively Furthering Fair Housing: Guidance for All Public Entities and for Housing Elements*. Sacramento, CA: HCD. https://www.hcd.ca.gov/community-development/affh/docs/affh_document_final_4-27-2021.pdf.

Chapple, Karen, David Garcia, Eric Valchuis, and Julian Tucker. 2020. *Reaching California's ADU Potential: Progress to Date and the Need for ADU Finance*. Berkeley, CA: Terner Center for Housing Innovation & UC Berkeley Center for Community Innovation. https://ternercenter.berkeley.edu/wp-content/uploads/pdfs/Reaching_Californias_ADU_Potential_2020.pdf.

Garcia, David, and Muhammad Alameldin. 2023. "California's HOME Act Turns One: Data and Insights from the First Year of Senate Bill 9." Terner Center for Housing Innovation, UC Berkeley. https://perma.cc/N9LT-GS25.

Marantz, Nicholas J., Christopher S. Elmendorf, and Youjin B. Kim. Under review. *Overseeing Infill: How State Agencies Can More Effectively Monitor Local Land-Use Administration*.

Menendian, Stephen, Samir Gambhir, Karina French, and Arthur Gailes. 2020. *Single-Family Zoning in the San Francisco Bay Area: Characteristics of Exclusionary Communities*. Othering & Belonging Institute. https://github.com/OtheringBelonging/BayAreaZoning.

National Bureau of Economic Research. 2014. "Block Group Distance Database." https://www.nber.org/research/data/block-group-distance-database.

Salon, Deborah. 2014. *Quantifying the Effect of Local Government Actions on VMT*. Institute of Transportation Studies, UC Davis. https://ww2.arb.ca.gov/sites/default/files/classic//research/apr/past/09-343.pdf.

Southern California Association of Governments. 2021. "2016 Land Use Information for Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties." https://gisdata-scag.opendata.arcgis.com/datasets/.

State of California, Department of Finance. 2021. *E-4 Population Estimates for Cities, Counties, and the State, 2011-2020 with 2010 Census Benchmark*. Sacramento, CA. https://dof.ca.gov/forecasting/demographics/estimates/e-4-population-estimates-for-cities-counties-and-the-state-2011-2020-with-2010-census-benchmark-new/.

U.S. Census Bureau. n.d. "Longitudinal Employer-Household Dynamics." https://lehd.ces.census.gov/data/.

———. 2022. "Building Permit Survey." https://www2.census.gov/econ/bps/Place/West%20Region/.

———. 2021. "Form C-404, Report of Building or Zoning Permits Issued for New Privately-Owned Housing Units." OMB No. 0607-0094. Washington, DC: U.S. Census Bureau. https://perma.cc/HP4B-4KVZ.

Zillow. 2023a. "Average Rental Price in California & Market Trends." https://perma.cc/9HMH-VWRV.

———. 2023b. "Average Rental Price in Palo Alto, CA & Market Trends." https://perma.cc/L33W-FAPV.

California's Strengthened Housing Element Law: Early Evidence on Higher Housing Targets and Rezoning

Paavo Monkkonen
Michael Manville
Michael Lens
Aaron Barrall
Olivia Arena
University of California, Los Angeles

Abstract

This article examines California's strengthened housing planning system as an example of land use reform impacts and intergovernmental conflict around housing policy. For the first time in its 50-year history, the state's plan mandate set local government housing targets for the 2021-through-2029 planning period higher than many municipalities' existing zoned capacity for new housing. Using administrative and census data, we describe changes in housing targets and changes in the housing plans cities have made in response. We analyze rezoning commitments in those plans, focusing on the 209 municipalities in southern California, especially the 93 housing plans deemed compliant by the state as of February 10, 2023. These municipalities, which represent less than one-third of the state's population, have already committed to over 10 times the amount of rezoning than in the previous planning period (in 2014). Using regressions with different measures of targets and rezonings, we find that larger increases in a city's housing target are associated with more rezoning and that increases in targets that require land zoned for multifamily housing have a stronger association. This assessment is important not only for the state's 40 million residents but also for national discussions about state-level intervention in local housing planning. Existing evidence suggests that state affordable housing appeals systems have been more effective than plan mandates, yet mandates have not yet been aggressively implemented until now. We also assess the actions by presumably exclusionary cities: those with more expensive housing, non-Hispanic White residents, homeowners, and elderly residents than the rest of the region. The results confirm that these cities had received relatively low targets previously but do not differ in their rates of rezoning.

Introduction

Federal and state governments in the United States have a long-standing interest in compelling jurisdictions with expensive housing, which tend to be more affluent and more homogenous than their regions, to allow more housing production. This interest arises from a desire to increase affordability, advance racial integration, and foster equality of opportunity. Specific approaches to this problem have varied across the country, but to date the results have been mixed at best.

On paper, local governments are creatures of the state and subject to the higher government's will. In practice, higher levels of government find it exceedingly difficult to change the behavior of local ones, at least with respect to land use. State laws designed to change local behavior are sometimes written poorly and other times written well but watered down—all state representatives are also local residents—so states rarely bring the full force of their authority to bear on localities. Even well-designed and strong laws, moreover, are often unevenly enforced. Local governments that fail to comply with state housing laws may face few consequences, and often it is the same affluent communities these laws target that are also best able to evade or circumvent them (Zheng et al., 2021). The result is initiatives undertaken with great fanfare that deliver little of substance. Massachusetts' anti-snob zoning ordinance, for example, was passed in 1969 with the intent of eventually having every city and town in the state offer 10 percent of its housing stock as affordable. More than 40 years later, only 39 of the state's 351 municipalities had reached that benchmark (Fisher and Marantz, 2015).

This article examines California's recent attempts to override local opposition. Specifically, we study reforms passed in 2017 and 2018 that were designed to give more teeth to the state's ineffective and complicated "fair share" housing planning system. Under California's long-standing existing system (described in detail below), local governments were required to plan for projected housing growth for households at a range of income levels. In theory, the system would ensure that every jurisdiction contributed enough housing (including affordable housing) to meet regional needs. In practice, the system was almost entirely ineffective.

The reforms we study identified and sought to correct three fundamental flaws in the existing system: a low total target for statewide housing growth, an inequitable and often unrealistic allocation of that total across local jurisdictions, and a plan update process that all but invited strategic behavior by allowing local governments to submit highly unrealistic plans for growth. As we will show, the first two flaws facilitated the third. The process that held down the total number of housing for which jurisdictions needed to plan directly enabled the strategic behavior in that local planning. Reforming the system to generate a higher initial number made evasion more difficult.

We wish to emphasize that point. Targets for *total* housing production are rarely part of state housing policies (Elmendorf, 2019). The two most widely known fair share policies—in New Jersey and Massachusetts—focus on subsidized units. California, by contrast, has long required that its cities plan for a total amount of housing, which includes market-rate and subsidized units; before reform, however, those targets were low. In the planning cycle that immediately preceded the 2017 reforms, for example, the statewide target for housing growth—despite occurring during a period of massive economic expansion—was 1 million units, many of which were allocated to

places with low demand for housing (Monkkonen and Friedman, 2019). Many affluent cities near job centers received low housing targets, whereas low-demand cities in outlying parts of metropolitan areas were expected to plan for thousands of units.

After the reform, the total target jumped to 2.5 million housing units, and compared to previous planning cycles, regional governments allocated larger shares to affluent jurisdictions. Those higher targets, combined with increased state scrutiny of how cities plan to meet them and new consequences for failing to do so, have changed housing planning in the nation's largest and least affordable state.

This article has two empirical components, both of which examine cities in southern California. First, we describe the recently adopted and certified housing plans under the reformed system. Our focus here is on whether the new system prompted more cities to rezone. Some jurisdictions could demonstrate to the state that their existing zoning provided sufficient capacity to meet their new housing targets. Cities that could not demonstrate as much would need to rezone land to be in compliance. If localities do not have to rezone, the planning mandate will continue to have no impact on housing production. To assess the relationship between the reformed housing targets and rezoning, we create an accurate measure of the change in housing targets standardized across cities.

Our second empirical exercise is to test the idea that more exclusionary cities were able, even in the face of those reforms, to evade the state mandates and maintain their regulatory barriers to housing (that is, avoid rezoning). We do so by measuring the association between rezoning and a series of characteristics commonly associated with regulatory exclusion: high incomes, high housing values, and larger shares of the population that are elderly and White. Doing so allows us to assess whether those cities are systematically engaging in less rezoning.

Because only half of the cities in southern California have had their plans certified (in many cases because the State found them inadequate), we also test whether these places differ on average from cities without certified plans.

In the next sections of the article, we review literature on the effectiveness of plan mandates, describe California's planning system, and summarize recent changes to it. The article then describes the challenges of assessing impact through a review of housing plans, how we dealt with these challenges, and what we can say about the 2021-through-2029 housing plans. We then turn to our empirical analysis and conclude.

Principal-Agent Problems and California's Housing Element System

This article contributes to the broad literature on housing affordability and exclusionary local jurisdictions and also to the smaller literature on state housing laws and plan mandates—state-level efforts to direct local planning actions. Plan mandates can address housing permitting, but they may also be focused on issues such as wetlands protection, transportation behavior, or other areas in which state officials believe that local incentives might be at odds with the state's broader

interests. In this case, it may be in an individual city's interest to block housing production, but an absence of housing undermines the state economy.

Some state housing laws take the form of ad hoc actions: California and Massachusetts, for example, both require local governments to offer regulatory relief for developments that include affordable housing. Other laws are more expansive and baked into the local planning process. At least 15 U.S. states require local governments to adopt a comprehensive plan to govern land use development (OECD, 2017). Some states—such as California, Florida, Oregon, and Washington—require local municipalities to plan for the development of new market-rate and subsidized housing. Expectations and requirements for plan content vary dramatically, as does how state agencies supervise local planning.

The research on the efficacy and impact of state planning mandates is mixed. Decades into their existence, the affordable housing laws in Massachusetts and California have produced thousands of units.[1] On the other hand, in most localities in both states, developers have never actually used those laws; the affordable units created by those statutes are concentrated in a handful of places. Arguments about comprehensive planning take a similar form: some scholars argue that comprehensive planning mandates improve the quality of local planning and the management of urban development generally (Burby et al., 1993; Jun, 2017), whereas others contend that such mandates have little practical effect for most municipalities (Bunnell and Jepson, 2011; Deyle, Chapin, and Baker, 2008; Yin and Sun, 2007).

More relevant for our purposes are studies that examine how well plan mandates are implemented. In a review, Burby et al. (1993) point to the three elements that lead to effective plan mandate implementation: a strong commitment by the state, clarity in monitoring and enforcement bureaucracy, and incentives to participate and enforcement actions for failing to comply.

Those criteria hint at the situation's broader contours. Any attempt by a state to compel local action faces a principal-agent problem. A state wants a locality to do something, but in many cases—especially in housing policy—both that outcome and the locality's effort are hard to observe. The outcome is hard to observe because the state cannot *mandate* housing production. Housing units are easy to count, but the biggest determinant of housing production, all things being equal, is demand, which is something localities have little control over. What the state (the principal) wants, then, is for a locality (the agent) to make it easier for developers to build housing *if* demand exists. A local government's conduciveness to housing production, however, is much harder to measure than housing production itself. Even if a state prohibits particular local restrictions (e.g., it says no localities can ban apartments), states have a hard time observing all the ways that local governments regulate development. The diverging priorities of the state and its localities make it difficult for states to measure progress toward housing production and fair housing goals and create incentives for localities to obfuscate that progress.

In theory, a principal-agent problem can be mitigated if the principal clearly defines the desired outcome and aligns accurate measures of effort with guaranteed consequences. Conversely,

[1] Assessing direct connections to housing production is hard for plan mandate approaches. See Marantz and Zheng (2020) for an example of comparative research on affordable housing appeals systems.

principal-agent problems can be exacerbated if effort is not accurately measured or if low levels of effort are not penalized, which, as we will show, California did for decades. Prior to reform, the statewide housing mandate process conflated low effort with low demand and thereby rewarded low levels of effort.

How Does California's Housing Element Process Work?

The state-level housing planning framework in California, called the Regional Housing Needs Assessment or the Regional Housing Needs Allocation (shortened either way to RHNA), consists of three planning exercises. In the first exercise, the state, in cooperation with regional councils of government,[2] determines regional housing needs on the basis of projections of household growth. Those needs are divided into housing that is affordable to households of different incomes, including low, moderate, and above-moderate income.[3]

In the second exercise, each regional government then allocates the regional housing targets to its constituent local governments (Cal. Gov. Code S 65584.05). The third exercise involves each local government, in turn, incorporating those targets into the housing element of its general plan. All California local governments must have a general plan, which can be thought of as a blueprint for a community's vision of its growth, divided into seven or more elements—including a housing element (Cal. Gov. Code S 65580 et seq.). After the local government receives its housing target, it must update the housing element of its general plan and demonstrate in that element that the city can accommodate its targeted number of units.

The housing element must demonstrate to the state's department of housing and community development (HCD) that the jurisdiction has the capacity, within its existing zoning, to not just meet but exceed its targets (Elemendorf et al., 2020).[4] Jurisdictions must identify specific parcels zoned as residential on which new housing could be built. To satisfy the requirements for low-income housing, parcels must have certain size and permitted density characteristics, depending on the type of city. For example, in metropolitan areas, parcels must be larger than one-half acre and zoned for housing at 30 dwelling units per acre to satisfy the capacity for low-income housing.

A hypothetical example might make the RHNA process more concrete. The first exercise might determine that the San Francisco Bay Area needs room for 300,000 housing units, the second might involve the Bay Area's regional government assigning 10,000 of those units to the City of Oakland, and the third might involve Oakland planners demonstrating that their city's existing zoning can easily accommodate those 10,000 additional units. That demonstration would typically involve identifying sites in the city that could hold more units (vacant lots, parcels ripe for redevelopment, and so on).

---

[2] California's councils of government take various forms, as some are also Metropolitan Planning Organizations. Eight councils of government represent more than 10 jurisdictions, and the largest three councils of government represent 197, 101, and 29 jurisdictions, respectively.

[3] In the recent RHNA process, roughly 40 percent of housing needs are for low-income households. Affluent cities get a larger share of low-income housing as a target.

[4] In addition, the housing element must contain other required chapters in which local governments analyze housing needs, identify potential constraints to housing production, and develop programs to address those needs and constraints.

If a city's existing zoning code lacks sufficient capacity for the additional housing units the regional plan has allocated to it, however, the government must commit to rezoning land to create space for the new units. The government in this case must list sites that will be rezoned within 1 to 3 years, although because the housing element is part of the general plan, the densities reported in sites' inventories are effectively changes to municipal rules. For the majority of local governments, the RHNA process repeats every 8 years, and the housing targets are for production during that period.

The Effectiveness of California's State Housing Planning

Historically, the process described above has not worked. Although the state tried to strengthen regulation over time, the RHNA process consistently failed to encourage housing production (Baer, 2008). A comprehensive study from 2005 presented strong evidence that the process did not matter: municipalities in compliance with RHNA were no more likely to produce new housing than noncompliant cities (Lewis, 2005).[5] Importantly, the RHNA process has also not noticeably or measurably reduced exclusionary land use regulation in California cities. Such a reduction is the primary mechanism through which RHNA would help increase production of both market-rate and subsidized housing. As we will describe, unless cities change their zoning or housing project review processes as a result of the housing element law, its impact will be minimal.

Three deficiencies have dulled RHNA's impact; each exacerbates the state-local principal-agent problem.

First, the planning exercises that determined housing needs were flawed at multiple stages. The state's process for producing top-line regional numbers systematically underestimated housing need by relying primarily on projected population growth and ignoring existing conditions that might indicate unmet housing demand, such as overcrowding, high rent burdens, and job growth. The state also treated increasing household sizes as an indicator of decreasing housing need when, in fact, the opposite was likely true: high housing prices, resulting from scarcity, were creating higher occupancy in the state's housing units.

Once regional housing needs were established, moreover, the process for allocating them across jurisdictions rewarded rather than penalized efforts to block housing construction. The regional governments (which are composed of, and heavily influenced by, local governments) made allocations based on projections of future growth. But future growth was estimated only by referring to past growth, not by any metric of demand, such as price levels or appreciation (Monkkonen, Manville, and Friedman, 2019). That approach implicitly rewarded expensive cities that had successfully used land use regulation to stop new construction. Those cities, with low past growth but high present demand, should have been a prime target for RHNA allocations. Instead, RHNA offered them an escape valve by virtue of the very behavior it ostensibly sought to curb. Whiter and more expensive jurisdictions received lower housing allocations (Bromfield and Moore, 2017), and jurisdictions with more vacant land (a sign of lower demand) got higher allocations. Low effort was rewarded with lower expectations (Monkkonen and Friedman, 2019; Ramsey-Musolf, 2020; Zheng et al., 2021).

[5] Other studies offer a more optimistic assessment but are based on small, non-random samples and find what are likely to be spurious correlations (Ramsey-Musolf, 2016, 2018).

Again, an example might help illustrate the problem. In the fifth RHNA cycle, Beverly Hills, an affluent municipality of approximately 30,000 people in close proximity to the region's major job centers, received a housing target of just three new units. By contrast, the city of Coachella, a lower-income municipality of approximately 40,000 people located hours into the desert (about as far from the region's job centers as possible), received a housing target of 6,771 new units.

The RHNA process's second flaw was that local jurisdictions, once they received their allocations, used faulty and perhaps disingenuous site selection processes to demonstrate the capacity to accommodate them. Recall that a city that wishes to avoid rezoning had to show that it had either ample vacant land or many sites that were likely to be redeveloped. More expensive cities tend to have little vacant land, so they often complied with RHNA by submitting inventories of sites they said were likely to be redeveloped. Many of those inventories strained credulity. Cities offered up sites that held recently built commercial uses, extremely steep slopes, and, on one occasion, a city hall (Collins, 2022). Whether those submissions were errors or lies is debatable, but the overall result was that sites listed as likely to hold new housing almost never, in practice, ended up holding new housing. One study found that only 10 percent of the sites listed in the Bay Area's fifth-cycle housing elements as likely to be redeveloped were, in fact, developed between 2015 and 2022. Indeed, most housing constructed in California cities during the cycle was built on sites *not* listed in the housing element—a testament to how inaccurate the planning process has been (Kapur et al., 2021).

The third flaw in RHNA was that enforcement and consequences were weak. In principle (again), state oversight should stop cities from submitting housing elements with sites that are unlikely to be developed. Effective enforcement, however, requires considerable local knowledge, and the state agency responsible for reviewing housing elements and site inventories had been inadequately staffed, making state oversight weak.

The inefficacy of the RHNA process was not by design. The problem, rather, was that RHNA was designed in a different era. When the RHNA system began, almost every city in California had substantial amounts of vacant land, which made growth politics less explosive and also made site selection more transparent and easier to verify.

Today, however, vacant land is less evenly distributed and is a sign of low demand. As such, a city with a lot of vacant land can comply with its RHNA sites requirement, regardless of whether it wants or is likely to get more housing. It can do so by pointing to its vacant land as capacity for housing development. A higher-demand city with little vacant land, though, faces two paths toward compliance. First, it can rezone its land for more intensive development. Rezoning ensures compliance but also invites new housing development. If the city wishes to comply but *avoid* new housing development, it must take a second option: argue (honestly or not) that it has enough existing sites ripe for redevelopment to meet its allocation. Because many high-demand cities would prefer to avoid development, they take the second option and behave strategically.

Two factors have enabled this strategic behavior: lax state oversight and a low total target. The latter is easier to fix than the former. Oversight is labor intensive, and predictions of future development are intrinsically debatable. A big target, in contrast, has self-enforcing properties. Each city has

only so many available sites that are likely to redevelop and only so many more that can plausibly be labeled as such (even in bad faith). As the target rises, cities that are built out according to their own zoning will, as a matter of math, be forced to rezone.

Reforms Affecting the Current Planning Period

Laws passed in 2017 and 2018 changed California's housing planning system in at least four substantial ways: the size of regional housing targets, the allocation of those targets to local jurisdictions, the requirements placed on local governments to demonstrate their ability to accommodate those targets, and the scrutiny with which the state agency was to review local plans. We briefly describe each law.

First, Senate Bill 828 (2018) led to higher regional targets for housing production. This bill also moved the projection process away from its sole reliance on projected household growth (Elmendorf et al., 2020) and required government demographers to also consider existing housing needs.[6] In high-priced areas, the impact of this change was significant: in the two southern California regions, overall regional housing targets nearly tripled.

Second, Assembly Bill 1771 (2018) reformed the way regional governments allocate regional housing targets to their constituent jurisdictions. Regional governments were previously allowed to develop their own methodology for allocating housing targets to local governments, with little oversight. AB 1771 requires regional governments to allocate the regional target to cities and counties in a way that advances specified objectives, such as increasing housing supply; increasing the mix of housing types, tenure, and affordability; and doing so in an equitable manner. Regional councils of government interpreted those instructions differently, but most used a combination of proximity to employment, transit access, and some consideration of equity (for example, average income) in allocating targets to local governments. The result was that municipalities that had previously received housing targets of a handful or a few hundred units had targets of several thousand units.[7] To return to previous examples, Beverly Hills' target for the 2021-through-2029 planning period was 3,104 units, an increase of roughly 1000 percent. The city of Coachella's target was 7,886, still much larger than that of Beverly Hills but an increase of 115 percent.

Third, Assembly Bill 1397 (2017) increased the level of evidence, analysis, and infrastructure necessary for a local government to justify designating a parcel as a site for future housing production in its housing plan. As discussed earlier, jurisdictions had been allowed to include housing sites on the basis of a "potential for redevelopment," with no evidence. In the current planning period, jurisdictions are required to show that their sites have "realistic" and near-term feasibility for redevelopment on the basis of past experiences with conversion of similar uses, a given use's current market demand, and existing leases. Jurisdictions meeting more than one-half of their lower-income housing targets on non-vacant sites were required to make evidence-based findings that existing uses were "likely to be discontinued" during the planning period. Jurisdictions had to assess infrastructure on a site-by-site basis, and all sites needed to be served by

[6] The bill left some openness to specific measures of existing housing needs but listed overcrowding and cost burden as factors. For details, see https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB828.

[7] Roughly 10 percent of the jurisdictions in southern California got lower targets in 2021 than in 2014.

suitable utilities or be included in a program dedicated to expanding infrastructure service. Lower-income sites were generally limited to parcels with sizes between 0.5 and 10 acres to match the size of actual projects.

In addition, SB 166 (2017) required that, as on-the-ground conditions change, jurisdictions maintain adequate capacity to meet remaining housing targets for each income level throughout the cycle. For example, if a site identified for lower-income housing production is developed for above-moderate units, a jurisdiction must either already have additional lower-income capacity identified or find a new site with proper zoning within 180 days. In effect, that necessitated that jurisdictions provide more capacity than their baseline targets to avoid rezoning multiple times throughout the planning period.

Finally, the reforms also gave HCD greater oversight authority. HCD gained the power to issue standards, protocols, and binding requirements on local governments to collect, report, and analyze data on how, for example, cities determine a site's development potential (Elmendorf et al., 2020). That reform is important because it reduces the information asymmetry between the principal and the agent and makes the job of state reviewers achievable. For example, one practical change is that cities must now submit an Excel form with detailed information on the sites they identify as likely to hold new housing and sites designated for rezoning. Previously, cities submitted that information in inconsistent and hard-to-use formats.

Did the combination of reforms work? If they did, one would expect to see that local government housing plans proposed rezoning land to allow more housing and also a relationship between the increase in municipalities' housing targets and their rezoning activity.

Research Design and Data

Our analysis has two goals: accurately describe the plans adopted under the new rules and determine if cities that received larger new housing targets proposed more rezoning. In the latter goal, our empirical approach emphasizes municipalities in southern California because the state staggers the timeline of the housing element process such that jurisdictions in northern California start their update process a year after those in southern California. Southern California, as a result, offers a large number of cities for whom the state has made determinations; northern California, at the time of this writing, does not.

We start by defining some terms. The state gave each city a number of housing units to plan for in 2014 and 2021. To meet that target, cities must show the state their "total capacity" for new housing. This total consists of "existing capacity" (the number of units that could be built on vacant and underdeveloped sites under current zoning) and, potentially, "rezoned capacity" (the amount of housing allowed as a result of rezoning).

Our main outcome variable is rezoned capacity—essentially, the number of units the city commits to through rezoning.[8] Analyzing this metric is not the only way one could assess the impact of

[8] Not only does listing sites for rezoning represent a commitment to changing the city's zoning ordinance but the density listed in the housing element can be the basis for entitlement applications by developers from the moment the housing element is adopted. For more on this topic, see Elmendorf et al. (2021a).

RHNA reforms. An alternative, for example, would be to calculate the capacity for growth relative to housing targets. The problem with this approach is that it includes existing capacity in the form of housing capacity from vacant or underdeveloped parcels. Such existing capacity, as we have noted, has traditionally been an unreliable guide to development and, more importantly, does not indicate a change in a jurisdiction's total potential stock of housing. The total potential stock only changes as a result of rezoning land to allow residential use or to allow more density.

For that reason, our approach is preferable; it examines how often cities were able to rely on existing capacity (for example, to rezone as little as possible in spite of new laws) and how often reforms forced them to change their land use plans. The absolute number of units rezoned in a municipality depends, in part, on its size, so we create a standardized dependent variable. We consider both the share of a city's total capacity that will come from rezonings and the share of a city's total 2021 housing target.

The treatment variable of interest, therefore, is a measure of policy change: the ratio of a city's 2021 target to its 2014 target. The policy mechanism we are hypothesizing, moreover, is rooted in a change in the total target, not in the level of the target or its size relative to some static indicator, such as the existing housing stock. A city assigned 1,000 more units in the reform cycle than it had been assigned in the previous cycle probably faces pressure to rezone. A city assigned 1,000 units may or may not face such pressure. For that reason, our analysis focuses on the increase in targets rather than the targets themselves.

We run two sets of models to test the hypotheses about the impact of the planning reforms and the role of city characteristics. The first set is composed of logistic regression models, which test whether a city rezoned at all, and the second uses ordinary least squares models to assess how much cities rezoned, both as a function of their relative increase in housing targets and as city characteristics, such as population size, median home value, share White, share older than 65 years old, and share homeowners. Our underlying theory is that local governments differ in both the level of land use regulation they have and the level of political pressure they face to resist changing their existing land use patterns. On the basis of the extant literature on opposition to new housing, we hypothesize that jurisdictions where more residents are older, White, higher income, and more likely to be homeowners will be less likely to rezone in response to higher housing targets (Einstein, Glick, and Palmer, 2019).

Data on Housing Targets, Plans, and City Characteristics

This study relies on census and administrative data for cities in southern California.[9] Housing targets are available on regional government websites,[10] and data on local governments' plans are

[9] County governments are responsible for developing a housing element for their unincorporated lands, but we exclude them from this study because of their distinct political organization and land pressures compared to city governments. Also excluded are small municipalities outside metropolitan statistical areas because the housing development pressures they face are substantially different from those in metropolitan areas.

[10] The Southern California Association of Governments (SCAG) website is https://scag.ca.gov/rhna, and the San Diego Association of Governments (SANDAG) website is https://www.sandag.org/projects-and-programs/regional-initiatives/housing-and-land-use/regional-housing-needs-assessment. The current planning period for the 197 jurisdictions in the six-county SCAG is 2021 through 2029. The 19 jurisdictions in SANDAG initiated their process 6 months before the rest of Southern California.

taken from the plans themselves. We triangulate three sources of data on housing element sites: the plans on local government websites, the electronic sites' inventory forms that cities are required to submit to the California Department of Housing and Community Development (HCD), and a new Department of General Services/HCD website that uses data from electronic sites' forms to map housing element sites.[11]

We obtained Excel forms directly from the California HCD. They consist of two tables: one that lists parcels on which housing could be developed today, both because they are zoned residential and are vacant or underused, and one that lists parcels that the city has committed to rezoning. In both tables, the local government records information about the parcels, including their size, density regulations, and estimates of the number of units of housing they would hold if developed. We sum these unit estimates for both tables.

We note that our measure of rezoned capacity is imperfect, with the potential for both simultaneously overestimating and underestimating the total amount of new capacity a city creates in its housing element. The overestimates occur because HCD considers all sites with use or density changes to be "rezoned," regardless of their capacity before zoning changes. That means HCD would consider a site zoned for 7 units rezoned to accommodate 15 units to be 15 rezoning units. Jurisdictions are not required to report previous capacity of sites, so we assume that all units on rezoned sites are rezoned capacity, just as HCD does. Fortunately for accuracy's sake, a scan of rezoned sites in cities that report on previous uses to the state reveals that most rezoned sites were previously non-residential uses. Thus, most of the rezoned capacity is new.

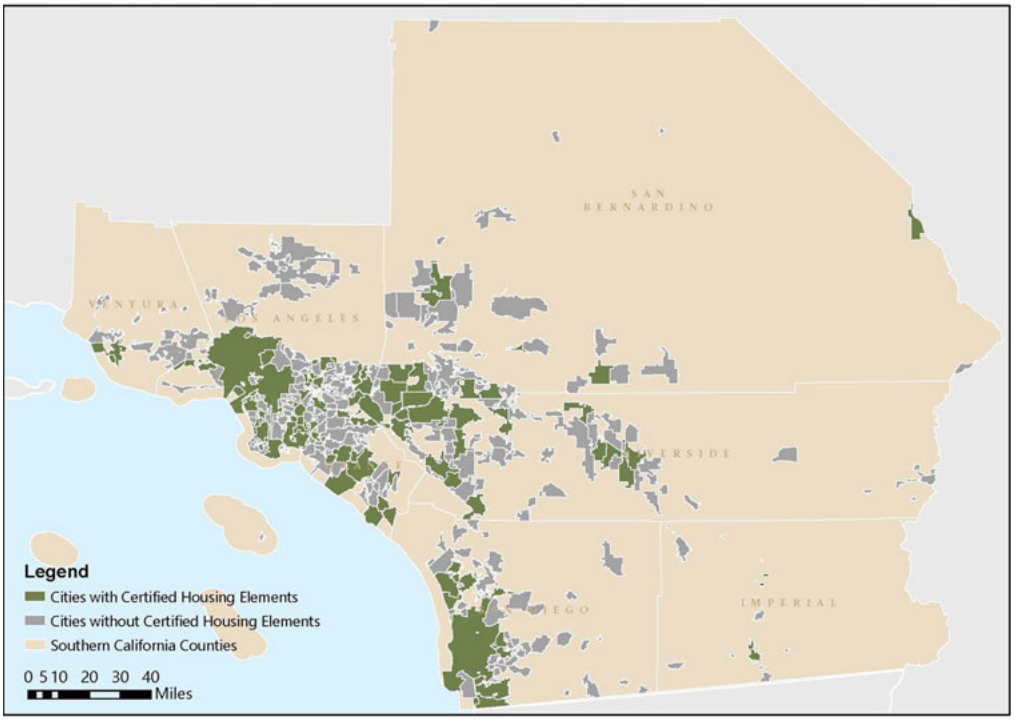
On the other hand, HCD's information underestimates the amount of capacity created through rezoning because it only includes sites listed in the inventory, even if a city proposes zoning changes beyond these properties. Sites' inventories represent the properties most likely to develop, but zoning changes often apply to many more properties than are listed. In addition, site capacities are typically not estimated at their maximum allowed; they are adjusted downward to match historical development trends. Finally, cities may implement other zoning reforms (e.g., removal of parking standards) that functionally result in more residential potential but are not required to be quantified on a site-by-site basis to HCD.

With these limitations in mind, we use the rezoned site capacity that cities reported to HCD as an effective proxy for estimating the magnitude of zoning changes across the state. Exhibit 1 shows the location of our sample of 93 municipalities with compliant housing elements as of February 10, 2023, on a map of southern California.

[11] The website is here: https://experience.arcgis.com/experience/670e112e04ae415e9755f2d65fded76c/. Where possible, we ensure data quality by checking all three sources.

Exhibit 1

Southern California Cities with Certified Housing Elements as of February 10, 2022



Source: Map created by Chanaporn Tohsuwanwanich with data from authors

Results

This section first describes the new housing targets faced by local governments statewide. The discussion then shifts to southern California and examines the challenge local governments faced in preparing compliant housing plans and the differences between local governments that had a compliant housing element by February 10, 2023 (our sample of municipalities) and those that did not. Finally, we present an overall description of the scale of local rezoning action, assess differences in municipalities' plans to meet housing targets, and test hypotheses predicting more or less rezoning based on higher targets and characteristics of cities.

How Large Are the New Housing Targets?

The statewide housing target of roughly 2.5 million units for the sixth-cycle planning period[12] is 2.5 times larger than that for the 2014-through-2021 fifth cycle (about 1 million units). This comparison, moreover, arguably underestimates the difference between the two cycles because the planning system allocated units in the sixth cycle to cities in a very different manner. In the fifth

[12] The dates of the 8-year planning period differ by region to stagger the review work of the state agency. For most southern California jurisdictions, the sixth-cycle period is 2021 through 2029 and the fifth cycle was 2014 through 2021. San Diego County's period is 2020 through 2028, and the Bay Area Association of Governments is 2023 through 2031.

cycle, most cities in southern California got targets based on their estimation of growth over the next 8 years. Many of those million units required no action by local governments or reflected vacant land in far-flung locations less likely to be redeveloped. In the sixth cycle, by contrast, more of the 2.5 million units targeted may require meaningful action because the targeted cities often are built out according to their zoning. Indeed, the state gave many local governments targets that far exceeded cities' stated capacity for new housing from 8 years earlier.

Exhibit 2 shows how big a challenge the new housing targets represent. This exhibit is not restricted to southern California and uses data from the more than 400 municipalities that make up the state's large urban regions. Whereas the median city's target (like the state's) grew by 2.5 times; for the city at the 75th percentile, the target grew by more than five times.

Exhibit 2

Sixth-Cycle Housing Targets in Context, Municipalities in Eight Major California Regions

Variables	25th Percentile	Median	75th Percentile
Ratio of sixth-cycle target to fifth-cycle target	1.42	2.58	5.09
Ratio of sixth-cycle target to fifth-cycle total capacity	0.57	1.22	2.48
Ratio of sixth-cycle target to 2021 housing units	0.09	0.15	0.22

Notes: N = 408. Planning periods differ across regions; they are staggered so the state agency does not have to review hundreds of plans at the same time.
Source: Nine regional government websites

On average, those targets were also larger than cities' stated capacity for new housing in 2014, indicating that the average city cannot rely on its preexisting capacity. That statement was not true for all cities, however; the second row shows that well over 25 percent of municipalities received *lower* targets than their stated capacity in 2014. Nonetheless, many cities received substantially higher targets than their capacity, as reflected in the 75th-percentile city, which received a target about 2.5 times its 2014 capacity.

Another way to illustrate the changes is to present them as a share of existing housing stock. The median jurisdiction received a housing target equivalent to 15 percent of its existing housing units, and one-fourth received an allocation that was equivalent to 22 percent. For context, California consistently built more than 250,000 units per year in the 1960s and 1970s, equivalent to adding as much as 30 percent or more of its stock over an 8-year period. In recent years, California has been adding slightly more than 100,000 units per year; that rate of production in an 8-year period represents only 6 percent of its stock.[13]

What Kinds of Cities Received Larger Targets?

We now turn to the 210 municipalities in Southern California. Exhibit 3 presents the correlations between select city characteristics and measures of the 2021 housing targets and the increase in targets compared with 2014. Housing targets in 2021, relative to existing stock, were higher for larger municipalities and in places with lower home values and lower shares of White and older residents. All of those findings are consistent with the idea that places presumably resistant to growth continue to successfully game the system and receive relatively lower targets.

[13] For data on housing production in California, see https://statewide-housing-plan-cahcd.hub.arcgis.com/.

Exhibit 3

Size of Housing Targets According to Select Municipal Characteristics (205 municipalities)

Variable	2021 Target/ Housing Stock	2021 Target/ 2014 Target (log)	2021 Low-Income Target/2014 Low-Income Target (log)
Population (log)	0.29	– 0.01	– 0.01
Housing Density (log)	– 0.02	0.34	0.35
Median Home Value (log)	– 0.30	0.38	0.47
Renters (%)	0.09	0.04	– 0.01
White population (%)	– 0.44	0.12	0.17
Black population (%)	0.13	– 0.03	– 0.05
Asian population (%)	0.16	0.25	0.28
Hispanic population (%)	0.31	– 0.25	– 0.32
Population older than 65 (%)	– 0.25	0.25	0.26

Source: U.S. Census Bureau, 2015

On the other hand, exhibit 3 also shows that the increase in housing targets was larger in places with high home values and with more White residents and residents older than 65 years old. In addition, higher-density municipalities and those with more Asian residents saw larger increases. When calculating increases in targets for low-income housing, correlations are in the same direction but slightly higher. Put differently, traditionally exclusionary municipalities continue to have relatively lower targets, but the recent reforms have successfully shifted course, and targets for those places have increased substantially.

Are Cities with Compliant Plans Different?

One indicator of the scale of changes to the planning system is the widespread difficulty jurisdictions have had in getting their housing plans approved by the state government's implementing agency. The deadline for local governments in southern California to have a compliant housing element was October 15, 2021. But a full year later, only one-third of the region's 197 cities and counties were in compliance. Five jurisdictions had not yet even submitted a housing element to the state for review by October 2022.

Before focusing on the 93 compliant plans as of February 10, 2023, we examine how they differ from those out of compliance. A substantial majority of jurisdictions in southern California were more than 1 year late in getting their housing plans certified by HCD. Roughly one-half of the jurisdictions in San Diego County, which began its update process 6 months before the rest of the region, are still not compliant.

We examine whether the jurisdictions that have approved plans differ in some way from those that do not. Using a logistic regression[14] model and data on the 209 southern California municipalities, we assess the probability of being compliant as a function of seven factors: cities' targets as a share of existing stock, the increase in targets, population, home values, share White, share homeowners, and share elderly. We find that only two factors are statistically significant in predicting compliance:

[14] Results of the logistic regression are available upon request.

the increase in housing targets and city size. Jurisdictions with larger increases are less likely to be compliant, and larger cities are more likely to be compliant. Those results likely reflect large jurisdictions' greater administrative capacity and the more substantial political challenges of compliance when faced with a larger growth target.

The Scale of Local Action

The most relevant outcome of the RHNA process is the volume of rezoning by local governments. As described previously, local housing plans must show to the state that a jurisdiction has a sufficient number of potential sites for housing development to accommodate its numerical housing target. If they cannot find parcels zoned for housing with development potential, they must commit to rezoning land to allow residential development or increase permitted densities to create that space within 1 to 3 years. In the previous planning period (roughly 2014 through 2021), jurisdictions across the entire state committed to only 35,430 units of rezonings to comply with RHNA (personal communication, HCD). Moreover, most of those rezonings were not in high-demand communities and were rezonings of vacant land. Those fifth-cycle rezonings mostly did not create redevelopment opportunities in cities that believed themselves to be built out. For example, three jurisdictions—Riverside County, Kern County, and the City of Coachella—made up nearly one-half of the state's rezoning count. All are places far from job centers.

By contrast, our summary analysis of planned rezonings in the first 93 certified housing elements for 2021 through 2029 finds more than 500,000 units on rezoned sites—roughly half of which are in the City of Los Angeles. The City of Los Angeles' housing element outlines a plan that will rezone for a minimum of 250,000 units but considers a potential rezoning of up to 1.5 million units (City of Los Angeles, 2021). These cities with compliant local housing elements represent less than one-third of the state's population. Considering that the majority of the state has yet to finalize its plans, the housing planning process in California has much more potential than ever before.

Not only is the overall volume of rezoning important, it is also spread across many jurisdictions. We find that roughly two-thirds of the jurisdictions with certified plans committed to rezoning some land in response to RHNA requirements. And because the regional governments allocated housing targets to higher-demand cities than in previous cycles, we see a positive correlation between the extent of rezoning and housing costs—unlike during the previous cycle, in which localities far from job centers did most of the rezoning.

Do Cities with Larger Increases in Targets Rezone More?

To more directly assess the connection between increases in housing targets and rezoning, we will now focus on the 93 municipalities with compliant plans. Exhibit 4 presents descriptive characteristics for this sample of municipalities.

Exhibit 4

Descriptive Statistics for Housing Plans and City Characteristics (93 cities)

Variable	Median	Mean	Std. Dev.
	Housing Plan Characteristics		
Any rezoning (1,0)	1	0.65	0.48
Rezoning units/Total capacity	0.34	0.41	0.40
Rezoning units/2021 target	0.40	0.54	0.76
2021 target/2014 target (total units in thousands)	2.80	39.98	218.99
2021 target/2014 target (low-income units in thousands)	2.95	27.67	145.59
	City Characteristics		
Population (thousands)	55	134	425
Median home value (thousands of $)	$573	$630	$314
Share of population White non-Hispanic	32%	35%	22%
Share of households that are homeowners	60%	58%	15%
Share of population older than 65	14%	15%	6%

Std. Dev. = standard deviation.

Sources: California HCD; U.S. Census Bureau, 2015

The outcome of interest is rezonings, and we use two different denominators to standardize the number of units in proposed rezonings across cities: the city's total capacity for new housing, including rezoning, and the 2021 housing target. For the median city, rezoning represents 36 percent of the total capacity for new housing and 37 percent of its target.

Our treatment measures are the increase in a city's housing target, measured by the ratio of its total 2021 target to its total 2014 target, and the increase in its target for low-income housing specifically. We use the increase in low-income targets separately because the rules cities face for satisfying those targets are more restrictive. They must identify larger sites with zoning at a prescribed minimum density threshold (for example, 30 dwelling units per acre in urban areas), whereas sites to meet targets for moderate- and above-moderate-income housing can be any size and density. Moreover, the aforementioned equity adjustments made in the regional allocation of targets gave slightly higher targets for low-income housing to more affluent cities, so we anticipate that the regional allocation will have a slightly larger impact than the change in the total target.

First, we assess correlations between these measures of plans, targets, and city characteristics individually to identify relationships. Then, we run a regression to test the hypothesis that higher housing targets are associated with more rezonings even when controlling for characteristics of the municipalities that are correlated with rezonings and housing targets.

Exhibit 5 reports bivariate correlations between measures derived from housing plans and municipal characteristics. The correlations between changes in targets and rezonings are positive and strong. The correlations between demographic characteristics of cities and their rezoning plans or change in targets are not statistically significant, meaning that even without controlling for other variables, cities with more homeowners or White and older residents did not systematically differ in their rezoning activity.

Exhibit 5

Correlations Between Housing Plan Measures and Municipality Characteristics (93 Certified Housing Elements)

Variables	Any Rezoning?	Rezonings/ Capacity	Rezonings/ Target	Total Target 2021/2014 (log)	Low-Income Target 2021/2014 (log)
Rezoning units/Capacity 2021	0.87**	1.00**			
Rezoning units/Target 2021	0.87**	0.95**	1.00**		
Total target 2021/2014 (log)	0.38**	0.43**	0.38**	1.00**	
Low-income target 2021/2014 (log)	0.42**	0.49**	0.43**	0.97**	1.00**
Population (log)	0.21*	0.13	0.13	– 0.02	– 0.04
Median home value (log)	0.20*	0.28*	0.28*	0.19	0.30*
White non-Hispanic (%)	– 0.18	– 0.07	– 0.05	– 0.18	– 0.07
Homeowners (%)	– 0.05	0.04	– 0.01	– 0.12	– 0.03
Older than 65 (%)	– 0.08	0.00	0.00	0.06	0.12

*Notes: N = 93. Spearman correlation coefficients. * and ** indicate significance at the 0.01 and 0.05 levels, respectively.*
Sources: Authors, with U.S. Census Bureau, 2015; California HCD

Exhibit 5 shows that places with higher home values committed to more rezonings and had higher targets, presumably because they are more likely to be built out according to their existing zoning. Because higher-demand (more expensive) cities cannot find existing capacity in their zoning, they need to rezone. This finding especially reinforces the need for a statewide planning process to provoke zoning reform because it creates much more potential for new production in higher-demand areas. Housing target increases are also significantly larger for cities with higher home values.

Now we turn to the results of our regressions in exhibit 6, which presents the results of six models in which we vary three measures of rezonings and two measures of the change in targets (overall targets and targets specific to low-income housing). Models 1 and 2 are logistic regression models that assess the probability of a city doing any rezoning, so the dependent variable is a yes (1) or no (0). Models 3 and 4 are ordinary least squares (OLS) regressions using rezonings as a share of total capacity, and Models 5 and 6 are also OLS using rezonings as a share of the target. All models include county fixed effects and a dummy variable indicating whether the city's housing element is compliant.

Exhibit 6

Regression Results: Rezoning and Housing Target Increase

Variables	Model 1 Logit: DV = Rezoning? (Y/N)	Model 2 Logit: DV = Rezoning? (Y/N)	Model 3 OLS: DV = (Rezonings/ Capacity)	Model 4 OLS: DV = (Rezonings/ Capacity)	Model 5 OLS: DV = (Rezonings/ Target)	Model 6 OLS: DV = (Rezonings/ Target)
Target 2021/2014 (log)	0.767**		0.097***		0.203***	
	(0.374)		(0.029)		(0.055)	
Low-income target 2021/2014 (log)		0.913**		0.113***		0.238***
		(0.417)		(0.032)		(0.060)
Population (log)	0.756**	0.704*	0.059	0.050	0.113	0.096
	(0.363)	(0.360)	(0.046)	(0.045)	(0.085)	(0.085)
Median home value (log)	0.620	0.298	– 0.002	– 0.051	0.094	– 0.012
	(1.075)	(1.107)	(0.135)	(0.137)	(0.253)	(0.256)
Non-Hispanic White (%)	0.004	0.005	0.002	0.002	0.012**	0.012**
	(0.022)	(0.022)	(0.003)	(0.003)	(0.005)	(0.005)
Homeowners (%)	0.035	0.031	0.007**	0.006*	0.009	0.007
	(0.026)	(0.026)	(0.003)	(0.003)	(0.006)	(0.006)
Older than 65 (%)	– 0.091	– 0.096	– 0.014*	– 0.015*	– 0.027*	– 0.029*
	(0.063)	(0.063)	(0.008)	(0.008)	(0.015)	(0.015)
Constant	– 17.220	– 12.611	– 0.698	0.0197	– 2.537	– 1.005
	(12.887)	(13.251)	(1.581)	(1.613)	(2.963)	(3.014)
Observations	92	92	92	92	92	92
(Pseudo) R-squared	0.30	0.31	0.31	0.31	0.34	0.36

DV = dependent variable. OLS = ordinary least squares.

*Notes: Models include county fixed effects. Standard errors in parentheses. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.*

Sources: Authors, with U.S. Census Bureau, 2015; California HCD

The results of the first two models show that only two variables—a larger increase in housing targets and a larger population—predict a city engaging in rezoning. The coefficients suggest that doubling the housing target makes a city 2.5 times more likely to rezone, and doubling the population makes it twice as likely it will rezone. As an example, the median city had a 64-percent chance of engaging in rezoning. A 1-standard-deviation increase in its target would lead to an 84-percent chance of rezoning, and a 1-standard-deviation increase in its population size leads to a 76-percent chance. The mechanism for larger targets to provoke rezoning is clear, and research shows that the politics of larger cities are more amenable to new housing (Marantz and Lewis, 2022).

Higher housing targets are also statistically significantly associated with more rezoning, and the coefficients are twice as large when measuring rezonings relative to housing targets compared with using a city's capacity. For example, doubling the overall housing target is associated with a 10-percentage-point increase in rezonings as a share of capacity and a 20-percentage-point increase in rezonings as a share of a city's target.[15] That difference likely results from cities expressing more

[15] To allay potential concerns about interpretation challenges when using the 2021 target to standardize rezonings, we note that the correlation between 2021 targets and the change in rezonings between 2014 and 2021 (the treatment variable) is almost zero (0.02).

capacity than their target if they do not have to rezone; being ambitious in identifying capacity is easier if it does not involve changing zoning and simply requires cataloguing more available sites.

The associations between target increase and rezoning are slightly larger if we use the increase in low-income targets rather than total targets as the treatment variable. Doubling the low-income target is associated with 11 and 24 percentage points more rezoning as a share of capacity and target. As mentioned, low-income sites must have certain characteristics—most importantly, a minimum density threshold. Given the scarcity of parcels zoned for higher density, larger low-income targets spur more change.

In a few of the models, the coefficients for share White and share homeowner attain slight significance and are positive, whereas the share older than 65 is associated with less rezoning. The coefficients represent the increase or decrease in share of capacity or target rezoned for a 1-percent increase in the city's population. For example, model 3 shows that a 1-percent increase in the share of a city who are homeowners is associated with a 0.7-percent increase in the share of a city's capacity met with rezoning. It also shows that a 1-percent increase in the share of a city who are older than 65 years old is associated with 1.4 percent less rezoning as a share of capacity.

Given the low significance levels, however, it is hard to make strong claims about the complicated interaction between previous success in gaming the system to get low targets, buildout according to local zoning, and NIMBY ("not in my backyard") characteristics that correlate with one another. We could interpret the negative coefficient on elderly as being a NIMBY characteristic that leads to less rezoning in the current cycle, whereas cities with more White residents and homeowners are more likely to be built out and thus have to engage in rezoning to become compliant. An encouraging finding is that cities with NIMBY characteristics are not systematically rezoning less. With more data as more cities complete their housing elements, those relationships will be easier to untangle.[16]

Conclusion

This article describes the outcomes of reforms to California's housing planning process. Reform legislation in 2017 and 2018 changed the nature and intensity of a planning process that occurs every 8 years. Southern California municipalities received substantially higher housing growth targets in 2021 than they had previously, and we evaluate the way they accommodate those targets. We focus on how much potential for new housing those municipalities created through rezoning land for residential use or for higher density.

We find that cities were more likely to change their local zoning in 2021 compared with 2014—and to do so more dramatically. The 93 (of more than 209) southern California cities that have compliant housing elements have committed to more than 500,000 units of rezonings, compared with fewer than 50,000 in the whole state in 2014. Moreover, those commitments to rezoning are happening in cities with relatively high housing values, which means housing is more likely to be

[16] We also ran the same regression analysis with a larger sample of cities (an additional 32 cities) that have completed their housing elements and have sites' inventory data available but are not certified by the state. The results of those models are reported in an appendix exhibit. The changes in targets have smaller coefficients but are still significant, and the other coefficients display some differences. We prefer the models using the smaller sample of certified housing elements because the uncertified elements may change.

built. For those cities with certified housing elements, higher housing targets were significantly associated with more rezoning, especially higher targets for low-income housing.

We also find that the characteristics associated with NIMBYism play a predictable role in the determination of housing targets but not in models of rezoning. Cities with higher housing values and more White homeowners get relatively lower targets than cities with fewer Whites and lower housing costs but react no differently to them—or, in some cases, rezone more—than other cities. In other words, although the planning system still treats those cities differently in setting targets, it is forcing cities to meet targets in land use plans through rezoning. We take this finding as evidence that the legislative reforms have spurred action and accountability among California cities in how they plan for housing. In particular, higher total housing targets seem to have stifled some of the previously existing strategic behavior.

Yet problems with the system remain. California's housing element process is expensive (in terms of money spent on consultants and plan preparation and of people's time) and slow (the process has been underway for several years, and no new housing has been built as a result), and rules seem to continue to be administered unequally across places (Collins, 2022). Moreover, rezoning is not yet permitting the needed housing, although it is a first and necessary step.

Finally, housing targets within regions have been increasingly assigned to cities with high prices and near jobs—such as Beverly Hills—as a relative matter. Despite that improvement, many cities that should probably not be pressured to grow from an environmental or affordability perspective—such as Coachella—are still receiving larger targets than places where the impact of rezoning would be greatest. One resolution to that problem would be to shift toward a system that explicitly considers the probability of housing development in regional decisions about where targets are assigned (Elmendorf et al., 2021b). For any parcel of land, analysts can use data to estimate how likely it is to be redeveloped, as Los Angeles did in its housing element (City of Los Angeles, 2021). Then regional targets could be assigned on the basis of where redevelopment is most likely—which is much higher in Beverly Hills than in Coachella. That practice would both reduce the local staffing costs of the process—because the estimation of development probability could be carried out at the state or regional level—and relieve pressure on lower-income cities.

Finally, this study recalibrates the debate between the plan mandate approach to land use interventions compared with state governments more directly preempting local control over land use in strategic locations or creating affordable housing appeals systems. As already noted, California's plan mandate system had historically proven ineffective. But if recent reforms indeed prove successful, as this research indicates, plan mandates may offer at least some advantages over alternative state land use strategies and can be complementary to them. That is, plan mandates set goals for local governments but include residents in a community-based process of deciding where growth should occur. We see a tradeoff between the potential for increased local participation in zoning decisions and concurrent political acceptance of the process and the possibility of planning decisions that compromise environmental sustainability and social integration. How that process will unfold a priori is not yet clear, and measuring political acceptance is challenging; thus, a useful next step for future research will be to assess where

rezonings are occurring in cities, spatially, compared with what a more top-down approach would have yielded, according to some objective criteria.

Appendix

Exhibit A1

Replication of Models in Exhibit 6 Using a Larger Sample of Cities (125) that Includes Data from Complete but Uncertified Housing Elements

Variables	Model 1 Logit: DV = Rezoning? (Y/N)	Model 2 Logit: DV = Rezoning? (Y/N)	Model 3 OLS: DV = (Rezonings/ Capacity)	Model 4 OLS: DV = (Rezonings/ Capacity)	Model 5 OLS: DV = (Rezonings/ Target)	Model 6 OLS: DV = (Rezonings/ Target)
Target 2021/2014 (log)	0.328*		0.066***		0.115***	
	(0.187)		(0.023)		(0.040)	
Low-income target 2021/2014 (log)		0.494**		0.086***		0.151***
		(0.226)		(0.026)		(0.045)
Population (log)	0.190	0.188	0.008	0.005	0.058	0.052
	(0.237)	(0.239)	(0.038)	(0.037)	(0.065)	(0.065)
Median home value (log)	1.666**	1.377*	0.146	0.096	0.151	0.064
	(0.729)	(0.756)	(0.104)	(0.106)	(0.179)	(0.183)
Non-Hispanic White (%)	– 0.028*	– 0.026	– 0.002	– 0.002	0.005	0.006
	(0.016)	(0.016)	(0.002)	(0.002)	(0.004)	(0.004)
Homeowners (%)	1.431	1.368	0.566**	0.549**	0.736	0.706
	(1.837)	(1.843)	(0.282)	(0.276)	(0.488)	(0.478)
Older than 65 (%)	0.006	0.001	– 0.003	– 0.004	– 0.010	– 0.01
	(0.039)	(0.040)	(0.006)	(0.006)	(0.011)	(0.011)
Certified (Y/N)	0.429	0.523	0.0716	0.0817	0.261*	0.278**
	(0.510)	(0.520)	(0.0797)	(0.0789)	(0.138)	(0.137)
Constant	– 24.63***	– 21.13**	– 2.139	– 1.502	– 2.990	– 1.881
	(9.495)	(9.792)	(1.307)	(1.330)	(2.264)	(2.303)
Observations	125	125	125	125	125	125
(Pseudo) R-squared	0.22	0.23	0.23	0.24	0.26	0.28

DV = dependent variable. OLS = ordinary least squares.

*Notes: Models include county fixed effects. Standard errors in parentheses. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.*

Sources: Authors, with U.S. Census Bureau, 2015; California HCD

Acknowledgments

This project was supported by the Pew Charitable Trusts and New York University. The authors would like to thank Noah Kazis, Ingrid Gould Ellen, Salim Damerdji, and participants at the 2022 conference of the Association for Public Policy Analysis and Management for valuable feedback on the research.

Authors

Paavo Monkkonen is a Professor of Urban Planning and Public Policy at the University of California, Los Angeles. Michael Manville is an Associate Professor of Urban Planning at the University of California, Los Angeles. Michael Lens is an Associate Professor of Urban Planning and Public Policy at the University of California, Los Angeles. Aaron Barrall is a Masters student in Public Health at the University of California, Los Angeles. Olivia Arena is a Masters student in Urban and Regional Planning at the University of California, Los Angeles.

References

Baer, William C. 2008. "California's Fair-Share Housing 1967–2004: The Planning Approach," *Journal of Planning History* 7 (1): 48–71. https://doi.org/10.1177/1538513207307429.

Bromfield, Heather, and Eli Moore. 2017. *Unfair Shares: Racial Disparities and the Regional Housing Needs Allocation Process in the Bay Area*. University of California, Berkeley, Haas Institute for a Fair and Inclusive Society, Research Brief. https://belonging.berkeley.edu/sites/default/files/haasinstitute_unfairshares_rhnabayarea_publish.pdf.

Bunnell, Gene, and Edward J. Jepson Jr. 2011. "The Effect of Mandated Planning on Plan Quality," *Journal of the American Planning Association* 77 (4): 338–353. https://doi.org/10.1080/01944363.2011.619951.

Burby, Raymond J., Philip Berke, Linda C. Dalton, John M. DeGrove, Steven P. French, Edward J. Kaiser, Peter J. Mary, and Dale Roenigk. 1993. "Is State-Mandated Planning Effective?" *Land Use Law & Zoning Digest* 45 (10): 3–9. https://doi.org/10.1080/00947598.1993.10395815.

City of Los Angeles. 2021. Housing Element of the General Plan 2021–2029. https://planning.lacity.org/odocument/55fdecf6-e185-4910-b690-2df603093d76/2021-2029_Housing_Element_Book_(Adopted)_-_Low_Res..pdf.

Collins, Jeff. 2022. "Southern California Housing Plans Contain 'Fake Sites,' Lack Analysis, Critics Say," *Orange County Register*, May 8.

Deyle, Robert E., Timothy S. Chapin, and Earl J. Baker. 2008. "The Proof of the Planning Is in the Platting: An Evaluation of Florida's Hurricane Exposure Mitigation Planning Mandate," *Journal of the American Planning Association* 74 (3): 349–370. https://doi.org/10.1080/01944360802229612.

Einstein, Katherine Levine, David M. Glick, and Maxwell Palmer. 2019. *Neighborhood Defenders: Participatory Politics and America's Housing Crisis*. Cambridge, UK: Cambridge University Press.

Elmendorf, Christopher S. 2019. "Beyond the Double Veto: Housing Plans as Preemptive Intergovernmental Compacts," *Hastings Law Journal* 71 (1). https://repository.uchastings.edu/hastings_law_journal/vol71/iss1/3/.

Elmendorf, Christopher S., Eric Biber, Paavo Monkkonen, and Moira O'Neill. 2021a. "'I Would, if Only I Could': How Cities Can Use California's Housing Element Law to Overcome Neighborhood

Resistance to New Housing," *Willamette Law Review* 57: 221–252. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3889771.

———. 2021b. "State Administrative Review of Local Constraints on Housing Development: Improving the California Model," *Arizona Law Review* 63: 609–670. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3614085.

———. 2020. "Making It Work: Legal Foundations for Administrative Reform of California's Housing Framework," *Ecology Law Quarterly* 46: 1–66. https://www.ecologylawquarterly.org/print/making-it-work-legal-foundations-for-administrative-reform-of-californias-housing-framework/.

Fisher, Lynn M., and Nicholas J. Marantz. 2015. "Can State Law Combat Exclusionary Zoning? Evidence from Massachusetts," *Urban Studies* 52 (6): 1071–1089. https://doi.org/10.1177/0042098014534906.

Jun, Hee-Jung. 2017. "The Link Between Local Comprehensive Plans and Housing Affordability: A Comparative Study of the Atlanta and Detroit Metropolitan Areas," *Journal of the American Planning Association* 83 (3): 249–261. https://doi.org/10.1080/01944363.2017.1321496.

Kapur, Sidharth, Salim Damerdji, Christopher S. Elmendorf, and Paavo Monkkonen. 2021. *What Gets Built on Sites that Cities 'Make Available' for Housing? Evidence and Implications for California's Housing Element Law*. UCLA Lewis Center for Regional Policy Studies Policy Brief, August. https://escholarship.org/uc/item/6786z5j9.

Lewis, Paul G. 2005. "Can State Review of Local Planning Increase Housing Production?" *Housing Policy Debate* 16 (2): 173–200. https://doi.org/10.1080/10511482.2005.9521539.

Marantz, Nicholas J., and Paul G. Lewis. 2022. "Jurisdictional Size and Residential Development: Are Large-Scale Local Governments More Receptive to Multifamily Housing?" *Urban Affairs Review* 58 (3): 732–766. https://doi.org/10.1177/1078087420988598.

Marantz, Nicholas J., and Huixin Zheng. 2020. "State Affordable Housing Appeals Systems and Access to Opportunity: Evidence From the Northeastern United States," *Housing Policy Debate* 30 (3): 370–395. https://doi.org/10.1080/10511482.2020.1712612.

Monkkonen, Paavo, and Spike Friedman. 2019. *Not Nearly Enough: California Lacks Capacity to Meet Lofty Housing Goals*. UCLA Lewis Center for Regional Policy Studies Policy Brief. https://escholarship.org/uc/item/7t335284.

Monkkonen, Paavo, Michael Manville, and Spike Friedman. 2019. *A Flawed Law: Reforming California's Housing Element*. UCLA Lewis Center for Regional Policy Studies Policy Brief. https://www.lewis.ucla.edu/research/flawed-law-reforming-california-housing-element/.

Organisation for Economic Co-operation and Development (OECD). 2017. *The Governance of Land Use: Country Fact Sheet United States*. https://www.oecd.org/regional/regional-policy/land-use-United-States.pdf.

Ramsey-Musolf, Darrel. 2020. "The Efficacy of Allocating Housing Growth in the Los Angeles Region (2006–2014)," *Urban Science* 4 (3): 43. https://doi.org/10.3390/urbansci4030043.

———. 2018. "According to the Plan: Testing the Influence of Housing Plan Quality on Low-Income Housing Production," *Urban Science* 2 (1): 1. https://doi.org/10.3390/urbansci2010001.

———. 2016. "Evaluating California's Housing Element Law, Housing Equity, and Housing Production (1990–2007)," *Housing Policy Debate* 26 (3): 488–516. https://doi.org/10.1080/10511482.2015.1128960.

U.S. Census Bureau. 2015. 2010–2014 American Community Survey 5-year estimates. https://www.census.gov/programs-surveys/acs/technical-documentation/table-and-geography-changes/2014/5-year.html.

Yin, Ming, and Jian Sun. 2007. "The Impacts of State Growth Management Programs on Urban Sprawl in the 1990s," *Journal of Urban Affairs* 29 (2): 149–179. https://doi.org/10.1111/j.1467-9906.2007.00332.x.

Zheng, Huixin, Nicholas J. Marantz, Jae Hong Kim, and Doug Houston. 2021. *Accessibility, Affordability, and the Allocation of Housing Targets to California's Local Governments*. University of California Institute of Transportation Studies Research Report no. UC-ITS-2020-50. http://dx.doi.org/10.7922/G20P0XBV.

How Can Procedural Reform Support Fair Share Housing Production? Assessing the Effects of California's Senate Bill 35

Moira O'Neill
University of California, Berkeley
University of Virginia

Ivy Wang
University of California, Berkeley

Abstract

Land use regulation that constrains housing production risks social, economic, and environmental harm. California attempts to avoid these harms by mandating localities plan to accommodate their fair share of housing production to meet local and regional needs. Decades of inadequate affordable housing production galvanized the legislature to pass multiple laws to address regulatory obstacles to affordable housing production. One of those laws, Senate Bill 35, creates a ministerial approval pathway for qualifying housing in communities that have failed to meet their housing production targets in prior years. Lawmakers hoped that making affordable housing development faster and more predictable would facilitate building more housing at a lower cost. This article provides preliminary empirical support for that theory. In some cities, Senate Bill 35 is, in fact, speeding up housing approvals.

Introduction

Land use regulation that constrains housing production risks exacerbating and perpetuating economic and racial segregation, inhibiting economic growth, increasing the cost of housing, and worsening environmental harm (Glaeser, Gyourko, and Saks, 2005; Hsieh and Moretti, 2019; Lens and Monkkonen, 2016; Rothwell and Massey, 2009; Sterk, 2021).[1] California's housing law

[1] For example, municipal land use regulation tends to lower housing density and increase sprawl (Levine, 2005). Sprawl, in turn, leads to more resource-intensive households that contribute disproportionately to carbon emissions (Jones and Kammen, 2014).

attempts to avoid these outcomes by imposing "fair share housing production" requirements on local zoning and planning (Elmendorf et al., 2021a; HCD, n.d.a). Despite this planning framework, housing need has outpaced housing demand in many California communities for decades.

Inadequate production, particularly affordable housing production, has galvanized the California legislature to reform state housing law across many dimensions.[2] This article discusses just one of these recent reforms, enacted in 2017—Senate Bill 35 (SB 35).[3] SB 35 builds on the state's existing fair share production law by limiting procedural obstacles to some housing production. SB 35 preempts local power to impose a discretionary approval process on qualifying affordable or mixed-income housing in localities that have failed to approve adequate, affordable housing in prior years (Wiener, 2017). Lawmakers hoped that making affordable housing development faster and more predictable would allow for more housing to be built in more communities at a lower cost (Wiener, 2017). This article provides preliminary empirical support for that theory. In some cities, SB 35 is, in fact, speeding up housing approvals.

This article describes the relevant California housing and planning law, then explains SB 35's intervention within that framework. Next the authors explain how the Comprehensive Assessment of Land Use Entitlements Study (CALES) data (O'Neill-Hutson et al., 2022) lends itself to exploring the effect of SB 35 in selected cities. Then, the article offers findings on how SB 35 has operated in five important local jurisdictions: Berkeley, Los Angeles, Los Angeles County, Oakland, and San Francisco.

Background

California's Housing Element Law provides the state's legal and planning framework to meet housing demand and address residential segregation (Ramsey-Musolf, 2016). Housing Element Law in California "took shape in the 1970s in an era in which there was increasing concern with civil rights and the ability of minorities and low-income families to have an opportunity to live in suburbia, not just in inner-city or rural enclaves" (Lewis, 2003). Housing Element Law attempts to remedy economic segregation through comprehensive long-term planning processes that theoretically force localities to plan and zone for each jurisdiction's "fair share" of housing for all income levels.

Housing Element Law operates within California's broader comprehensive planning law. Cities and counties must update their Housing Elements every 5 or 8 years (HCD, n.d.b).[4] The Housing Element sets forth how the locality will support the production of sufficient housing units at

[2] California State Senate, Senate Committee on Transportation and Housing Analysis, March 2, 2019, page 4. *Senate Bill 35. Planning and Zoning: Affordable Housing: Streamlined Approval Process*. 2017–18 Reg. Sess., 4. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB35.

[3] In addition to SB 35, the 2017–18 California legislature passed 15 pieces of legislation that aimed to, among other things, raise money to finance low-income developments, incentivize cities to plan neighborhoods for new development, allow cities to implement low-income requirements on developments, preserve existing low-income housing, require cities to plan for more housing, and enhance enforcement against cities that deny housing projects (Dillon, 2017). The legislature has continued to work actively in this area in the intervening years. Perhaps the most prominent changes have been California's allowing duplexes on most single-family lots statewide.

[4] Cal. Gov't. Code Sec. 65585(e)(3).

each of four income levels—very low, low, moderate, and above-moderate (HCD, 2020: 9).[5] The local government does not determine what is sufficient—production targets come from the state's Regional Housing Needs Assessment (RHNA) (Elmendorf et al., 2021a: 978; Lindgren and Mattas, 2022: Sec. 2.13).

The RHNA process begins with the California Department of Housing and Community Development (HCD) first determining the overall housing need for each region of the state based on state demographic data, working with regional planning bodies.[6] Each region then allocates its housing need between all the cities and counties within its region,[7] assigning a number of housing units to each locality for each income level.[8] Localities must then demonstrate that enough parcels in their jurisdiction are zoned to accommodate those targets and identify and correct for regulatory constraints on housing production (Elmendorf et al., 2021b: 611–12).[9]

Local governments submit their housing elements to HCD for approval. Following approval, localities must also submit annual reports on their progress in implementing the Housing Elements (HCD, n.d.a). HCD also has enforcement authority when communities fail to meet their obligations under Housing Element law.[10] If HCD decertifies a Housing Element, state law provides for several potential consequences: A local government may be unable to access state funding for community development, infrastructure, housing, and transportation and be exposed to lawsuits, with plaintiffs eligible for attorneys' fees (Elmendorf et al., 2021c; HCD, n.d.b). A court may also mandate the approval of building permits for affordable housing developments or suspend the local government's permitting authority altogether (HCD, n.d.c).[11]

Despite the ostensible force of Housing Element Law, California communities have failed to meet housing production needs. Indeed, research indicates that between 1994 and 2000, local compliance with Housing Element Law did not result in any more local housing production

[5] Cal. Gov't. Code Sec. 65585(c); California Department of Housing and Community Development, "Housing Element Sites Inventory Guidebook," p. 9, https://www.hcd.ca.gov/community-development/housing-element/docs/sites_inventory_memo_final06102020.pdf.

[6] Cal. Gov't. Code Sec. 65584.01(a).

[7] Cal. Gov't. Code Sec. 65584.03.

[8] These income categories are prescribed in the California Health and Safety Code, Section 50093, *et seq*. See also Cal. Gov. Code Section 65583. Notably, some argue that the allocations exacerbate existing income and racial segregation; one study found that the regional planning process led to assigning a disproportionate share of very low- and low-income units to jurisdictions with larger minority populations. See Bromfield and Moore (2017).

[9] At page 612, Elmendorf discusses Cal. Gov't. Code Sec. 65583(a), (c).

[10] Cal. Gov't. Code Sec. 65585(i)-(j); Assem. Bill 72, 2017-18 Reg. Sess., requiring HCD to review written findings about actions inconsistent with an adopted housing element and authorizing HCD to revoke a prior finding of compliance for a housing element, and AB 215 (2021), expanding HCD's mandate to notify the Attorney General to bring action to enforce state law violations in housing element and authorizes HCD to appoint its own counsel if the Attorney General declines to represent the department in such an action, including https://www.hcd.ca.gov/planning-and-community-development/accountability-and-enforcement. That enforcement authority has grown over time. Compare McDougall (1987)—following amendments to state law in 1984, the HCD must give prior approval to all local fair-share plans—with Elmendorf et al. (2021a) "The legislature has also authorized HCD to decertify housing elements midcycle for failures of implementation and has backstopped decertification with fiscal penalties and more."

[11] Cal. Gov't. Code Sec. 65755.

(Lewis, 2005). Scholars offer multiple explanations for local failure to meet production targets.[12] The critique that Housing Element Law did not dismantle the procedural obstacles that can block the construction of new housing is of particular interest to this research (Monkkonen, Manville, and Friedman, 2019: 3). In theory, the law required localities to identify and mitigate regulatory constraints to housing production, but in practice, local governments offered little to no analysis of local constraints and doing so led to no consequences (Elmendorf et al., 2021b: 612). Prior research suggests that the systematic failure to identify and correct for procedural obstacles to production may significantly curtail housing production, even in cities that zone a lot of land for dense housing (O'Neill-Hutson et al., 2022).

Procedural obstacles in California communities can manifest in different ways. California law allows local governments latitude in how they approve residential development. Many communities use discretionary review processes when approving housing developments, even those that conform to base zoning and planning standards (that is, the density, use, setback, and other requirements that dictate what type of development can go on a parcel). Discretionary review refers to a local government's ability to impose conditions of approval—or deny approval altogether—when deciding whether to approve proposed development.[13] The discretionary approval process is best understood by contrasting it with a ministerial process in which a decisionmaker applies law to fact without using subjective judgment.[14] A discretionary process allows for uncertainty and delay, which can increase costs; a ministerial process suggests approval is certain if a project proponent meets specified requirements.[15]

Discretionary design, architecture review, site development review, and historical preservation review are all examples of discretionary processes that localities apply to development that conforms to all base zoning requirements (O'Neill-Hutson et al., 2022: 18). In past research, O'Neill-Hutson et al. found that nearly all dense developments studied went through a discretionary approval process—even in areas that cities have identified for dense development

[12] These factors include that Housing Element Law does not require localities to actually produce additional housing (Lewis, 2003; Monkkonen, Manville, and Friedman, 2019). Moreover, material consequences are few for failing to deliver on housing shares, and the planning process bases local housing need on past population growth, perpetuating exclusivity and unaffordability (Elmendorf, 2019; Kazis, 2020). Finally, the process frequently defers to affluent cities that lobby to keep their RHNA shares low (Monkkonen, Manville, and Friedman, 2019: 3).

[13] California's Housing Accountability Act (HAA) codified in Cal. Gov't. Code Sec. 65589.5 *et seq*. requires that a local government issue written health and safety findings when imposing conditions of approval that reduce density or outright denying approval for certain housing developments. The written findings must justify the denial "based on a preponderance of the evidence in the record" (65589.5(d)). Amendments to the HAA in 1999 also provided that the HAA limits the scope of local discretion over developments that conform to "objective" general plan and zoning requirements in Cal. Gov't. Code Sec. 65589.5(j). Also, penalties exist for bad-faith disapprovals in Cal. Gov't. Code Sec. 655589.5(l).

[14] For a definition of ministerial in California law, *see Prentiss v. City of S. Pasadena*, 15 Cal. App. 4th 85, 90, 18 Cal. Rptr. 2d 641 (1993), citing Cal. Code Regs., title 14 section 15268 (b)(1) "'Ministerial' describes a governmental decision involving little or no personal judgment by the public official as to the wisdom or manner of carrying out the project. The public official merely applies the law to the facts as presented but uses no special discretion or judgment in reaching a decision. A ministerial decision involves only the use of fixed standards or objective measurements, and the public official cannot use personal, subjective judgment in deciding whether or how the project should be carried out."

[15] For a discussion of what characterizes a discretionary action, *see Friends of Westwood, Inc. v. City of Los Angeles* 181 Cal. App. 3d 259, 269-74 (1987). When city employees can set standards and conditions for many aspects of a proposed building, the approval process is discretionary.

through zoning and planning designations (O'Neill-Hutson et al., 2022: 51–52).[16] Discretionary processes may enable local governments and homeowners to effectively block projects by creating costly delay and uncertainty (Elmendorf, 2019: 88).[17] In earlier work, O'Neill-Hutson et al. also found that median entitlement timeframes for discretionary projects can span a few months to many years, with timeframes varying widely across neighboring cities for similar developments subject to similar processes (O'Neill-Hutson et al., 2022: Table 8).

In California, local discretionary review also triggers state-mandated environmental review under the California Environmental Quality Act (CEQA). The California legislature enacted CEQA in 1970 as a tool to review and mitigate potentially significant environmental effects of public actions.[18] As relevant here, CEQA requires local governments to study and disclose the effects of their decisions, including discretionary housing approvals, on the environment (defined broadly) and to engage in a public participation process to guide that analysis of impacts.[19] Projects that are more likely to have a significant effect on the environment require more extensive study and disclosures. CEQA review also applies to local legislation. For example, if the local legislature would like to create a new ministerial pathway for housing approvals previously subjected to discretionary review, CEQA applies.[20]

Critics of CEQA argue that this environmental review process adds significant expense, time, and uncertainty to project development, potentially leading to fewer residential projects being pursued and built.[21] CEQA lawsuits have challenged or stalled the development of affordable housing, as well (Gray, 2021; Sedonaen, 2018). Indeed, some scholars argue that CEQA's deference to local agencies in the face of extensive delays and bad-faith tactics may allow development opponents to "launder" project denials through CEQA when the actual grounds for their option may have nothing to do with environmental concerns (Elmendorf and Duncheon, 2022: 17–23).

---

[16] The CALES studied over 2,000 housing approvals for five or more units of housing. More than 80 percent required discretionary approvals.

[17] A recent appellate opinion demonstrates that project proponents and housing advocates may successfully seek judicial relief from local-level bad-faith denials under the HAA, partially ameliorating this problem. *See California Renters Legal Advocacy & Education Fund v. City of San Mateo*, 68 Cal. App.5th 820 (2021).

[18] See Cal. Pub. Res. Code Sec. 21002.

[19] Prior research found that most dense development of five units or more across 20 jurisdictions was subject to discretionary review, even in areas designated for dense development. As a result, most multifamily developments fell within CEQA's ambit (O'Neill-Hutson et al., 2022). Moreover, courts have interpreted CEQA broadly. Notoriously, a state court of appeal recently found that the University of California (U.C.) Berkeley's decision to increase student enrollment was a "project" subject to CEQA review and considered environmental effects, including "increased use of off-campus housing by U.C. Berkeley students (leading to increases in off-campus noise and trash), displacement of tenants and a consequent increase in homelessness, more traffic, and increased burdens on . . . public safety services." *Save Berkeley's Neighborhoods v. Regents of University of California*, 51 Cal. App.5th 226 (1st Dist. 2020). In this instance, the state legislature stepped in to supersede the court's decision by amending CEQA to state that enrollment increases on their own do not constitute a project under CEQA. Cal. Pub. Res. Code Sec. 21080.09.

[20] See, for example, *Union of Med. Marijuana Patients, Inc. v. City of Upland*, 245 Cal. App. 4th 1265, 1272 (4th Dist. 2016) "Ordinances passed by cities are clearly activities undertaken by a public agency and thus potential 'projects' under CEQA," quoting *Santa Monica Chamber of Commerce v. City of Santa Monica*, 101 Cal. App.4th 786, fn. 2 (2nd Dist. 2002). However, "a municipal ordinance that merely restates or ratifies existing law does not constitute a project . . ." *Union of Med. Marijuana Patients, Inc. v. City of Upland*, 245 Cal. App. 4th 1265, 1273 (4th Dist. 2016).

[21] See, for example, Hernandez (2018) and Gray (2021).

How Senate Bill 35 Operates

SB 35 reduces procedural hurdles to production. SB 35 does so by eliminating both local discretionary review and state mandated environmental review for qualifying urban housing developments in jurisdictions that have not met their state-set housing production targets or process requirements under the Housing Element Law.

If cities or counties failed to approve enough housing units in their most recent reporting period to meet their need allocation for certain income levels, they lose their discretionary authority over specified projects.[22] Instead, housing developers can apply to have the city use a state-required ministerial approval process.[23]

Under the SB 35 process, local governments may still impose their objective local zoning and design review standards.[24] However, SB 35 significantly reduces or eliminates parking requirements.[25] Local governments may not impose additional discretionary review, however. Importantly, SB 35 also provides for strict timelines for the approval process. The local government must adhere to 90- or 180-day time limits (depending on the size of the development) for design review and public oversight processes.[26] Affordable housing developments also receive extended expiration periods to complete construction.[27] If the project is not consistent with objective standards, the city must inform the developer in writing within 60 or 90 days.[28] Local governments may not impose additional fees or inclusionary housing requirements on these developments.[29] Because SB 35 does not allow for a discretionary approval process for qualifying projects, CEQA review is no longer required.

Which projects are eligible? SB 35 applies a ministerial approval process only to urban multifamily housing developments that meet specific affordability thresholds.[30] Additional criteria attempt to preserve affordability and prevent displacement: Eligible projects cannot involve the demolition

[22] Cal. Gov't. Code Sec. 65913.4(a)(4)(A). SB 35 initially provided that a jurisdiction that either permitted too few developments by income level *or* had not submitted their annual report for 2 consecutive years was required to perform a streamlined review for qualified developments. The state legislature later removed 2 consecutive years of nonreporting as a way for jurisdictions to fall under SB 35. *Compare* Stats.2017, c. 366 (S.B.35), Sec. 3, eff. Jan. 1, 2018 to Stats.2018, c. 92 (S.B.765), Sec. 2, eff. Jan. 1, 2019.

[23] See *Prentiss v. City of S. Pasadena*, 15 Cal. App. 4th 85, 90 (1993).

[24] Cal. Gov't Code Sec. 65913.4(a)(5).

[25] Localities may not impose parking standards for streamlined developments within one-half of a mile of public transit, within architecturally and historically significant historic districts, requiring on-street parking permits but not offering them to occupants of the development or within one block of a car share vehicle. For all other developments, parking standards cannot exceed one parking space per unit. Cal. Gov't Code Sec. 65913.4(d).

[26] Cal. Gov't Code Sec. 65913.4(c).

[27] Cal. Gov't Code Sec. 65913.4(e).

[28] Cal. Gov't Code Sec. 65913.4(b)(1).

[29] Localities cannot impose any increased fees or inclusionary housing requirements based solely or partially on the fact that the project has received streamlined approval under SB 35 per Cal. Gov't Code Sec. 65913.4(f).

[30] Cal. Gov't Code Sec. 65913.4(a).

of affordable or tenant-occupied housing.[31] The development must not require subdivision.[32] The development may not be sited in environmentally sensitive or significant areas.[33] A significant portion of the law also ensures developers using this streamlined process pay prevailing union wages to both contractors and subcontractors.[34]

Research Questions and Hypothesis

This article explores how SB 35 operated within specific study cities for project approvals in 2018, 2019, and 2020. The authors examine—

1. What types of developments benefited from SB 35 in these years in the study cities?
2. For development that benefited from SB 35, how did the SB 35 approval process unfold?
3. What effect does SB 35 have on approval processes within these cities?

In earlier research, O'Neill-Hutson et al. (2022) examined the pathways to approvals for developments of five or more units of housing issued in 2014, 2015, 2016, and 2017 in 20 jurisdictions. More than 80 percent of the more than 2,000 approved developments navigated a discretionary review process on the way to approval; that is, they required "entitlement" before they could proceed to the building department for permits to build.

For developments subject to a discretionary process, O'Neill-Hutson et al. found extreme differences in the time between a project's application and its entitlement, even between neighboring urban cities for similar housing development. The median timeframe to entitlement for multifamily development that conformed to all local planning and zoning requirements in San Francisco exceeded 25 months. Next door, in Oakland, the median for the same was 6 months. Both cities had similar regulations "on the books" and applied identical CEQA streamlining to satisfy state required environmental review.

The authors hypothesized that (as the legislature intended it to) SB 35 should curtail process time lags and risk of opposition for at least some mixed-income development. The authors hypothesized that SB 35 would have the greatest effect in cities with more onerous procedural hurdles—like Berkeley or San Francisco.

Methods

To understand SB 35's effect on entitlement processes in the study jurisdictions, the authors built on the research from O'Neill-Hutson et al. (2022) by adding analysis and data from the existing 20 case studies, an additional 8 case studies, and annual progress reports (APRs) for all 28 jurisdictions

[31] Cal. Gov't Code Sec. 65913.4(a)(7). Indeed, the project is ineligible if the proposed project is on a site that used to have tenant-occupied housing, but that tenant housing was demolished within the past 10 years. The code has additional anti-displacement provisions, as well.

[32] Cal. Gov't Code Sec. 65913.4(a)(9).

[33] Cal. Gov't Code Sec. 65913.4(a)(6).

[34] Cal. Gov't Code Sec. 65913.4(a)(8).

produced under state Housing Element Law. The CALES case studies used mixed-method research to understand planning, zoning, and approval pathways in 28 jurisdictions throughout the State of California. To identify which of these cities would provide insight into the potential effect of SB 35, the authors first used 2018 and 2019 annual progress reports to identify which of the 28 CALES study jurisdictions reported approving developments that used SB 35. Only five of the study cities reported approvals through SB 35 in these years, so the authors restricted this research to those five jurisdictions: Berkeley, Los Angeles, Los Angeles County, Oakland, and San Francisco. That said, that the other 23 jurisdictions initially reported no approvals under SB 35 is a notable fact about the law's early implementation, meriting further investigation.

Local governments implement SB 35, not the state. Whether developers use SB 35 depends partly on how localities provide information about their SB 35 procedures and whether they make prompt determinations about whether projects meet objective criteria. Thus, to better understand some factors that might drive local outcomes despite the state's attempt to standardize approval processes, the authors reviewed how these five local governments explain their implementation of SB 35 and how SB 35 fits into each jurisdiction's existing legal regime.

Next, the authors examined how SB 35-eligible projects navigated the SB 35 approval pathway in each city. The goal was to compare these processes with processes for similar developments in earlier years, which were explored using a housing approval dataset developed for each of the CALES case study cities.

Reviewing both APR data and local data portals, the authors found 49 potential observations of proposed developments across five jurisdictions.[35] The authors then confirmed whether these 49 observations did, in fact, benefit from SB 35 and expanded the data collection to determine if additional developments benefited from SB 35 in 2020 using documents each jurisdiction makes available through their local public portals. The authors then coded the data to allow for comparative analysis with similar developments entitled in 2014–17 in the same five jurisdictions.

The observations from prior years do not have all the details needed to conclusively determine that a project would have met SB 35 requirements. For example, the authors do not have information on whether developments entitled in 2014–17 met the statute's prevailing wage requirements. Therefore, the authors selected projects entitled prior to SB 35 that met SB 35's affordability, density, and siting requirements and that were consistent with objective zoning and design review standards. The authors then compared these pre-SB 35 entitlements with SB 35 approvals in later years. The authors focused on required steps and entitlement timeframes when comparing developments. Each jurisdiction requires its planning department to review whether the proposed development qualifies for review under SB 35, and approval under SB 35, to proceed to the next step of applying for a

[35] A quick review of the APR data across the entire state for these same years suggests that the total number of SB 35 approvals statewide may not be very high. Most reported SB 35 approvals in the 2018, 2019, and 2020 APR data (Table A) are incorrect. Jurisdictions appeared to report SB 35 approvals for single-family development (not allowed under the law). The APRs from those years indicate only around 125 possible SB 35 approvals across the state. The authors are unable in this research to fully explain why more development did not benefit from SB 35. Base zoning (density and use controls) in some urban communities could be the problem. Prevailing wage requirements could be problematic in some regional markets. Site characteristics might also present an obstacle.

building permit. The eligibility review process allows the authors to uniquely create a comparison between state ministerial approvals with local discretionary approvals in prior years.

An important limitation of this study, and data, is that findings from each study city are not representative of how entitlement (or SB 35) operates across the state. The authors rely on case studies to explain entitlement (and the application of SB 35) in specific cities—and do not draw conclusions about how SB 35 operates in California, more generally, although the authors hope these findings help build toward that larger understanding. Also, these study observations are limited to proposed developments that were successfully entitled in 2014–17 or successfully qualified for SB 35's ministerial process in 2018, 2019, or 2020. In other words, these data represent those developments that developers likely believed had a high enough probability of success that they were willing to pursue entitlement in the first place. Thus, the authors cannot rigorously evaluate whether SB 35 is changing the quantity or type of project proposed by developers, who make those decisions in light of the applicable local legal regime. Even so, to the extent that this research shows a faster and more predictable approval process under SB 35, the authors would expect that developers adjust their behavior accordingly. Finally, the authors did not find complete data in all five cities that would allow for comprehensive timeframe calculations for all five cities.

Findings

Although SB 35 provides criteria about when and where it applies and imposes time constraints on planning department eligibility review, it is not possible to extract a fully standard approach to reviewing and processing applications from the language of the statute. Indeed, none of the five jurisdictions studied modified their procedural rules in exactly the same way. Thus, the authors begin each city-specific discussion with how the local government complied with the state law's eligibility review requirements. How cities respond to the time constraints on the eligibility review process is significant in California, because past efforts to impose time constraints on procedure have had mixed results, at best.[36] Fully understanding the findings with respect to SB 35's project-level effects requires contextualizing those findings with cities' still-disuniform procedures for accessing the SB 35 process. Having provided that context, the authors then discuss the effect of SB 35 on development approvals, offering comparisons with similar developments in prior years where possible.

[36] For example, the Permit Streamlining Act requires that local governments make completeness determinations within 30 days of a project application date, or the project application is "deemed complete" and ready for planning department review. The authors observed that many cities ignore this requirement entirely, whereas others do not make completeness determinations but do capture "deemed completed" dates within planning review tracking software.

The City of Los Angeles

Los Angeles' Senate Bill 35 Processes Add More Steps to Determining Eligibility, but the City's Application of Density Bonus Law Allows More Developments to Qualify

Separate from SB 35, the city of Los Angeles generally provides a ministerial process for code compliant development, up to 49 units.[37] California's Density Bonus law further allows some code compliant developments larger than 49 units to benefit from Los Angeles' local ministerial process.[38] A property owner that qualifies for ministerial approval under local law applies for a building permit directly with the Department of Building and Safety. If the development does not qualify for ministerial review, the building department refers the project to the Department of City Planning for planning review.

In contrast, to access SB 35 ministerial review, a project proponent begins with the Department of City Planning and navigates multiple steps before proceeding to the Department of Building and Safety. Los Angeles created an administrative procedure, the Streamlined Infill Project (SIP) process, to review and track housing developments that qualify for SB 35.[39] The goal of the SIP process is to confirm that eligible projects meet the city's objective zoning standards necessary to access SB 35's ministerial review. The SIP process requires multiple reviews, including from the Department of City Planning and the Housing and Community Investment Department, before proponents submit plans to the Los Angeles Department of Building and Safety (City of Los Angeles Department of Regional Planning, 2023). Under the current procedures, it appears that applicants for ministerial review under SB 35 are required to pay an "expedite fee" for this service, in addition to the regular fee for a plan check (City of Los Angeles Department of Regional Planning, 2023). Notably, SB 35 forbids the levying of "increased fees" based solely or partially on the fact that the project has received this ministerial approval process, although it is unclear whether the prohibition extends to processing fees.[40]

Los Angeles states that it will determine whether the application is consistent with objective design standards within SB 35's required timeframes. Any amendment to the original submission, however, restarts that review clock (City of Los Angeles Department of Regional Planning, 2023). Moreover, the city requires a project proponent to complete a "Pre-Application Review Process" to determine eligibility. The city interprets SB 35's time limitations to apply only after this preliminary review (Glesne, n.d.). It is unclear whether these preapplication review process requirements are consistent with SB 35.

[37] Site Plan Review (the blanket discretionary provision with Los Angeles' local code) generally applies at 50 units per Los Angeles Municipal Code §16.05 (C)(1). Additional criteria (related to specified planning areas) may also pull what would be ministerial into a discretionary approval pathway. Community Design Overlays can also render what would be ministerial discretionary (see § 13.08 (E)).

[38] Los Angeles Municipal Code §12.22 A.25(g).

[39] The same process is used to approve supportive housing projects that qualify for streamlined review under Assembly Bill 2162 (2018).

[40] Cal. Government Code § 65913.4(h)(1) provides "A local government shall not adopt or impose any requirement, including, but not limited to, increased fees or inclusionary housing requirements, that applies to a project solely or partially on the basis that the project is eligible to receive ministerial or streamlined approval pursuant to this section."

A final interpretive issue arising in Los Angeles' implementation of SB 35 concerns the application of density bonuses to SB 35 projects. SB 35 applies only to projects where one-half of units are affordable but, until recently, did not provide clear language on whether the minimum affordability threshold was to be calculated prior to or after a density increase.[41] The city interpreted SB 35 to allow for "[a] minimum of 50 percent of the total units in the development, *calculated prior to any density increase*, must be affordable" (City of Los Angeles Department of Regional Planning, 2023). This calculation parallels how the city applies the state Density Bonus Law to its own local ministerial process. Notably, in September 2022, the state legislature amended the law to provide that the minimum affordability threshold should be calculated prior to the application of a Density Bonus, consistent with what Los Angeles was already doing.[42]

Senate Bill 35 Appears to Cut Approval Times in Los Angeles

So, how did the city's SIP operate? Overall, the SIP appears to have reduced approval timeframes for 18 developments (exhibit 1 and exhibit 2). The median approval timeframe for the developments that qualified for SB 35 was less than 3 months (or 2.7 months). CALES data yielded 11 similar developments entitled in prior years that have project and site characteristics that would seem to qualify for SB 35—had the state law applied in those prior years. The median time to entitlement for the developments in earlier years was approximately 7 months, which indicates that SB 35 reduces approval timelines for some multifamily affordable housing developments in Los Angeles.

To illustrate the effect of SB 35 on individual developments, the authors examined two examples from the same neighborhood. The authors compared 459 Hartford Avenue S and 1218 Ingraham Street; both are 100-percent affordable developments in the Westlake neighborhood. The development at 459 Hartford Avenue S, a 101-unit development sited on what was once surface parking, took 132 days to reach its final entitlement in 2017. The development at 1218 Ingraham Street, a 121-unit development also sited on a former surface parking lot, took 71 days to approve under SB 35.

In terms of affordability mix, the 11 comparable pre-SB 35 developments were all 100 percent affordable.[43] After SB 35, the city approved 18 developments through SB 35. Of the 18 developments, 16 were 100 percent affordable. The city also approved one development that was 37 percent affordable and another that was 34 percent affordable. In both instances, the developments received density bonuses, and the city appears to have calculated the affordability mix prior to applying the bonuses based on its interpretation of SB 35.

[41] Cal. Gov't Code § 65913.4(a)(4)(B)(ii) (2021).

[42] Stats.2022, c. 658 (Assembly Bill 2668), Sec. 1, eff. Jan 1, 2023.

[43] Developments with all but one or two units designated as affordable units are defined as 100 percent affordable, because those units are typically set aside as managers' units.

Exhibit 1

City of Los Angeles 2014–17 Observations With Senate Bill 35 Qualifying Criteria

Project	Total Units	Total Affordable Units	CEQA Compliance Pathway	Months to Approval to Proceed to Building Department	Opposition Through Local Administrative Appeal
7843 N Lankershim Blvd.	50	50	Mitigated Negative Declaration	4.3	Not appealed
3200 W Temple St.	59	59	CEQA Exempt (Class 32)	3.7	Not appealed
307 N Wilmington Blvd.	176	174	Mitigated Negative Declaration	10.8	Appealed (land use)
1307 W 7th St.	76	75	Mitigated Negative Declaration	8	Appealed (land use)
649 S Wall St.	55	54	Mitigated Negative Declaration	6.9	Not appealed
2631 S Crenshaw Blvd.	50	49	Mitigated Negative Declaration	11.4	Not appealed
13366–13380 W Beach Ave.	21	20	CEQA Exempt (Class 32)	4.5	Not appealed
655 San Pedro St. S	81	80	CEQA Exempt (Class 32)	6.5	Not appealed
4306 Adams Blvd. W	38	37	CEQA Exempt (Class 32)	2.6	Not appealed
4339 Adams Blvd. W	48	47	Mitigated Negative Declaration	7.8	Not appealed
459 Hartford Ave. S	101	100	Addendum to Prior Mitigated Negative Declaration	4.4	Not appealed

CEQA = California Environmental Quality Act.

Source: Comprehensive Assessment of Land Use Entitlements Study data (O'Neill-Hutson et al., 2022)

Exhibit 2

City of Los Angeles 2018–20 Senate Bill 35 Approvals (1 of 2)

Project	Total Units	Total Affordable Units	Months to Approval to Proceed to Building Department
3200 Temple St. W	64	63	2.1
1218 Ingraham St. W	121	120	2.4
14142 Vanowen St. W	64	63	2.9
4200 Pico Blvd. W	54	53	2.8
4719 Normandie Ave. S	43	42	4.0
5627 Fernwood Ave. W	60	59	6.9
456 9th St. W	91	90	Unknown
7022–7026 South Broadway and 235 W 71st St.	52	51	2.6
2106, 2108, 2112 South Central Ave.	57	56	2.8

Exhibit 2

City of Los Angeles 2018–20 Senate Bill 35 Approvals (2 of 2)

Project	Total Units	Total Affordable Units	Months to Approval to Proceed to Building Department
1601–1647 North Las Palmas Ave.	202	69	8
1104–11014 Santa Monica Blvd.	51	50	4.1
5501, 5511 South Main St.	57	56	3.5
401–411 E 6th St. and 522 S San Julian St.	94	93	5.6
4219–4227 S Broadway	87	87	2.3
1040 N Kenmore Ave., 4904–4920 W Santa Monica Blvd.	62	61	1.5
3300–3322 W Washington Blvd.	84	31	2.9
407–413 E 5th St.	150	150	6.3
6576–6604 S W Blvd.	64	63	2.1

Source: Authors' original data

San Francisco

Senate Bill 35 Simplifies San Francisco's Project Application Procedures for Qualifying Projects

San Francisco's local application process provides important context to understand the effect of SB 35. San Francisco applies discretionary review to all development. San Francisco's procedural requirements provide multiple opportunities for discretionary review, public hearings, and neighborhood opposition that often begin *before* a developer applies for entitlement.[44] These preapplication hearing requirements are supposed to air out potential opposition to the proposed development and mediate disputes with neighbors. However, they can add years to the entitlement process before the start of formal planning review (and environmental review). Moreover, San Francisco historically has not applied time constraints once formal planning review begins.[45] Another unique feature of San Francisco local law is that it provides a catch-all opportunity for "interested parties" to request Discretionary Review of any permit, including code compliant development.[46] This process is separate from the processes for local administrative appeal of housing approvals, which offer additional opportunities for neighborhood opposition post-entitlement. In practice, the opportunity to request Discretionary Review allows project opponents anywhere within the city to present previously undisclosed complaints about the proposed development when the proposed development is on the eve of entitlement.[47] In the CALES study

[44] San Francisco requires all development proposals of more than 10 units of housing to complete a Preliminary Project Assessment (PPA) *before* they may file a Project Application. (City of San Francisco Planning Department, 2022). The PPA triggers a mandatory public notice and hearing that precedes the formal planning review process (and required hearings).

[45] Specifically, San Francisco has openly acknowledged its failure to make completeness determinations (consistent with the Permit Streamlining Act) when reviewing Project Applications (City and County of San Francisco Board of Supervisors, n.d.). The authors found that to be true in the 2014–17 dataset.

[46] Municipal Business and Tax Regulations Section 26(a).

[47] Although the Planning Commission may only "take" Discretionary Review under "extraordinary circumstances," a hearing will allow the interested party to request Discretionary Review.

of San Francisco, O'Neill-Hutson et al. (2022) found that when the Planning Commission takes Discretionary Review, it imposes a new set of conditions of approval. O'Neill-Hutson et al. also heard from stakeholders that even when the Planning Commission does not take Discretionary Review, the request alone may trigger last-minute negotiations that alter the proposed development.

San Francisco's implementation of SB 35 creates a comparatively simplified and time-constrained initial review process and eliminates the notice and hearing requirements typically required of development proposals. Importantly, SB 35 eliminates the preapplication hearings *and* the opportunity for project opponents to request Discretionary Review. Applicants seeking to use SB 35 must complete only the appropriate applications and submit architectural plans to initiate review of whether SB 35 applies (City of San Francisco Planning Department, 2020: 2–3). SB 35, thus, eliminates substantial sources of unpredictability. Developers can be certain that if the proposed development conforms to planning and zoning law and meets all SB 35 criteria, San Francisco will approve the plans for development as proposed and allow the developer to proceed to the Department of Building Inspection.

The city also provides an informational packet that summarizes the major objective criteria a project must meet under the statute and describes the application process (City of San Francisco Planning Department, 2020).[48] Like Los Angeles, San Francisco specifies that any changes to the application will restart the statutorily required 90- and 180-day review timelines.

SB 35 Shortens Approval Timeframes for Qualifying Developments in San Francisco

In San Francisco, the CALES data yield only *one* multifamily affordable housing development out of 140 entitlements issued in 2014–17 that offered an opportunity for meaningful comparison. In fact, there are five 100-percent affordable developments in the San Francisco 2014–17 entitlement dataset. Four of them are not suitable for comparison because of process or site characteristics.[49]

Exhibit 3 shows that the pre-SB 35 development is a 94-unit, 100-percent affordable development in the Mission/Dolores neighborhood for formerly homeless seniors who satisfied the city's application of its inclusionary ordinance on another parcel slated for mixed-use development. This project took just more than a year to entitlement (367 days).[50] This affordable development conformed to all planning and zoning and qualified for a streamlined environmental review process.[51] The planning department applied its priority processing, as well. The proposed affordable housing did not require any approvals other than environmental review.

[48] San Francisco has also dedicated a section of its city website to information on SB 35 in English, Mandarin, Spanish, and Tagalog (San Francisco Planning, n.d.).

[49] These four were not suitable for different reasons: One required demolition of housing for sensitive populations, one required a conditional use permit, and two required general plan amendments. These characteristics would have disqualified these projects from benefiting from SB 35.

[50] This calculation is from the date of application. San Francisco also requires a mandatory preapplication review process, a PPA, for large projects (more than 10 units). Calculating the total timeline from the PPA application date would add another 59 days to the entitlement timeframe.

[51] The development qualified for tiering under section 15183.3 of the California Environmental Quality Act guidelines and Public Resources Code Section 21094.5.

Exhibit 3

City and County of San Francisco 2014–17 Observations With Senate Bill 35 Qualifying Criteria

Project	Total Units	Total Affordable Units	CEQA Compliance Pathway	Months to Entitlement	Opposition Through Local Administrative Appeal
1296 Shotwell	94	94	Tiering (15183 Community Plan Exemption)	12.2	Appealed

CEQA = California Environmental Quality Act.

Source: Comprehensive Assessment of Land Use Entitlements Study data (O'Neill-Hutson et al., 2022)

After entitlement, someone appealed the Planning Commission's decision to use streamlined environmental review[52] (consistent with the planning department's recommendation). [53] The Board of Supervisors upheld the Planning Commission approval, but the local administrative appeal hearing and decision added another 76 days to the 367 days to entitlement.

Following the implementation of SB 35, San Francisco approved 12 100-percent affordable developments and 1 group housing development (with 53 percent of the beds below market rate) under SB 35 in 2018, 2019, and 2020 (exhibit 4). The median timeframe to approval for the 13 developments was 141.5 days, or approximately 4.5 months. There is one outlier in terms of approval timeframes. The entitlement process for 4840 Mission Street began in 2016 several months before California State Senator Scott Weiner proposed SB 35 and years before SB 35's applicability. If we calculate the timeframe to approval from the date the developer initiated a new application for SB 35 eligibility in March 2019, the approval period was 3.5 months.

Exhibit 4

City and County of San Francisco 2018–20 Senate Bill 35 Approvals (1 of 2)

Project	Total Units	Total Affordable Units	Months to Approval to Proceed to Building Department
2340 San Jose Ave.	130	130	6.2
266 4th St.	70	69	4.5
3001 24th St.	45	45	5.2
457 Minna St.	270	143	6.1
681 Florida St.	130	130	1.6
833 Bryant St.	146	145	5.3
1360 43rd Ave. (originally proposed as 1351 42nd Ave.)	135	135	3.5
921 Howard St.	203	203	1.4
78 Haight St.	63	63	3.1

[52] Sec. 15183.3 of CEQA Guidelines and Section 21094.5 of the CA Public Resources Code allow for Community Plan Exemptions (or the ability to "tier" off of a plan Environmental Impact Report (EIR) in specified circumstances).

[53] San Francisco's online portal provides no additional detail about the administrative appeal or the party that appealed the approval. The record states "an appeal was filed" instead of naming the party that filed the appeal. The archived website no longer provides access to 2017 hearings in front of the Board of Supervisors.

Exhibit 4

City and County of San Francisco 2018–20 Senate Bill 35 Approvals (2 of 2)

Project	Total Units	Total Affordable Units	Months to Approval to Proceed to Building Department
180 Jones St.	70	70	3.9
4840 Mission St.	137	137	33.4
436 Geary Blvd.	130	130	1.5
1064–1068 Mission St.	260	260	4.9

Source: Authors' original data

Comparing specific developments with the pre-SB 35 development reveals more. For example, one SB 35 development was five blocks from the pre-SB 35 site previously described, and its entitlement under SB 35 took 157 days. This approval timeframe is less than one-half of the timeframe for its pre-SB 35 neighbor. Although a local administrative appeal process further delayed the pre-SB 35 project, SB 35 removed this opportunity for administrative appeal as an obstacle altogether.

The City of Oakland

Senate Bill 35's Effect on Oakland's Project Application Procedures Are Unclear

As of summer 2022, Oakland offered scant resources explaining its SB 35 procedures. The extent of its SB 35 public education resources appears to be a two-page checklist and brief description of the SB 35 ministerial process (City of Oakland, n.d.). The checklist details the major requirements for accessing ministerial review.[54] The checklist states that approval decisions will be made within SB 35's required timelines of 90 days for developments of 150 or fewer units and 180 days for developments of greater than 150 units but does not mention the separate 60- and 90-day deadlines for determining consistency with objective design standards. The document does not provide information on what forms developers must submit to qualify. Unlike the city of Los Angeles and San Francisco, Oakland does not specify whether application revisions restart the clock (City of Oakland, n.d.).

Oakland's application procedures are more difficult to ascertain from public written documents than San Francisco's, but it does not necessarily mean that they are more burdensome. In prior work, O'Neill-Hutson et al. (2022) found Oakland's discretionary timeframes to entitlement for development (including noncode compliant development) comparatively short.[55]

[54] The checklists track the law's requirements and include the level of affordability, percentage of affordable units, zoning, siting, construction worker compensation, conformity with objective standards of the planning code, and potential for tenant displacement.

[55] Timeline data are much more difficult to pull out of Oakland compared with San Francisco. Almost one-half of all the authors' observations are missing applications and, therefore, application dates, whereas nearly all San Francisco observations have application documents that the authors used to determine application dates. Fortunately, the observations within Oakland with timeline data, combined with interviews, allowed the authors to draw some conclusions about how Oakland compared with its neighbors.

It Is Unclear Whether Senate Bill 35 Shortens Approval Timeframes in Oakland, Given a Lack of Pure Senate Bill 35 Developments

The authors found seven entitlements in the 2014–17 dataset that offer valuable comparisons with developments that benefited from SB 35. All were 100 percent affordable. The authors have complete timeframe data for only five. The entitlement timeframes ranged from 4 to 41 months (exhibit 5).

Exhibit 5

City of Oakland 2014–17 Entitlement Observations with Senate Bill 35 Qualifying Criteria

Project	Total Units	Total Affordable Units	CEQA Compliance Pathway	Months to Entitlement	Opposition Through Local Administrative Appeal
0 7th St.	79	79	Tiering (15183 Community Plan Exemption)	18.8	Not appealed
2126 Martin Luther King Jr. Way	62	62	CEQA Exempt (Class 32)	4.8	Not appealed
2201 Brush St.	59	59	CEQA Exempt (Class 32)	41.9	Not appealed
445 30th St.	58	57	CEQA Exempt (Class 3)	–	Not appealed
0 35th Ave.	181	179	Tiering	–	Not appealed
1415 Harrison St.	81	81	CEQA Exempt (Class 3)	4	Appealed on land use grounds
344 13th St.	66	65	CEQA Exempt (Class 3)	4	Not appealed

CEQA = California Environmental Quality Act.

Note: – means a timeframe calculation is not possible.

Source: Comprehensive Assessment of Land Use Entitlements Study data (O'Neill-Hutson et al., 2022)

In 2018–20, Oakland approved two developments under SB 35, both 100 percent affordable (exhibit 6). It took 10 months to approve a project of 97 units and around 14 months for a project of 60 units. These eligibility review timeframes are longer than the median pre-SB 35 timeframes.

Exhibit 6

City of Oakland 2018–20 Senate Bill 35 Approvals

Project	Total Units	Total Affordable Units	Months to Approval to Proceed to Building Department
2125 Telegraph Ave.	97	97	10.3
2372 International Blvd.	60	59	13.9

Source: Authors' original data

However, a closer exploration suggests these projects were not approved entirely within the SB 35 framework (and, indeed, exceeded the statutory SB 35 time limits).[56] These two developments both required approvals outside of the SB 35 process. The 97-unit development revised its plans to allow for more units after obtaining a lot line adjustment, which may have delayed the final

[56] SB 35 holds local government to strict time limits. For projects of 150 units or fewer, they must respond within 60 days if a project conflicts with any standards and 90 days to complete design review and public oversight. Cal Gov't. Code § 65913.4(c)(1)-(d)(1).

approval. The 60-unit project involved subdividing an existing parcel into two lots, which required a separate application outside the SB 35 process.[57] The approval documents suggest that the city of Oakland allowed the project to qualify for ministerial review under SB 35 while also requiring the developer to separately process the subdivision application, a process that perhaps did not strictly adhere to SB 35 but did facilitate approval. Moreover, the 60-unit project appears not to have requested review under SB 35 when it first sought approval in 2019, only doing so in 2020.

Oakland's approval process for the 97-unit project also raises a fundamental question of what qualifies as "objective" design criteria under SB 35. In this case, the developer and city disagreed over whether historic district design criteria were objective. The criteria required, for example, that new construction be "compatible [. . .] in terms of massing, siting, rhythm, composition, patterns of openings, quality of material, and intensity of detailing" and provide "high visual interest."[58] The developer argued that the criteria were subjective and, therefore, should not be applied during design review. The city maintained that the criteria were objective but ultimately found that the project satisfied them.

The City of Berkeley

Berkeley's Senate Bill 35 Eligibility Determination Processes Are Complex But Senate Bill 35 Importantly Modified Berkeley's Use Permit Requirements

The city of Berkeley provides several SB 35 specific forms and resources on its website with considerable detail about requirements for the use of the ministerial process and the necessary documentation to satisfy these requirements (City of Berkeley, 2022a). Berkeley's checklist adds documentation requirements beyond those of SB 35, including affordable housing, landscaping, and green building documentation depending on the project's specifications (City of Berkeley, 2022b). Although SB 35 does not enumerate these requirements, they fall under the local objective criteria provision of SB 35. Notably, the Berkeley checklist also "strongly encourage[s]" the project proponent to convene a "pre-application neighborhood meeting," even though SB 35 does not allow the imposition of additional requirements on projects solely or partially, because they are receiving ministerial review under SB 35 (City of Berkeley, 2022b).

Berkeley's local regulations are comparatively difficult to understand and access, relative to the other cities studied, which makes determining whether a project qualifies for SB 35 more difficult. In other words, determining what is "code compliant" is difficult in Berkeley. SB 35 does not resolve this issue, because it does not modify local density and use controls—it intervenes in process. Unlike the other four jurisdictions discussed in this article, Berkeley does not automatically disqualify proposed development that is inconsistent with current zoning provisions. Instead, it allows applicants an opportunity to "reconcile[e] those discrepancies and demonstrate how the development will be consistent" (City of Berkeley, 2022b). SB 35 had another major effect in Berkeley: Berkeley's local law requires all developments to obtain a use permit, even

[57] Under SB 35, lot subdivisions disqualify a project from ministerial review unless the subdivision falls under one of two exceptions per Cal. Gov't. Code § 65913.4(a)(9).

[58] Oakland Planning Code Sec. 17.136.055(B)(2).

when the project fulfills all objective criteria for development. One of SB 35's provisions voids this requirement for qualifying developments.[59]

Notably, Berkeley considered SB 35 a major imposition on its control of land use, arguing in litigation against the constitutionality of the statute under California home rule law. The narrow dispute at issue concerned whether a project proposed to be built on an Ohlone shellmound burial ground could receive a ministerial permit under SB 35 (Huang, 2018). However, when a developer sued because Berkeley declined to apply SB 35, Berkeley's arguments extended far beyond the contested issues of the case, which concerned whether the burial site was a historic "structure" and challenged the state's authority to intervene in charter cities' land use processes.[60] These arguments, made by a liberal city in the context of a site of cultural significance to Native American tribes, echoed those made by the conservative city of Huntington Beach in related litigation. In both cases, courts ultimately found in favor of the state and affirmed that SB 35 was reasonably related to the statewide issue of insufficient low-cost housing and narrowly tailored to address the issue (Szabo, 2021). However, this litigation may indicate the practical importance of SB 35 in Berkeley; the city considered the law sufficiently intrusive to challenge the statute as a whole during litigation.

Senate Bill 35 Approvals Moved Quickly in Berkeley

In Berkeley, two multifamily affordable developments were approved prior to the passage of SB 35 that can be compared with three SB 35 developments (exhibit 7). Of the two developments from 2014–17, the authors were not able to determine the application date for one and could not calculate an entitlement timeframe. The other took more than 34 months to entitlement.[61] In 2014, the developer sought approval for modifications to reduce parking and make minor adjustments to the building, which it secured in 2017. One of the pre-SB 35 projects was 100 percent affordable; the other was 57 percent affordable.

Exhibit 7

City of Berkeley 2014–17 Entitlement Observations With Senate Bill 35 Qualifying Criteria

Project	Total Units	Total Affordable Units	CEQA Compliance Pathway	Months to Approval to Proceed to Building Department	Opposition Through Local Administrative Appeal
2748 San Pablo Ave.	23	13	CEQA Exempt (Class 32)	34.7	Not appealed
3132 Martin Luther King Jr. Way	42	42	Unknown	Unknown	Not appealed

CEQA = California Environmental Quality Act.
Source: Authors' original data

Two of the three projects approved under SB 35 were significantly larger (142 and 87 units) than the two projects from the 2014–17 dataset (23 and 42 units). Two of the SB 35 projects moved quickly (exhibit 8). One took approximately 3.4 months and the other just under 2 months to

[59] Cal. Gov't Code § 65913.4(a).

[60] The City of Berkeley also unsuccessfully argued for other narrowing constructions of the statute. *Ruegg*, 63 Cal. App. 5th at 318–319 (2021).

[61] It also appears that the development was entitled in prior years, as well. The authors found a similar entitlement from 2007.

secure planning approval. The authors were unable to confirm the application date for the third SB 35 project, but press coverage described the process as swift (Hicks, 2019).[62] All three of these projects were 100 percent affordable.

Exhibit 8

City of Berkeley 2018–20 Senate Bill 35 Approvals

Project	Total Units	Total Affordable Units	Months to Approval to Proceed to Building Department
2012 Berkeley Way	142	141	1.9
2001 Ashby	87	86	3.4
1601 Oxford	37	34	Unknown

Source: Authors' original data

Los Angeles County

Los Angeles County Provides Substantial Guidance on How to Quality for Senate Bill 35

Los Angeles County created several SB 35 documents to explain how to access this process. At the time of writing, the County provided English- and Spanish-language factsheets. It now offers those at request but still provides information about the basics of SB 35, including the major criteria for projects, what ministerial review entails, and SB 35's approval timelines (Los Angeles County Department of Regional Planning, n.d.a.). A "Preexisting Site Condition Questionnaire" takes developers through six questions about the site location that determine whether or not it is eligible for SB 35 review (Los Angeles County Department of Regional Planning, n.d.b). The county also provides a frequently asked questions list and memorandum that go into greater detail about the SB 35 process (Los Angeles County Department of Regional Planning, n.d.a).

Los Angeles County also provides more information than the previously discussed five jurisdictions regarding approval expiration. In addition to notifying developers that approvals are valid for 3 years, the county provides that privately funded project proponents can extend the approval for 1 year and certain publicly funded affordable housing projects have no approval expiration date (Los Angeles County Department of Regional Planning, n.d.a). Finally, Los Angeles County updated its Housing Element in November 2021. The Housing Element includes basic provisions relating to SB 35.

The county's support for SB 35 applicants is not limited to written materials. The county's Department of Regional Planning also established a team of Affordable Housing Case Planners that serves as the point of contact for all SB 35 applicants (Los Angeles County Department of Regional Planning, 2021: 16).

[62] https://www.berkeleyside.org/2019/01/17/berkeley-approves-two-affordable-housing-projects-in-record-time-under-new-state-law-sb-35. The authors were able to locate the date of the SB 35 Checklist, but not the date for the main application document, so the authors cannot confirm the application date. If the Checklist date is the same as the application date, then the approval timeframe is 31 days.

Los Angeles County Applies Senate Bill 35 Broadly—Even to Small Market-Rate Developments

Before the passage of SB 35, Los Angeles County entitled two multifamily affordable developments between 2014 and 2017 (exhibit 9).

Exhibit 9

County of Los Angeles 2014–17 Observations With Senate Bill 35 Qualifying Criteria

Project	Total Units	Total Affordable Units	CEQA Compliance Pathway	Months to Approval to Proceed to Building Department	Opposition Through Local Administrative Appeal
6218 Compton Ave.	30	29	Unknown	7.9	Not appealed
1854 E. 118th St.	100	100	Hybrid exemption (Transit Priority Project)	4	Not appealed

CEQA = California Environmental Quality Act.

Source: Comprehensive Assessment of Land Use Entitlements Study data (O'Neill-Hutson et al., 2022)

Following SB 35, the county entitled seven qualifying projects between 2018 and 2020 (exhibit 10). What is also notable is the time range until approval across SB 35 developments. Although many took only a few months, one took more than 9 months, and another took almost 20 months to approval. Thus, among the seven SB 35 approvals, the timeframes vary considerably. Indeed, one 10-unit development accounted for the near 20-month timeframe, whereas another 10-unit development required only 2 months. In this county, SB 35 did not lead to predictable entitlement timeframes for qualifying projects. However, the authors lack the detail needed to understand why certain projects in Los Angeles County exceeded the statutory timelines in SB 35. Hypothetically, the story may involve projects with non-SB 35 components, or which changed their approval process midway through the entitlement process, as in Oakland, but it is unknown.

Exhibit 10

2018–20 Observations Los Angeles County

Project	Total Units	Total Affordable Units	Months to Approval to Proceed to Building Department
10928 S. Inglewood Ave.	10	0	19.9
7220 Maie Ave.	192	29	9.2
1351 W 95th St.	57	56	3.6
1619 Firestone Blvd.	12	2	3.5
Valley Blvd. and Workman Mill Rd.	81	80	.1
4101–4111 Whittier Blvd.	34	33	1
11503 S New Hampshire Ave.	10	2	2.2

Source: Authors' original data

The longest approval timeline of the county's SB 35 projects may be explained by its small size and lack of affordable units. Overall, the county's SB 35 projects had a range of affordability levels. Of the seven multifamily affordable developments approved using SB 35, three were 100-percent

affordable developments, but the remaining developments were mixed income, with affordable rates at 15, 17, and 20 percent of total units. The final development, of 10 units, had no affordable units, however. The application of SB 35 to the market-rate 10-unit building may suggest that Los Angeles County interprets SB 35 to also apply to market-rate developments of under 10 units, meeting the other site and project criteria. SB 35 requires that to be eligible for ministerial review, a development must be "subject to a requirement mandating a minimum percentage of below market-rate housing" based on one of several criteria.[63] In one such scenario, SB 35 provides that a project of more than 10 units must make 10 percent of units affordable but does not specify that projects of 10 units or fewer do not need to meet the requirement of being subject to a minimum percentage of below market-rate housing.[64] Los Angeles County advises in its materials that to be eligible for SB 35 review, a "project with more than 10 dwelling units must include a 10-percent affordable housing set-aside for lower or very low-income households" (Los Angeles County Department of Regional Planning, n.d.a). The development without any below market-rate units had an approval timeframe of 597 days. Although the authors are unsure exactly how or why Los Angeles County applied SB 35 to this project, it appears to be an outlier in multiple respects.

Discussion

SB 35 is a state intervention in local discretionary review of a select group of developments that meet predetermined affordability, site, and other project criteria. It also provides local planning departments and developers relief from state mandated environmental review. SB 35 does not disrupt local choices around density, use, or design. For researchers and policymakers, the form of SB 35 poses important questions about whether a procedural intervention alone can catalyze meaningful or marginal increases in housing production. Because SB 35 requires planning review to determine whether a proposed development qualifies for the state-level ministerial process, the statute also creates a unique opportunity to compare the effect of state law on preentitlement processes within that state ministerial framework with preentitlement processes under local discretionary review. Future research may want to compare ineligible developments approved within the same period.[65]

This preliminary review indicates that in the first years following the statute's effective date, few developments statewide used SB 35. Many explanations are plausible. First, SB 35 modifies process, not density and use controls. The parcels that meet the state law's site criteria may not have zoning in place to allow for multifamily developments, or developments big enough to be financially feasible given the required affordability thresholds. Second, in some places, only certain developers can benefit from SB 35. In four of the cities studied (Berkeley, Los Angeles, Oakland, and San Francisco), the threshold to qualify for SB 35 was 50 percent of units being affordable, but most SB 35-approved development was 100 percent affordable.[66] Third, it could be that developers

[63] Cal Gov't Code Sec. 65913.4(a)(4)(B).

[64] Cal Gov't Code Sec. 65913.4(a)(4)(B)(i).

[65] Future research may want to compare the effect of SB 35 on qualifying developments with proposed developments that do not meet SB 35's site criteria, for example, or prevailing wage requirements.

[66] Each city had a requirement of 50 percent affordable, except Los Angeles County, which had a 10-percent affordable requirement.

and planners were uncertain about how to apply the new state law within the context of local legal regimes. Local use of SB 35 may change over time as various actors learn how SB 35 applies and interacts with other laws (like the state density bonus law in question in Los Angeles) and as courts and the state legislature perhaps provide more clarity.

Nonetheless, these case studies provide preliminary evidence that SB 35 likely will quicken approval timeframes for qualifying developments. Certainly, SB 35 approval processes are worth tracking statewide. San Francisco and Los Angeles best illustrate how SB 35 can shorten approval timeframes, with what appear to be meaningful reductions in timelines and increases in predictability.

Also important, in some cities, SB 35 will offer a ministerial pathway to approval for mixed income and 100-percent affordable development where none existed. This ministerial approval pathway is especially important to affordable developers in cities with complex local rules that repeatedly invite opportunity for neighborhood opposition—like Berkeley and San Francisco. Thus, SB 35's effect on planning review processes is significant, even if it has been limited to only a handful of jurisdictions in the first years of the statute's implementation.

These case studies also signal that SB 35 is unlikely to fully standardize how cities and counties determine eligibility. These five jurisdictions adjusted their local planning review processes to implement SB 35 differently. For example, San Francisco's process changes infused simplicity into a procedural maze, whereas the city of Los Angeles imbued more complexity into its Planning Department review process. These distinctions reflect interactions between SB 35 and the local rules previously in place: the SB 35 eligibility review in Los Angeles is more complicated than Los Angeles' local ministerial review, while SB 35 eligibility review in San Francisco eliminated lengthy preapplication requirements and San Francisco's use of a sometimes disruptive, blanket Discretionary Review provision. The city of Los Angeles' SB 35 process, thus, highlights the importance of functional differences between what local ministerial processes and the state ministerial process created by SB 35 can offer developers in terms of ease and efficiency. Other differences in local application of SB 35 included the calculation of affordability when density bonuses are applied—an issue subsequently clarified by state legislation—as well as how to apply SB 35 when approvals ineligible for SB 35 (like subdivision) are required project components.

Still, outcomes from these jurisdictions also suggest that SB 35 is working—at least in some cities—to accelerate approval of affordable housing development. Reforms that affect only procedure are inherently insufficient to promote housing production in all places. In many jurisdictions, the underlying substance of the zoning code provides the binding constraints on development. However, where the base zoning purportedly permits development—whether by local initiative or due to separate state-level interventions—procedural reforms can play a critical role.

Appendix: Additional Tables

Exhibit A1

Comparable Developments (Neighborhoods and Affordability)

	2014–17 Entitlement Observation	SB 35 2018–20 Observations
Jurisdiction	San Francisco	San Francisco
Neighborhood	Mission	Mission
Number of units	94	63
Percent affordable	100%	100%
Entitlement timeframe	367 days	92 days
Jurisdiction	Oakland	Oakland
Neighborhood	Uptown	Uptown
Number of units	62	97
Percent affordable	100%	100%
Entitlement timeframe	143 days	308 days
Jurisdiction	City of Los Angeles	City of Los Angeles
Neighborhood	Westlake	Westlake
Number of units	101	121
Percent affordable	100%	100%
Entitlement timeframe	132 days	71 days
Jurisdiction	City of Los Angeles	City of Los Angeles
Neighborhood	Westlake	Westlake
Number of units	76	64
Percent affordable	100%	100%
Entitlement timeframe	240 days	64 days
Jurisdiction	City of Los Angeles	City of Los Angeles
Neighborhood	West Adams-Baldwin Hills-Leimert	West Adams-Baldwin Hills-Leimert
Number of units	38	54
Percent affordable	100%	100%
Entitlement timeframe	78 days	84 days
Jurisdiction	City of Los Angeles	City of Los Angeles
Neighborhood	West Adams-Baldwin Hills-Leimert	West Adams-Baldwin Hills-Leimert
Number of units	48	64
Percent affordable	100%	100%
Entitlement timeframe	235 days	63 days
Jurisdiction	City of Los Angeles	City of Los Angeles
Neighborhood	Central City	Central City
Number of units	81	94
Percent affordable	100%	100%
Entitlement timeframe	198 days	169 days

SB 35 = Senate Bill 35.

Source: Comprehensive Assessment of Land Use Entitlements Study data (O'Neill-Hutson et al., 2022)

Acknowledgments

The authors are grateful to the Furman Center at New York University for providing financial support for this paper, and to Vicki Been and Noah Kazis for their thoughtful review and feedback on drafts. The authors acknowledge and thank the Silicon Valley Community Foundation, the Chan Zuckerberg Initiative, and the California Air Resources Board for their financial support of the CALES.

This article relies on CALES data. The authors thank the CALES team, including the collaborators, professors Eric Biber and Nicholas Marantz, student researchers, including Vivek Adury and Deborah Le-An Tan, and former research team members, including Giulia Gualco-Nelson and Raine Robichaud.

Authors

Moira O'Neill is an associate research scientist at the Institute for Urban and Regional Development and a senior research fellow at the Center for Law, Energy, and the Environment at the University of California, Berkeley. O'Neill is also an associate professor of law, general faculty, at the University of Virginia School of Law and in the Department of Urban and Regional Planning in the School of Architecture. Ivy Wang is a graduate student researcher at the Institute for Urban and Regional Development at the University of California, Berkeley.

References

Bromfield, Heather, and Eli Moore. 2017. "Unfair Shares: Racial Disparities and the Regional Housing Needs Allocation Process in the Bay Area." Berkeley: University of California, Haas Institute. https://belonging.berkeley.edu/sites/default/files/haasinstitute_unfairshares_rhnabayarea_publish.pdf.

California Department of Housing and Community Development (HCD). n.d.a. "Annual Progress Reports." CA.gov. State of California. https://www.hcd.ca.gov/planning-and-community-development/annual-progress-reports.

———. n.d.b. "Housing Elements." https://www.hcd.ca.gov/planning-and-community-development/housing-elements.

———. n.d.c. "Housing Element Compliance Incentives." https://abag.ca.gov/sites/default/files/documents/2021-04/HE_Compliance_One-Pager.pdf.

———. 2020. "Housing Element Sites Inventory Guidebook." https://www.hcd.ca.gov/community-development/housing-element/docs/sites_inventory_memo_final06102020.pdf.

City of Berkeley. 2022a. "SB 35 Eligibility Criteria." https://berkeleyca.gov/sites/default/files/2022-02/SB-35-Eligibility-Requirements.pdf.

———. 2022b. "SB 35 Development Application Submittal Requirements." https://berkeleyca.gov/sites/default/files/2022-02/SB-35-Project-Application_Submittal-Requirements.pdf.

City of Los Angeles Department of Regional Planning. 2023. "SB 35 – Streamlined Infill Projects: Filing Instructions." https://planning.lacity.org/odocument/23b09292-faf9-430c-ab0c-bd52a2f072bb/SB%2035%20Streamlined%20Infill%20Projects%20-%20Application%20Instructions.pdf.

City of Oakland. n.d. "SB 35 Checklist Decision Tree." https://mtc.ca.gov/sites/default/files/City_of_Oakland_SB_35_Checklist_Decision_Tree.pdf.

City of San Francisco Planning Department. n.d. "Affordable Housing Streamlined Approval (SB-35)." https://sfplanning.org/resource/sb35-application.

———. 2022. "Preliminary Project Assessment: Information Packet." https://sfplanning.org/sites/default/files/forms/PPA_InfoPacket.pdf.

———. 2020. "SB 35 Supplemental Application." https://sfplanning.org/sites/default/files/forms/SB35_SupplementalApplication.pdf.

City and County of San Francisco Board of Supervisors. n.d. "Permit Streamlining Act." https://sfbos.org/permit-streamlining-act.

Dillon, Liam. 2017. "Gov. Brown Just Signed 15 Housing Bills. Here's How They're Supposed to Help the Affordability Crisis," *Los Angeles Times*, September 29. https://www.latimes.com/politics/la-pol-ca-housing-legislation-signed-20170929-htmlstory.html.

Elmendorf, Christopher. 2019. "Beyond the Double Veto: Housing Plans as Preemptive Intergovernmental Compacts," *Hastings Law Journal* 71: 79.

Elmendorf, Christopher, and Timothy Duncheon. 2022. "When Super-Statutes Collide: CEQA, the Housing Accountability Act, and Tectonic Change in Land Use Law," *Ecology Law Quarterly* 49: 17–23. https://doi.org/10.2139/ssrn.3980396.

Elmendorf, Christopher S., Eric Biber, Paavo Monkkonen, and Moira O'Neill. 2021a. "Making It Work: Legal Foundations for Administrative Reform of California's Housing Framework," *Ecology Law Quarterly* 47 (4): 973–1060. https://doi.org/10.15779/Z38FF3M128.

———. 2021b. "State Administrative Review of Local Constraints on Housing Development: Improving the California Model," *Arizona Law Review* 63 (3): 611.

———. 2021c. "'I Would, If Only I Could' How Cities Can Use the California's Housing Element Law to Overcome Neighborhood Resistance to New Housing," *Willamette Law Review* 57: 221–252. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3889771.

Glaeser, Edward L., Joseph Gyourko, and Raven Saks. 2005. "Why is Manhattan So Expensive? Regulation and the Rise in Housing Prices," *The Journal of Law and Economics* 48 (2): 331–369. https://doi.org/10.1086/429979.

Glesne, Matthew. n.d. "Implementation of SB 35 and SB 167 in the City of Los Angeles." Los Angeles, CA: Citywide Housing Policy Unit, Department of City Planning. https://static1.squarespace.com/static/58793de5f7e0abe551062b38/t/5a907bd8085229b2646756f6/1519418329943/SB+35+and+SB+167+SCANPH+event_DCP_pdf.pdf.

Gray, M. Nolan. 2021. "How Californians Are Weaponizing Environmental Law," *The Atlantic*, March 12. https://www.theatlantic.com/ideas/archive/2021/03/signature-environmental-law-hurts-housing/618264/.

Hernandez, Jennifer. 2018. "California Environmental Quality Act Lawsuits and California's Housing Crisis," *Hastings Environmental Law Journal* 24 (1): 21–71.

Hicks, Tony. 2019. "Berkeley Approves Two Affordable Housing Projects in Record Time Under New State Law, SB 35," *Berkeleyside*, January 17. https://www.berkeleyside.org/2019/01/17/berkeley-approves-two-affordable-housing-projects-in-record-time-under-new-state-law-sb-35.

Hsieh, Chang-Tai, and Enrico Moretti. 2019. "Housing Constraints and Spatial Misallocation," *American Economic Journal: Macroeconomics* 11 (2): 1–39. https://doi.org/10.1257/mac.20170388.

Huang, Yao. 2018. "Berkeley Declines Developers' Request to Build on 1900 Fourth St. for 2nd Time," *The Daily Californian*, September 5. https://www.dailycal.org/2018/09/05/berkeley-declines-developers-request-build-1900-fourth-st-2nd-time.

Jones, Christopher, and Daniel M. Kammen. 2014. "Spatial Distribution of U.S. Household Carbon Footprints Reveals Suburbanization Undermines Greenhouse Gas Benefits of Urban Population Density," *Environmental Science & Technology* 48 (2): 895–902. https://doi.org/10.1021/es4034364.

Kazis, Noah. 2020. "Ending Exclusionary Zoning in New York City's Suburbs." New York City: NYU Furman Center. https://furmancenter.org/research/publication/ending-exclusionary-zoning-in-new-york-city8217s-suburbs.

Lens, Michael C., and Paavo Monkkonen. 2016. "Do Strict Land Use Regulations Make Metropolitan Areas More Segregated by Income?" *Journal of the American Planning Association* 82 (1): 6–21. https://doi.org/10.1080/01944363.2015.1111163.

Levine, Jonathan. 2005. *Zoned Out: Regulation, Markets, and Choices in Transportation and Metropolitan Land-Use*. New York City, NY: Resources for the Future.

Lewis, Paul G. 2005. "Can State Review of Local Planning Increase Housing Production?" *Housing Policy Debate* 16 (2): 190–192.

———. 2003. *California's Housing Element Law: The Issue of Local Noncompliance*. San Francisco: Public Policy Institute of California. https://www.ppic.org/publication/californias-housing-element-law-the-issue-of-local-noncompliance/.

Lindgren, Adam, and Steven Mattas. 2022. "General and Specific Plans," *California Land Use Practice*, Oakland, CA: CEB.

Los Angeles County Department of Regional Planning. n.d.a. "Senate Bill 35: Streamlined Approval Process for Multifamily Residential Developments [Updated]." https://planning.lacounty.gov/wp-content/uploads/2023/02/SB35_Memo.pdf.

———. n.d.b. "SB 35 Preexisting Site Condition Questionnaire." https://planning.lacounty.gov/wp-content/uploads/2023/02/sb35_pre-existing-questionnaire.pdf.

———. 2021. "Review of 2014 Housing Element Programs." https://planning.lacounty.gov/long-range-planning/housing-element/.

McDougall, Harold A. 1987. "From Litigation to Legislation in Exclusionary Zoning," *Harvard Civil Rights-Civil Liberties Law Review* 22 (2): 644.

Monkkonen, Paavo, Michael Manville, and Spike Friedman. 2019. *A Flawed Law: Reforming California's Housing Element*. Los Angeles, CA: University of California, Lewis Center for Regional Policy Studies.

O'Neill-Hutson, Moira, Eric Biber, Raine Robichaud, Giulia Gualco-Nelson, and Nicholas J. Marantz. 2022. *Examining Entitlement in California to Inform Policy and Process: Advancing Social Equity in Housing Development Patterns*. Sacramento, CA: California Air Resources Board and the California Environmental Protection Agency.

Ramsey-Musolf, Darrel. 2016. "Evaluating California's Housing Element Law, Housing Equity, and Housing Production (1990-2007)," *Housing Policy Debate* 26 (3): 488–516. https://doi.org/10.1080/10511482.2015.1128960.

Rothwell, Jonathan T., and Douglas S. Massey. 2009. "The Effect of Density Zoning on Racial Segregation in U.S. Urban Areas," *Urban Affairs Review* 44 (6): 779–806. https://doi.org/10.1177/1078087409334163.

Sedonaen, Maureen. 2018. "CEQA Abuse Delays, Frustrates Affordable Housing," *The Daily Journal*, August 1. https://www.smdailyjournal.com/opinion/guest_perspectives/ceqa-abuse-delays-frustrates-affordable-housing/article_4f04b844-951c-11e8-bfac-4759a0b619fd.html.

Sterk, Stewart E. 2021. "Incentivizing Fair Housing," *Boston University Law Review* 101 (5): 1607–1665. https://www.bu.edu/bulawreview/files/2021/10/STERK.pdf.

Szabo, Matt. 2021. "Huntington Beach Loses Housing Case With State of California," *Los Angeles Times*, February 2. https://www.latimes.com/socal/daily-pilot/news/story/2021-02-02/huntington-beach-loses-housing-case-with-state-of-california.

Wiener, Scott. 2017. "Senate Bill 35 – Housing for a Growing California: Housing Accountability and Affordability Act." https://sd11.senate.ca.gov/sites/sd11.senate.ca.gov/files/SB%2035%20Fact%20Sheet_1.pdf.

Here Come the Tall Skinny Houses: Assessing Single-Family to Townhouse Redevelopment in Houston, 2007–2020

Jake Wegmann
Aabiya Noman Baqai
Josh Conrad
University of Texas at Austin

Abstract

Contemporary research has documented a recent and widespread boom in the construction of "townhouses," or land-efficient single-family houses, both detached and attached, in Houston. Contrary to popular portrayals of Houston as a Wild West of unrestricted land use, a deliberate reform in 1998 that was subsequently extended in 2013, in fact, made this townhouse boom possible. It drastically reduced permissible minimum lot sizes citywide. This article builds on this emerging body of literature to specifically focus on cases in which formerly single-family parcels were subdivided into small lots for townhouse construction between 2007 and 2020. It argues that Houston's phenomenon of single-family-to-townhouse (SF2TH) redevelopment offers a glimpse of what other U.S. cities might expect to occur were they to repeal large lot single-family zoning and other binding restrictions to allow for widespread construction of widely desired small-lot single-family housing products in formerly low-density neighborhoods. The findings suggest that SF2TH redevelopment accounts for less than one-fifth of overall townhouse development, that it tends to take place on larger lots in the urban core occupied by small, old houses, that it produces relatively reasonably priced houses, and that it predominantly takes place in neighborhoods with higher-than-average house values prior to the period analyzed. The latter result is inconsistent with a view of gentrification as a primary driver of SF2TH redevelopment. This article also examines the pattern of "block votes," or the pattern of usage of a petition mechanism that allows homeowners to opt out of townhouse development on their own blocks, and finds that clusters of block votes generally adjoin clusters of SF2TH redevelopment but with relatively little overlap.

Introduction

What would happen if a large U.S. city decided to open up parcels on streets dominated by existing large-lot, detached single-family houses to denser development? Furthermore, what if this redevelopment took the form of a replacement of existing freestanding houses with multiple houses on much smaller lots? Given the century-long dominance of single-family zoning in the United States (Hirt, 2015), these questions might seem like an exercise in alternative history. However, this article argues that, in fact, the recent experience of Houston provides instructive answers.

Despite its libertarian image as the only big American city without zoning, Houston is decidedly in the business of regulating land use. Starting in the late 1990s, policymakers made a deliberate decision to drastically reduce required minimum lot sizes for houses—at first only within the city's urban core (15 percent of the city's land area) and later citywide. As a foundational article by Gray and Millsap (2020) convincingly demonstrates, this sea change in land use regulation set off an urban townhouse boom that led to the construction of tens of thousands of tall, skinny houses in less than two decades, introducing a new housing product type and changing the urban landscape of entire neighborhoods in the process. The resulting houses are locally known as *townhouses* regardless of whether they are attached (that is, they touch on their side walls) or are technically, if barely, freestanding. They sit on lots that are minuscule by typical U.S. standards—even by big city U.S. standards. Notably, however, Houston-style townhouses are usually owned "fee simple," that is, homeowners own their house and the land underneath it. In this regard, Houston townhouses represent a different outcome than what other U.S. cities have been recently pursuing in relaxing land use regulations on residential blocks, through which planners tend to work toward redevelopment into small-lot, medium-density multifamily, or "missing middle," development.

Therefore, this article examines the results of Houston's townhouse boom with a view toward drawing useful lessons for other cities contemplating similar reforms. This article builds on Gray and Millsap's (2020) research and focuses on a subset of Houston's townhouse phenomenon: Townhouses developed via the acquisition and teardown of existing single-family parcels and the subsequent resubdivision of parcels to accommodate multiple new townhouses. This process represents the type of redevelopment—which is shorthanded herein as single-family-to-townhouse (SF2TH) redevelopment—that some proponents of single-family zoning repeal hope and that detractors fear will happen in zoned cities.

The rest of this article proceeds as follows. It begins by reviewing debates over single-family zoning and notes recent developments that suggest its longstanding impregnable status—the "zoning straitjacket" in the memorable formulation of legal scholar Ellickson (2021)—is weakening. Next, it relies on Gray and Millsap (2020) and others to provide a brief overview of the regulatory system, and reforms to it, that have allowed SF2TH units to take root in Houston. After introducing the datasets and methods, the article presents various descriptive statistics and logistic model results in three successive sections that allow for answering basic questions about the quantity, timing, physical characteristics, and spatial patterns of SF2TH units, plus their association with neighborhood change. It also presents results about the extent of "block votes," an only-in-Houston regulatory mechanism that allows homeowners to opt out of townhouse redevelopment on their own block—but *only* on their own block—and that arguably paved the way for the reforms to

be broadly acceptable to the public in the first place (Gray and Millsap, 2020). It ends with a summary of the topline findings and some reflections on what they might mean for other U.S. cities contemplating the end of single-family zoning.

In brief, SF2TH redevelopment is comparatively rare on the citywide scale but concentrates in particular locations, particularly within the urban core—much more so than townhouse development in general. The most likely parcels for SF2TH redevelopment are large (when controlling for other characteristics) with old, small, existing single-family houses. New SF2TH units are, although not cheap, on the whole relatively modestly priced in the median case. Contrary to many common assumptions, gentrification is not a particularly illuminating framework for predicting where SF2TH redevelopment will concentrate. Also, contrary to common assumptions, SF2TH redevelopment does not appear to be associated with a gain in children despite the relative spaciousness of the new houses and their desirable locations—in fact, locations with concentrations of SF2TH redevelopment lost children more rapidly than the city as a whole in the past two decades. The unexpectedness of some of the findings underscores that research on Houston's unique land use trajectory is a rewarding enterprise with lessons for other cities. The article accordingly closes with several suggestions for further research.

Background

Houston is often posited as an exceptional case, given its unique status as the only large U.S. city that eschews zoning. This section begins with an overview of the current state of zoning reform efforts in low-density neighborhoods in the United States, then reviews the case of Houston and how it both aligns with and departs from these broader trends. It closes with a brief terminological note on the use of "R1" as a shorthand for single-family zoning.

Single-Family Zoning: No Longer Untouchable?

If an outside observer were asked to identify the single characteristic that best distinguishes how land use is regulated in the United States compared with its peer countries, chances are high that single-family zoning, or R1,[1] would win (Hirt, 2015). The concept certainly is not unique to the United States, but it has arguably been taken further here than anywhere else, even when compared with other high-income, sparsely populated countries such as Canada and Australia (Hirt, 2015; Whittemore and Curran-Groome, 2022). Concerted action from the emerging professionalized real estate industry and the federal government starting about a century ago led to the rapid adoption of R1 in most localities, a process that was largely complete after just several decades (Weiss, 1987; Whittemore, 2021).

In the 1960s, the concept of R1 and related regulatory tools, such as minimum lot sizes, particularly in suburbs, experienced a serious challenge on the grounds of racial exclusion. The efforts of the advocacy planner, Paul Davidoff, and others led to a series of "anti-snob zoning" reforms in such locations as New Jersey, where it was imposed by the courts, and Massachusetts, where it was legislated. Some local governments, beginning with Montgomery County in

[1] This article follows Manville, Monkkonen, and Lens' (2020) use of this terminology; it refers to a common (although not universal) shorthand for the most restrictive single-family zones in municipal zoning ordinances.

Maryland, adopted inclusionary zoning ordinances as a means of counteracting the exclusionary effects of single-family zoning and related land use regulations such as minimum lot sizes. Still, the net effect of this wave of reforms was to leave R1 almost entirely unchallenged by the time it had receded (Whittemore, 2021).

The status quo persisted for decades, right up until the present day. A recent *New York Times* analysis of 11 mostly large cities shows that the percentage of residentially zoned land reserved for single-family uses is startlingly high in most of them, such as 81 percent in Seattle and 79 percent in Chicago (Badger and Bui, 2019). Of the 11, only New York City, the great *sui generis* exception to the general U.S. patterns of low-density land uses and automobility reliance, and to a lesser extent Washington, D.C., stand apart as cities with less than most of their residential land zoned R1 (King, Smart, and Manville, 2022). The predominant status quo in most places, such as the suburbs of Chicago, is one in which a demolished single-family house is replaced (if it is replaced at all) with the only economically viable option under R1: A new single-family house much larger and pricier than the one it supplants (Charles, 2013). Trends for decades toward public participation mechanisms of greater frequency and scope have largely served to amplify the most vocal nearby homeowners' objections to any net gain whatsoever in units on an R1 parcel (Einstein, Glick, and Palmer, 2019; Lemar, 2021).

However, something shifted within only the past half decade or so, and cracks in the firmament of R1 have begun to grow and spread. Whittemore (2021) argues that this time, unlike in the 1960s, the critique has originated from the urban economics literature and has also emphasized racial exclusion and housing unaffordability within large cities, as contrasted with the suburban emphasis in Davidoff's heyday (also see Mangin, 2014). Academics have recently launched direct attacks on R1, even as several zoned cities, most notably Minneapolis but also the likes of Olympia and Walla Walla in Washington have repealed it within their boundaries (Manville, Monkkonen, and Lens, 2020; Wegmann, 2020a). Most dramatically of all, entire states, including California, Maine, and Oregon, now require a large number of their jurisdictions to jettison R1.

It would be a mistake to conclude from these recent trends that the disappearance of R1 throughout the United States in the medium term is a foregone conclusion. Even many planning academics still oppose its eradication or at least view it with trepidation on various grounds, from infrastructural effects to inequitable outcomes, such as gentrification to unaffordable post-redevelopment housing to the lack of an aspirational housing package with the same universal appeal as large-lot single-family living (Chakraborty, 2020; Etienne, 2020; Kendig, 2020; Searle and Phibbs, 2020). Among the voting public, R1 may be more popular still. The sheer weight of the status quo means that even if a stronger consensus around the benefits of doing away with R1 were to emerge, it would be acted on unevenly across jurisdictions and slowly in the aggregate. One helpful historical analogy is with minimum off-street parking requirements. Thanks to foundational research by Shoup (2021) and others, the concept retains few principled defenders today. However, under the sheer weight of status quo bias and the popularity of parking among ordinary people, parking requirements continue to remain the law of the land in most cities, suburbs, and towns in the United States.

One of the obstacles to the further spread of R1 repeal is a paucity of evidence about its actual effects. One reason is a classic chicken-and-egg problem: It has happened in few places, and in those very recently, with a global pandemic drastically upending housing development in the United States since early 2020. What limited evidence exists does not show dramatic results. Kuhlmann (2021) used a clever research design that exploited boundary effects between Minneapolis and its neighboring suburbs to find that the much-ballyhooed recent citywide replacement of R1, with zones permitting triplex construction, had modestly boosted land prices but yielded few triplexes. It is possible that the zoning reform was a necessary but not sufficient condition to induce the actual construction of a novel housing product type. After all, although the city increased the number of units that can be accommodated on a formerly R1 parcel, it did not appreciably increase the total square footage that can be built on one of those parcels. If one thinks of the envelope of a new building on a previously R1 lot in Minneapolis as a box, the box can split into three, but the box cannot be any bigger.

In the specific case of Minneapolis, it may be that the demand is not sufficient for three small units rather than one large house on a parcel (Hamilton, 2020). It is also possible that triplexes—an example of so-called "missing middle," or lowrise, middle-density housing—suffer from the perception among buyers that it is "stuck in the middle," in that it offers neither the privacy nor individualized ownership and control of a single-family house nor the amenities, security, and views of an apartment or condominium in large midrise or highrise developments (Furth, 2020; Parolek, 2020). Another possibility that must be considered is that the reform is in its early days, and small builders will take a while to pivot to building a product type unfamiliar to both them and their buyers (Kuhlmann, 2021). Time should soon tell.

At any rate, an informed observer is left with vanishingly few empirically documented cases demonstrating how housing developers might respond to R1 repeal in cases for which it is a binding constraint for builders' decisions (Gabbe, 2018). The average American now lives in a census tract with less than 15 percent of the tract-level population-weighted density that prevailed in 1940 (King, Smart, and Manville, 2022). Not surprisingly, cases in which densities within a neighborhood, let alone a whole city, have increased rather than decreased are rare and even rarer in areas previously developed with housing opposed to former industrial or commercial lands (Romem, 2016).[2] One possibility is to turn to historical analogues, such as instances of the replacement of single-family houses with what are sometimes called "dingbat" apartments in Oakland during the 1960s (Banham, 1971; Smith, 1964).[3] However, these comparisons suffer from the obvious drawback of the vast changes to both the supply and demand sides of housing development that have unfolded during the past half century or more.

However, Houston provides an instructive, albeit counterintuitive, case to learn from. Although it is famously the only large, unzoned city in the United States, it engaged in a large-scale effort to

[2] Some of the most striking cases—above all in California—of cities in which densities have increased rather than decreased since the 1960s can be attributed at least to a substantial degree to widespread densification via the addition of unpermitted housing, through either conversion or construction. See Wegmann (2015) and Wegmann and Mawhorter (2017).

[3] The construction of dingbats in Oakland and other California cities largely took place where zoning already permitted higher density construction on what had been originally developed as single-family lots; thus, the historical analogue with R1 repeal today goes only so far.

increase the permitted density of residential development, and it did so relatively recently but also long enough ago that its on-the-ground effects are observable. Recent scholarship has done a great deal to illuminate this heretofore underreported story in U.S. big city land use reform, to which the next subsection turns.

The Unique Case of Houston

A tradition of scholarship examines Houston's unique system of land use regulation, dating back to at least Siegan's seminal book *Land Use Without Zoning*, published in 1972.[4] Among U.S. cities alone, Houston put zoning adoption to a plebiscite on three occasions—in 1948, 1962, and 1993—and its voters found it wanting each time (Gray and Millsap, 2020). A powerful narrative has developed in which Houston's voters, confronted with a choice between an orderly but restrictive regulatory regime versus a messier but more dynamic pro-free enterprise system, opted for the latter, perhaps in keeping with the city's general ethos and nationwide reputation (Gray and Millsap, 2020).

However, it would be a mistake to assume that Houston lacks land use regulation. Instead, it regulates land use not with zoning but with a series of citywide ordinances that restrict much of what is regulated in any other U.S. city, such as minimum lot sizes and off-street parking requirements, but without reference to zone districts. Furthermore, private deed restrictions are viewed as a central mechanism deployed by the city to control land use. Texas state law includes a special provision that grants special powers to Houston (and to no other Texas city) to use its regulatory and enforcement machinery to encourage and enforce private deed restrictions. These deed restrictions are not transparent in the same way as zoning, and so their scope is much more difficult to quantify than in zoned cities, but one informed observer estimated that private deed restrictions cover about one-fourth of private parcels in Houston (Kapur, 2004).

Legal scholars such as Lewyn (2004) and Kapur (2004) have argued that what might be termed "Houston exceptionalism" is overblown and that, in fact, on-the-ground land use patterns seen there differ little from other automobile-dominated Sunbelt cities that similarly grew explosively in the postwar era. Pendall, Puentes, and Martin (2006), in presenting a taxonomy of land use regulatory regimes across the United States, viewed the cities and suburbs of Texas as belonging to a distinctive category of land use regime but did not see fit to exclude Houston from it. For the purposes of this article, however, Houston really is a place apart in one critical way: It has seen a boom in townhouses since the turn of the millennium, likely unique among big cities in the United States in its scale and extent.

Gray and Millsap (2020) provide the definitive account of the 21st century Houston townhouse boom, with Park and Guajardo (2021) and Hamilton (2023) subsequently adding important empirical and historical perspectives. The brief summary that follows relies heavily on their accounts.

As Stephen Fox (2000: 23) notes, from a nadir in the local oil and gas sector, "the recovery of Houston's economy in the second half of the 1990s resulted in a boom in new, expensive, inner-

[4] As an indication of the resurgent interest in Houston's unique system of land use regulation, George Mason University recently reissued an updated edition of Siegan's book.

city row house construction." Gray and Millsap (2020) observe that the townhouse boom preceded the city of Houston's seminal townhouse-promoting reform in 1998. Those legal reforms then augmented this initial shift in market conditions. After 1998, townhouse development could proceed more smoothly in a "by right" fashion. Developers no longer had to undergo the more costly and uncertain process of seeking variances to the subdivision ordinance.

The heart of the 1998 reform was a reduction in the required minimum lot size for detached single-family houses from 5,000 to 3,500 square feet inside Interstate 610, an area generally regarded as the city's urban core or "Inner Loop." Furthermore, for cases in which developers provided compensating open space within a redevelopment or else met several performance standards, the resubdivided house lots could get as small as 1,400 square feet (Hamilton, 2023). To put these sizes in context, one recent analysis shows that the median area for new single-family house lots in U.S. metropolitan areas ranges from 6,098 square feet in El Paso to 43,560 square feet (or exactly one acre) in Bridgeport, Connecticut (Kolomatsky, 2022).

The reduced minimum lot sizes exist alongside other regulations that are highly permissive, such as a citywide height limit of 75 feet for structures adjacent to single-family houses and a requirement of a scant three feet of separation (even less under some conditions) for a detached townhouse from its neighbor to the side (Hamilton, 2023). Required front setbacks range from none at all to 25 feet, depending on the type of street (Hamilton, 2023). Although the required off-street parking of two spaces per unit is not unusually permissive, it is easily accommodated in a "tuck-under," or first-story, garage in a typical townhouse and, in any case, aligns with many homebuyers' expectations.

The upshot of the lot size reforms coupled with other key regulations was that developers could now build, by right, a housing product that they wanted to build and that their customers wanted to buy. Townhouses could not be built quite everywhere—for instance, preexisting deed restrictions and more recent "block votes" (detailed explanation to follow) preclude some single-family parcels from being redeveloped into townhouses. Still, an enormous area was opened to "by-right" townhouse development.

Despite the locally used moniker, many of these so-called "townhouses" are technically fully detached houses; for this reason, Park and Guajardo (2021) dubbed them "detached townhouses." Nevertheless, even the detached variant of townhouses à la Houston are unlikely to be confused with the popular image of a typical American single-family detached house. They are much taller—commonly three stories tall and sometimes four or even five stories, as permitted under a generous citywide 75-foot height limit—occupy comparatively tiny footprints, and sit on tiny lots, very often with minimal or nonexistent yard space (exhibit 1).

Exhibit 1

Various Examples of Townhouse Developments in the Greater Heights Area of the Inner Loop to the Northwest of Downtown Houston

Source: Sandra Wegmann

Houston's minimum lot size reforms were so well received in the housing market and in the political arena that, in 2013, they were extended to all areas inside the city served by sewers (Hamilton, 2023). It is an intriguing, and to date unanswered, question as to why such substantial reforms passed to begin with and were subsequently expanded. Gray and Millsap (2020) make a convincing argument that the key to success was providing homeowners with a mechanism to opt out of townhouse development on their own blocks, thus defusing what would otherwise be a potent source of opposition.

In Houston, homeowners can petition for their own residential block to be incorporated into one (or both) of two types of special districts, Special Minimum Lot Size (SMLS) and Special Minimum Building Line (SMBL) district, that consist of either one or two adjoining block faces. These districts peg land use regulations to preexisting lot sizes or setbacks rather than the citywide standards. Both SMLS and SMBL districts, thereby, severely constrain or altogether halt economically viable subdivision of existing large parcels containing single-family houses into smaller parcels appropriate for townhouses. These districts are formed by city ordinance rather than private deed restrictions and thus can be thought of as a form of opt-in zoning. Formation of

one of these districts is a straightforward process requiring at least majority support of the affected homeowners (the specifics vary), but at a minimum, the proposed regulation must match what exists on at least 70 percent of the existing lots (or 60 percent in a historic district). Forming a SMLS or SMBL district is loosely analogous to the homeowner-initiated process commonly used to form historic districts in many cities, but the former is more from the bottom up. Whereas new historic districts normally need the approval of an elected or appointed body, a proposal for a new SMLS or SMBL district in Houston is highly likely to pass if enough property owners support it. On formation, both types of districts—hereafter jointly referred to as "block vote" districts—automatically sunset after 40 years, whereupon a new petition would be required to renew them.

Gray and Millsap (2020) argue that block votes force homeowners to weigh the tradeoffs between maintaining the physical character of their own block and the possibility of increased property values unlocked by future townhouse redevelopment. By contrast, in conventional zoning, a citywide elected body votes on whether or not to change zoning on a given parcel or in a particular district, and so a homeowner's ability to act on their preferences for their own block is less direct. In Houston, homeowners who most vehemently object to townhouse redevelopment near them have a hyperlocal mechanism to which they can turn, which may reduce their motivation for changing the rules that prevail beyond their own blocks.

Estimates of how many townhouses were built since the seminal reform in 1998 vary according to the exact time periods and methodologies used, but it is clear that the number is large. Gray and Millsap (2020) found more than 25,000 townhouses built between 1999 and 2016, Park and Guajardo (2021) found nearly 39,000 from 2005 to 2018, and Wegmann (2020b) found more than 34,000 from 1998 to 2020. Regardless of the details of the differing methodologies and estimates, what is clear is that the scale is considerable; for instance, one of these analyses found that post-1998 townhouses now account for 4 percent of all housing units citywide, 8 percent inside the Inner Loop, and no less than 43 percent of net housing units added citywide since 1990 (Wegmann, 2020b). The transformation is not evenly distributed—some neighborhoods remain untouched by townhouse redevelopment, while others, like Rice Military, 3 miles north by northwest from Downtown Houston, have experienced a total transformation in their urban form in only two decades (Gray and Millsap, 2020).

Although recent research has revealed a great deal about townhouse redevelopment in Houston, more is to be learned. After all, the studies previously mentioned deal with townhouse redevelopment as a whole, whether it took place on large former single-family parcels, formerly commercial or industrial land, or other large nonresidential parcels. Arguably a study is needed that specifically examines the subset of Houston's post-1998 townhouse development activity, in which formerly single-family parcels have been resubdivided into townhouse lots. These cases could provide additional clues as to how redevelopment might proceed in existing residential neighborhoods at buildout—neighborhoods that are the locus of both reformers' ambitions and much popular opposition—after reforms to land use regulations. This subcategory of redevelopment is the object of the empirical investigation described in what follows.

A Brief Note on Terminology

This article is premised on our claim that Houston's minimum lot size reforms represent one path other cities could take toward R1 repeal. In actuality, this premise is not quite precise. Lot size requirements, on their own, are far from the only mechanisms enforcing the dominance of large-lot single-family uses across the landscape, and removing them will not necessarily permit major changes to the status quo. Typical American land use regulations also include use restrictions (that is, allowing but a single unit per parcel); setback requirements and impervious cover and height restrictions; elements of other, nonzoning ordinances that favor large-lot single-family housing over more land-efficient housing types; and procedural laws that do the same. Bronin (2023) calls this status quo "zoning by a thousand cuts;" in her analogy, any form of housing other than a single-family house on a large lot is bled to death.

Even so, the Houston reforms are a useful stand-in for R1 repeals. Houston, unlike most zoned cities, before 1998, lacked many of the mechanisms that in other cities limit the density of single-family housing. That left minimum lot size requirements as the sole binding constraint (Gabbe, 2018). Once it was lifted, townhouse development ramped up dramatically. For that reason, the example of Houston is instructive because it is analogous to what might happen if a typical zoned city simultaneously lifted the various interlocking barriers that prevent redevelopment of R1 lots into townhouses—which is what most proponents of R1 repeal have in mind.

Moreover, the Houston reforms only represent *one* path away from R1 zoning. They still produce single-family housing (that is, townhouses), just on smaller lots than before. Still, this path is meaningful, even without reforms to legalize more multifamily housing. Houston-style townhouses (as this article quantifies in the following) are arguably such a dramatic departure from the R1 status quo that they are different in kind and not just degree from large-lot single-family houses. They are not "missing middle" housing in the purist sense but do meet Hamilton's (2020) definition of "stickplex" housing, or housing forms that combine efficient use of land with inexpensive construction techniques (Parolek, 2020). In this regard, they represent a singular case in the recent evolution of single-family dominated city neighborhoods in the United States, one which this article proceeds to examine in detail.

Data and Methods

This article poses the research question: "What are the observable characteristics of SF2TH redevelopments in Houston?" This article tackles this research question by dividing it into several subquestions.

1. What is the overall quantity of SF2TH redevelopment and incorporation of single-family parcels into block vote districts?
2. What is the temporal pattern of SF2TH redevelopment, that is, how has it fluctuated over time?
3. What are the characteristics of SF2TH redevelopments in comparison with what they replaced?
4. What are the geographic patterns of SF2TH redevelopment and block votes, that is, in what types of locations have they occurred?
5. How have the neighborhoods around SF2TH redevelopments changed over time?

To answer these subquestions, this investigation relies on an analysis of property tax records from the Harris Central Appraisal District (HCAD) for the years 2005 (the earliest available in electronic form) through 2020, inclusive.[5] To identify parcels on which SF2TH redevelopments have occurred, the analysis takes advantage of a supplementary dataset that HCAD maintains known as a "tieback table," in which for every year, lots that have been newly created via lot subdivision are noted and linked to the property identifications of (now defunct) parcels from previous years. SF2TH redevelopments are defined as cases in which (1) a parcel HCAD initially classified as one of the "residential" categories is (2) linked to later parcels occupying the same land area, and where (3) a house on a parcel of less than 5,000 square feet occupies each of the subsequent parcels (that is, below the pre-1998 minimum lot size and, therefore, conforming to the vernacular definition of a "townhouse" in Houston). By collecting information on both the pre- and post-SF2TH parcels as linked groups of one parcel (pre-redevelopment) to two or more (post-redevelopment), it is possible to address research subquestion 3.

All cases of SF2TH redevelopment are linked to a geographic information system spatial representation (that is, a shapefile) of all 2020 parcels, performed with Quantum Geographic Information System, or QGIS, software. Shapefiles were obtained from the city of Houston's website, representing both forms of block votes (SMLS and SMBL).[6] These block votes were combined into a single layer, that is, with no distinction in the analysis between SMLS and SMBL. The analysis of block votes considers only single-family parcels that, as of 2007 (the year of the earliest identified SF2TH redevelopment in the dataset), were not then incorporated in a block vote district, and it considers only block vote districts that were either formed in 2007 or later or else were pending as of August 2022.

Some of the analyses rely on sociodemographic characteristics at the census tract level. These are obtained from decennial census data from the year 2000 (that is, shortly after the enactment of the townhouse reforms and the most recent data available prior to the beginning of this analysis period in 2005) and 5-year American Community Survey (ACS) data collected in the years from 2015 through 2019. The latter are preferred over the more recent 2016–2020 ACS data due to difficulties in data collection during the pandemic year of 2020 and considerable missingness in reported 2016–2020 ACS data. This analysis uses all census tracts in Harris County that contain at least one parcel in the city of Houston in use as single-family housing as of 2005.

Some of the previously summarized calculations provide two binary dependent variables: Redevelopment of a given initially single-family parcel from 2007 to 2020 and its actual or pending incorporation into a block vote from 2007 to August 2022 for the logistic regression models described in the following section. These models are performed with the general linear model (glm), command in the R programming language. Other calculations previously noted create the

[5] Most of the city of Houston lies within Harris County, although small portions are in Fort Bend and Montgomery Counties. This study ignores the latter two counties, as Houston's territories within both are small and lie at the most distant fringes of the city, thus are unlikely to have had significant SF2TH redevelopment.

[6] As of October 6, 2022, these shapefiles were available from https://www.houstontx.gov/planning/Min-Lot_Size-Min_Bldg_Line.html.

dependent variables for each of the two models: One predicting SF2TH redevelopment and the other predicting block votes.[7] Appendix A provides more detail on the two logit models.

Hypotheses for Models

Model 1 tests a hypothesis that large original lots, old original houses, and small original houses will be associated with greater probability of redevelopment into townhouses, as all these characteristics would be expected to increase the likelihood that homeowners sell to developers. One would expect a negative relationship with central business district distance, that is, for parcels closer to downtown Houston to be likelier to redevelop. A quadratic relationship with tract house prices in the year 2000 is also hypothesized, based on Gray and Millsap's (2020) finding, that overall, Houston townhouse development was most concentrated in middle-income neighborhoods. These areas have property values high enough to support redevelopment but low enough that their residents are less likely to have initiated or maintained deed restrictions that would restrict redevelopment.

The relationships with sociodemographic variables test the proposition that townhouse redevelopment in Houston is a story of gentrification. If gentrification is a dominant mechanism, then one would expect a greater likelihood of redevelopment in tracts that have higher Black and Hispanic populations, more children, and a less college educated population in 2000, prior to the period examined. This analysis, on the other hand, hypothesizes that Houston's unusually permissive land use regulations allow small-lot redevelopment to concentrate in more privileged neighborhoods (as measured before the time period under analysis) than would be typically seen in a large U.S. city.

Because block votes are expected to occur in reaction to SF2TH redevelopment, although the models as structured can only detect associations rather than a causal relationship, coefficients for Model 2 are expected to be broadly similar to those in Model 1. For the added variable of SF2TH units within the same census tract, a quadratic relationship is modeled because of an anticipated saturation effect. More SF2TH redevelopment nearby leads to a greater likelihood of a block vote in response but only up to a point. Once the area nearby is sufficiently saturated with townhouse redevelopment, according to this view, enacting a block vote is less worthwhile and thus becomes less likely past the threshold.

Results

This section reports the results in three parts. The first reports descriptive statistics that shed light on the first three subquestions listed in the prior section—that is, (1) on the quantity of SF2TH redevelopment and block votes, (2) the timing of SF2TH redevelopment, and (3) a comparison of pre- versus post-redevelopment characteristics of parcels. The next reports the results of the two logit models to shed light on subquestion 4 on the geographic patterns of SF2TH redevelopment and block votes. The last analyzes sociodemographic trends from 2000 to 2015–2019 to answer subquestion 5—that is, to show how neighborhoods containing SF2TH redevelopment concentrations have changed over time.

[7] Exhibit 8 in the appendix summarizes all these variables' values.

Basic Characteristics of Townhouse Subdivisions and Block Votes

Using the methods described in the previous section, 1,392 SF2TH redevelopments were identified in the HCAD data spanning from 2005 to 2020, yielding 5,359 identified townhouse units, each lying on its own new parcel, produced via the SF2TH process. The earliest of these townhouse units were built in 2007 and the most recent in 2020. It must be acknowledged that this method has not identified all SF2TH units in Houston; those whose lots were subdivided prior to 2005 would not be identified. It is also possible that this technique relying on tieback tables may have missed some SF2TH subdivisions due to inaccurate or incomplete records.

The figure of 5,359 SF2TH units is not directly comparable with Gray and Millsap's (2020) finding that 25,269 townhouse-style parcels were created between 1998 and 2016, because the time periods do not entirely overlap. Still, a very rough comparison suggests that SF2TH redevelopments yielded less than one-fifth of the total post-1998 townhouses developed in Houston. Presumably the remainder have been constructed on larger parcels, many of them commercial or industrial rather than residential. The results further suggest that, notwithstanding Houston's 21st-century townhouse boom, SF2TH redevelopment is a relatively rare event. Out of 282,770 identified single-family parcels in the dataset not included within a block vote district as of 2007, only 0.5 percent underwent SF2TH subdivision between 2007 and 2020. A considerably higher, but still small, number of parcels, or 13,302 (4.7 percent of the total), were incorporated into block vote districts during the same period.

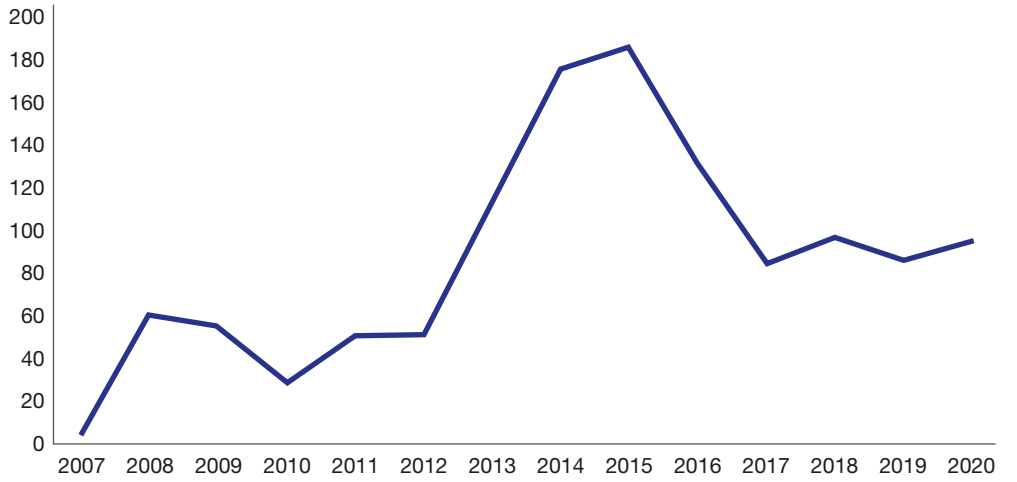
SF2TH Subdivision Over Time

Exhibit 2 shows the number of SF2TH redevelopment events by year between 2007 and 2020. Starting from a minuscule number (only four), the phenomenon rises in the latter part of the decade of the 2000s, then declines (although by no means disappears) during the Great Recession after 2008.[8] However, it quickly resumes its upward growth after 2010 and proceeds to skyrocket through 2015. After 2015, a large decline ensues—although not to anywhere close to zero—perhaps as a delayed effect of a downturn in the locally important oil and gas economy (of which Houston is regarded as the global capital) due to a collapse in global crude prices during 2014. From 2016 to 2020, activity is relatively steady.

[8] Note that the very low number for 2007 should be treated with caution, because the dataset does not include redevelopments of parcels classified as "residential" prior to 2005. This analysis would have missed any 2007 redevelopments linked to parcels before 2005.

Exhibit 2

Completed Single-Family-to-Townhouse Redevelopments by Year in Houston, 2007 to 2020



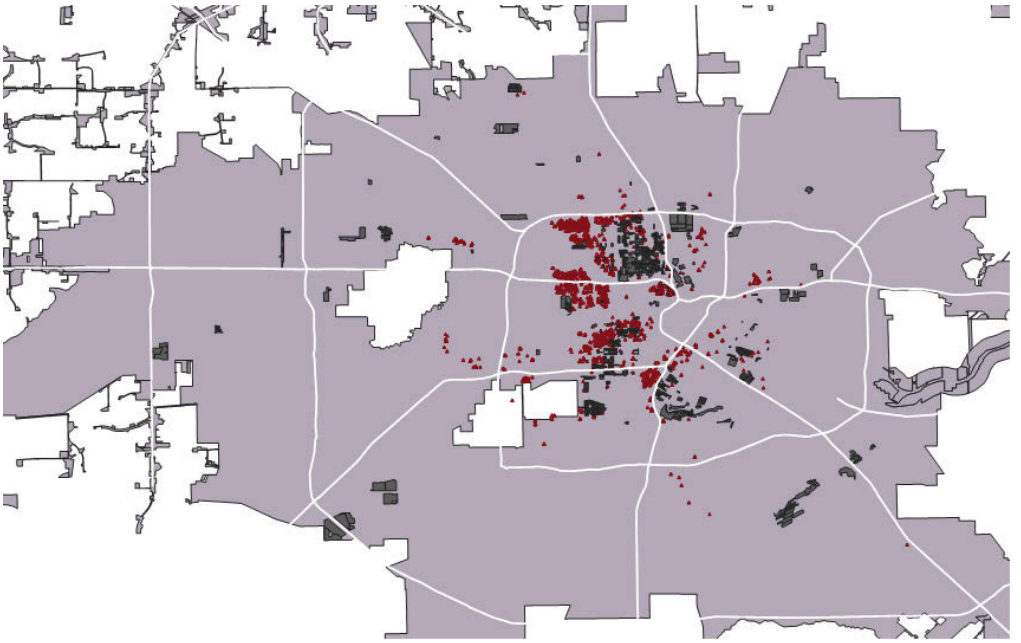
Note: The figure for 2007 may be low, because the dataset does not include subdivided parcels that link to unsubdivided parcels from before 2005.
Source: Harris County Appraisal District (HCAD) data, with calculations by authors

Geography of SF2TH Subdivision

Exhibit 3 shows the locations of SF2TH units completed from 2007 to 2020, along with the block votes enacted during that period. It is immediately notable that SF2TH redevelopment is overwhelmingly concentrated inside the Inner Loop (visible as the white roadway circling around Downtown Houston). Only a minuscule number of SF2TH units (just 3.4 percent of the total) lie beyond the Inner Loop. This very small share is in contrast to the prior results that Wegmann (2020b) found, in which only 53 percent of townhouses overall built from 1999 to 2015 were within the Inner Loop. Thus, SF2TH development appears to be a more intensely urban phenomenon than townhouse development in Houston in general. Reasons could include higher land prices in the Inner Loop that make custom-built designs built in small increments more feasible for builders, the higher sales prices needed to justify teardowns of existing houses, or a lower prevalence of homeowners' associations that might serve to thwart such development.

Exhibit 3

Single-Family-to-Townhouse Redevelopments in Houston



Notes: Single-family-to-townhouse redevelopments are black circles, block votes are in dark grey, freeways are white lines, and the Houston city limits are in light grey. Some fringe areas of the city that contain no redevelopments or block votes are omitted from view. For reference, Downtown Houston, containing no block votes or redevelopments, is located inside the smallest freeway loop visible. The Inner Loop, commonly regarded as Houston's urban core and containing the bulk of redevelopments and block votes, is the area inside the larger of the two visible complete freeway loops.

Source: Image by authors, using data from Harris Central Appraisal District

Block vote districts are mostly, although not exclusively, close to large concentrations of single-family-to-townhouses, although there is little overlap between the two. Indeed, the dissimilarity index for block votes and SF2TH redevelopment at the tract level is just under 0.84.[9] Instead, clusters of SF2TH units and nearby large patches of block votes seem to exist within clumps of roughly 1 to 4 miles in diameter primarily to the northwest, west, and south of Downtown Houston. In the macroscale, these clusters are spatially concentrated, in the sense that only 121 of the 660 Harris County census tracts in Houston have either at least one SF2TH unit, at least one block vote, or both. One could summarize the spatial pattern by remarking that block votes and SF2TH units are clustered together when one is zoomed out but separated from each other in mostly homogenous clusters when zoomed in. Exhibit 4 provides an illustrative example.

[9] The dissimilarity index, commonly used as a measure for residential racial segregation, ranges from 0 (perfectly unsegregated) to 1 (perfectly segregated). Intuitively, the index of 0.84 means that 84 out of 100 block vote parcels would have to move to different tracts to achieve a perfectly proportionate balance of block votes and SF2TH townhouses by tract.

Exhibit 4

Single-Family-to-Townhouse Redevelopments in the West of Downtown Houston

Notes: Single-family-to-townhouse redevelopments are shown as red dots, and block votes are shown in dark grey in a swath of the northwest quadrant of Houston's Inner Loop. Both redevelopments and block votes tend to group together in clusters that are relatively near each other but mostly nonoverlapping.
Source: Image by authors, using data from Harris Central Appraisal District

A small although nontrivial number of block votes are beyond the Inner Loop and, in some cases, a considerable distance from any identified SF2TH redevelopments. It is possible that nearby (non-SF2TH) redevelopment motivated the formation of these districts as a preemptive measure to prevent it in the future, or perhaps as a means of restricting or altering other forms of anticipated redevelopment, such as single-family teardown and replacements.

Pre Versus Post-Single-Family-to-Townhouse Redevelopment

Having examined the macro characteristics of the SF2TH redevelopments—their number, temporal pattern, and geographic distribution—now to turn to the characteristics of the redevelopments. First, their scale: Redevelopments are mostly very small. If one thinks of a redevelopment as an event that begins with the demolition of one or more existing structures on a single-family lot, then results in a number of townhouses built on smaller lots subdivided from the original lot, then the most common version of this event yields only two townhouses. The median redevelopment event yields four townhouses. Notwithstanding the small net gain in units, Houston is a rare example—beyond the still relatively small number of cities in which permitted accessory dwelling units have been built in nontrivial numbers—in which small-lot redevelopment processes yield net gains in housing units. The typical counterfactual in many other large cities is a one-for-one replacement of a (small and deteriorated) single-family house with a (large and new) single-family house.

Exhibit 5 summarizes a number of metrics that in various ways compare conditions before and after SF2TH redevelopment for all 1,392 parcels in the dataset on which it occurred. The unifying theme is a drastic intensification in the use of these parcels, as one would expect. After all, for a builder to expend the capital to acquire an existing property, demolish its existing use, and replace it with new housing units requires a substantial increase in value. Exhibit 5 allows for this dynamic to be quantified via various indicators.

Exhibit 5

Various Indicators Comparing Single-Family-to-Townhouse Redevelopment Ex Ante Versus Ex Post

Indicator	Pre-redevelopment	Post-redevelopment
Median house construction date	1936	2014
Median lot size	6,500 sf	2,105 sf
Median built floor area	1,348 sf (pre-redevelopment parcel)	2,483 sf (all newly-created townhouse units)
Ratio of new total built square footage to previous total built square footage	1	4.2 (median; 1st quartile = 2.2; 3rd quartile = 6.6)
Improvement-to-land (I/L) assessed value ratio	0.14 (median)	2.14 (median)
Ratio of new assessed property value to previous property value	1	3.2 (median; 1st quartile = 1.7; 3rd quartile = 5.1)
Total citywide taxable property value	$319 million	$1.914 billion

Source: Harris County Appraisal District (HCAD) data, with calculations by authors

First, in the median case, an old house (built in 1936) is demolished and replaced with new townhouses (built in 2014). The median lot of 6,500 square feet is split into new, smaller lots with a median size of only 2,105 square feet. The original, relatively small house with a median of 1,348 square feet of floor area is replaced with new townhouses that collectively have 4.2 times the floor area as the one single-family house demolished to make way for them. Furthermore, in the median case, *each* new individual townhouse unit includes considerably more living space than the original house that was torn down (2,483 versus 1,348 square feet).

According to one metric, the improvement-to-land (I:L) ratio, which measures the value of the building as HCAD assessed compared with the assessed value of the land on which it sits—and whose significance Landis et al. (2006) explained—post-redevelopment sees the parcel far much more efficiently used. The I:L ratio leaps from 0.14 predevelopment to 2.14 for the median townhouse created in the process—a 15-fold increase. Measured in a different way, the total assessed value on the parcel jumps more than threefold from before versus after redevelopment. Aggregated together, the SF2TH parcels represented $319 million of taxable value for the city, county, school district, and other entities reliant on property tax revenues prior to redevelopment compared with $1.914 billion in value afterward. Although this analysis does not attempt to quantify increased needs for municipal services generated by lot subdivision, it seems highly likely that SF2TH units represent a considerable fiscal net positive for taxing entities, including the city, county, and kindergarten through 12th grade school districts.

Affordability

The median SF2TH unit had an assessed value of $340,000 ($133 per square foot) as of 2020—much less than the median citywide assessed value of single-family houses built 2007 or later on unsubdivided parcels, which was $545,000 ($176 per square foot).[10] Assessed values, opposed to sales price data, should be treated with caution, but rough comparisons are still instructive. Values of SF2TH units varied greatly, with an interquartile range of $213,000. This wide range suggests that SF2TH units in Houston span the full gamut from bargain to high-end products and everything in between.

When one considers that most SF2TH units are easily spacious enough for a four-person household, their newness, and their predominant location inside the Inner Loop, $340,000 is a comparatively modest price. Under a reasonable set of assumptions, it was affordable to a household earning 105 percent of the metropolitan median household income in October 2020, although, of course, major changes have transpired in interest rates and other market conditions since.[11, 12] Compared with other big and growing U.S. cities, it is notable that a newly built, family-sized housing product with a central location is within reach of middle-income Houston households in the median case.

Summary

To summarize, SF2TH redevelopment on the citywide scale is a relatively rare event; the same is true of block votes—presumably mostly conducted in response to nearby SF2TH redevelopment—although less so. Although precise quantification is not possible, it is clear that SF2TH redevelopment represents a small share of townhouse development in Houston overall. After a slow start during and immediately following the Great Recession, SF2TH redevelopment has steadily produced new housing, albeit not without fits and starts. SF2TH redevelopment is overwhelmingly concentrated in the urban core, more so than townhouse development as a whole. It represents a considerable intensification of urban land use, whether measured from a built form or property tax generation standpoint. Even so, the typical end product, although by no means cheap, is reasonably affordable to many middle-income homebuyers. Having reviewed some of the general characteristics of SF2TH redevelopment, the article now turns to an analysis of the locational factors that predict where it—along with its close companion, block vote district formation—is most likely to take place.

Predicting Townhouse Redevelopment and Block Votes From 2007 to 2020

Exhibit 6 summarizes the two logit model runs, predicting SF2TH redevelopment (Model 1) and block vote incorporation (Model 2). A discussion of the results from Model 1 follows.

[10] Unless otherwise indicated, all dollar figures are rounded to the nearest $1,000.

[11] This calculation uses Fannie Mae's (n.d.) Homebuying Mortgage Calculator and assumes the following: 5-percent downpayment, 2.8-percent interest rate for a 30-year mortgage, and no homeowner's association fees (as is typical for Houston townhouses) but includes property taxes, homeowner's insurance, and private mortgage insurance in addition to principal and interest. These costs are assumed to total no more than 30 percent of gross household income. In 2020, the median family income for Greater Houston was $78,800 (HUD, 2020).

[12] This calculation also does not account for the likely understatement of HCAD's assessed house values compared with real-world prices.

Exhibit 6

Logit Model Results for Single-Family-to-Townhouse Redevelopment (Model 1) and Block Vote Incorporation (Model 2)

	Model 1 (SF2TH logit): Single-family parcel (as of 2007) undergoes subdivision into townhouse lots, 2007–2020		**Model 2 (Block Vote logit): Single-family parcel not in a block vote district (as of 2007) is incorporated into a block vote, 2007–August 2022**	
Intercept	– 52.58	2.97***	11.70	(1.01)***
Original Lot and Structure Characteristics				
Original lot size (acres)	0.51	(0.14)***	0.47	(0.032)***
Original structure year built	– 0.028	(0.0015)***	– 0.011	(0.00051)***
Original structure interior area (sf)	– 0.00026	(0.000041)***	0.00015	(0.000013)***
Distance from CBD (miles)	– 0.55	(0.022)***	– 0.059	(0.0048)***
Tract-level Characteristics, Year 2000				
Median house value (1999 USD)	0.000019	(0.0000024)***	0.000026	(0.00000085)***
Median house value (1999 USD), squared	– 3.50E-11	(4.18E-12)***	– 5.56E-11	– 1.73E-12***
Population share under age 18	– 1.71	(0.96)	– 4.41	(0.26)***
Population share Black non-Hispanic	– 1.37	(0.35)***	5.23	(0.10)***
Population share Hispanic	– 0.58	(0.44)	7.88	(0.13)***
Share of people ages 25+ with bachelors or higher	– 1.89	(0.60)**	5.89	(0.17)***
SF2TH Townhouses in Tract, Built from 2007–2020				
SF2TH townhouses in tract			0.012	(0.00066)***
SF2TH townhouses in tract, squared			– 0.000057	(0.0000028)***
n		282,742		282,742
Nagelke pseudo r^2		0.293		0.259

****p < 0.001; **p < 0.01; *p < 0.05; p < 0.1*

SF2TH = single-family-to-townhouse.

Note: Standard errors are shown in parentheses.

Sources: Harris County Appraisal District (HCAD) and American Community Survey data, with calculations by authors

The four original lot and structure characteristic coefficients are all highly significant and have the expected signs. As hypothesized, parcels that are larger and that contain older and smaller existing houses and that are closer to downtown are all likelier to redevelop when controlling for the other variables in the model. The relationship of house value to redevelopment also behaves as expected. Confirming Gray and Millsap's (2020) finding that townhouse development in general is most common in upper-middle-income locations, the year 2000 median tract house value coefficient and its square in Model 1 point toward the likelihood of SF2TH redevelopment peaking, all else equal, in tracts with a median house value of $271,000 (with a 95-percent confidence interval spanning from $165,000 to $442,000) in 2000. This value compares with an overall year 2000 average tract-level median income house price of $91,000.[13]

[13] See exhibit 8 in the appendix.

The sociodemographic variable coefficients tell a somewhat mixed story. Tracts with fewer Black residents in 2000 are more likely to redevelop, cutting against the notion that SF2TH redevelopment is a phenomenon of gentrification. On the other hand, parcels in tracts with lower college education levels are likelier to redevelop. A very weak negative relationship is between the number of children in the tract and the likelihood of SF2TH redevelopment; Hispanic population share has no relationship at all. Although these results are mixed, taken in tandem with the finding previously reported about tract house prices, certainly no compelling reason exists to strongly associate SF2TH redevelopment from 2007 to 2020 with gentrification. Instead, it appears to concentrate in tracts that had fewer Black and college educated residents but higher-than-typical house prices, as of 2000.

The Model 2 results bear many similarities to Model 1, suggesting that many of the basic factors that drive SF2TH redevelopment are also associated with greater likelihood of a given parcel being incorporated into a block vote district. For instance, as with SF2TH redevelopment, block votes are likelier on larger parcels, with older houses, closer to downtown, and in neighborhoods with above median house prices as of 2000 (peaking at $233,000 compared with $271,000 for Model 1).

The differences between Model 2 and Model 1 are instructive. Unlike SF2TH redevelopment, block votes are more likely on parcels that contain *larger* houses; perhaps their owners (being less likely to resubdivide their own lot) are more motivated to act to prevent what they regard as out-of-scale townhouse redevelopment from taking place nearby. Block votes are more likely to take place in tracts that have more children and college-educated adults; one could imagine neighbors organizing to thwart SF2TH redevelopment in the name of maintaining a tranquil, child-friendly atmosphere. One could also imagine more educated residents having more ability to navigate the block vote district formation procedures. Intriguingly, parcels in tracts with more Black and Hispanic residents are sharply more likely to join a block vote district.

Model 2 has a variable not present in the SF2TH model (Model 1), along with its squared term: The number of SF2TH units built during the period from 2007 to 2020 within the same census tract as the parcel in question. As previously discussed, the supposition here is that the presence of SF2TH redevelopment nearby may spur homeowners to organize a block vote as a defensive measure against townhouse redevelopment on their own street, although this analysis ignores the relative timing of these events and thus can only yield a loose association. The sign and significance of the squared term suggest, as with the house value variable, a quadratic relationship between SF2TH units and block vote likelihood. The probability of a block vote covering a parcel between 2007 and 2022 peaks with 104 townhouse units created in the same census tract from 2007 to 2020 (with a 95-percent confidence interval from 84 to 115). Below that amount, block votes, all else equal, are less likely, presumably because townhouse encroachment is a less alarming prospect. If more than 106 townhouses per tract, block votes also become less likely, suggesting a critical level of townhouse saturation, past which homeowners begin to calculate that it is no longer worthwhile to bother with organizing a block vote.

Models 1 and 2 have Nagelke pseudo r^2 values of nearly 0.29 and 0.26, respectively. Thus, they are reasonably predictive, given that many factors governing lot-by-lot redevelopment and block

vote formation, such as a given homeowner household's readiness to sell, the presence of nearby blighted properties, or social relations on a given residential block are idiosyncratic.

Townhouse Redevelopment and Neighborhood Change

Although some of the model results previously reviewed relate, at least indirectly, SF2TH redevelopment with gentrification, it is also useful to use simple descriptive statistics to build a portrait of how the neighborhoods in which this type of townhouse development predominates have changed during this century. Exhibit 7 captures these changes from 2000 in the decennial census to 2015 through 2019 in the ACS. Sociodemographics in the mean census tract containing SF2TH units (middle column) are compared with the same for the mean census tract containing unsubdivided single-family parcels (right column). To provide a concrete example from the top row of exhibit 7, the average parcel that underwent SF2TH redevelopment was in a census tract in which the share of the population under age 18 dropped 7.4 percentage points between 2000 and 2015–2019 (center column). Meanwhile, the average single-family parcel that did *not* undergo SF2TH redevelopment was in a tract whose under-18 share decreased only 2.3 percentage points during that same period (right column). Therefore, SF2TH parcels tended to be in tracts that lost children at a faster rate than single-family parcels that were not redeveloped into townhouses.

Exhibit 7

Average Tract-Level Change From 2000 to 2015–2019 for Subdivided (SF2TH) Versus Unsubdivided Parcels

	Subdivided Parcels	Unsubdivided Parcels
Percent of population under age 18	– 7.4 pp	– 2.3 pp
Percent of population over age 65	– 0.2 pp	+1.8 pp
Percent of population non-Hispanic Black	– 3.8 pp	– 5.2 pp
Percent of population non-Hispanic White	+16.8 pp	– 6.4 pp
Percent of population Hispanic	– 21.0 pp	+10.7 pp
Median Family Income (nominal dollars)	+ $109,667	+ $29,520
Percent of adults 25+ with bachelors degree or higher	+38.3 pp	+6.2 pp
Percent of occupied housing units owner-occupied	+11.6 pp	– 3.1 pp
Median owner-occupied house price (nominal dollars)	+$315,401	+$134,195
Population density per square mile	+1,986	+270
Number of parcels	*1,371*	*281,400*

pp = percentage point change.

SF2TH = single-family-to-townhouse.

Sources: Harris County Appraisal District (HCAD), US Decennial Census, and American Community Survey data, with calculations by authors

The mean SF2TH unit in the dataset is in a census tract that in the 21st century has, by all indicators, disproportionately gained in Houston's most historically advantaged populations. White[14] residents are up by 17 percentage points, although Black and Hispanic residents are down 4 and 21 percentage points, respectively. These demographic trends took place in the context of substantial densification: The median density of the average SF2TH tract leapt by almost 2,000

[14] "White" refers to "non-Hispanic White" throughout.

extra people per square mile (an increase of nearly 39 percent) compared with less than 300, on average, in the unsubdivided parcels' tracts.

The average SF2TH tract gained in median family income by a whopping almost $110,000 compared with under $30,000 for the tract housing the average unsubdivided single-family parcel. The median house price shot up by $315,000 in the former versus only $134,000 in the latter. Homeownership rate trends diverged, increasing nearly 12 percentage points in the former compared with a drop of 3 percentage points in the latter.[15]

The share of senior households in the mean SF2TH tract remained basically unchanged versus a slight increase (1.8 percentage points) in the tract of the mean unsubdivided parcel. The divergence was greater for children, as previously noted, that is, a 7.4-percentage-point drop for subdivided versus drop of 2.3 percentage points for unsubdivided parcels.

Do these changes represent gentrification as it is commonly understood? In the average case, no: The mean SF2TH unit is in a tract that had substantially more White residents in 2000, was essentially identical in income, and had considerably higher median house values compared to unsubdivided parcels (40 percent White for tracts containing SF2TH units versus 30 percent White for tracts containing unsubdivided parcels, $48,000 versus $47,000 of median family income, and $128,000 versus $90,000 of house value, respectively). SF2TH redevelopment, it appears, disproportionately took place in somewhat advantaged tracts near the urban core and helped those neighborhoods grow their advantaged populations. Consider the typical pattern in most growing U.S. cities, such as nearby Austin, where land use regulations largely shield advantaged neighborhoods from infill development and housing unit densification and, instead, shunt it to historically marginalized (and less heavily regulated) areas in the urban core, thus fueling gentrification. Houston represents an entirely different trajectory (Tretter, 2016).

Takeaways and Lessons

How should one summarize the Houston experience of SF2TH redevelopment—something that could be thought of as Houston's two-decade long experiment in repealing (erstwhile) large lot single-family zoning via allowing redevelopment into townhouses? Although it is of course important to be cautious about generalizing from one city to another, some of the topline takeaways from the empirical findings previously presented may be instructive for other large, hot market, U.S. cities, or at least those seeking to legalize townhouse-style redevelopment of large single-family lots. The following paragraphs summarize these takeaways.

The removal of binding constraints can spur change. At the risk of stating the obvious, the removal of a binding constraint on a form of development can greatly speed up the proliferation of that form of development (Gabbe, 2018). Just as prior research has demonstrated that minimum lot size requirements altered the quantity and character of greenfield suburban development throughout Texas and townhouse redevelopment in Houston in general, the 1998 reforms appear to have

[15] Here, it is worth recalling that exhibit 7 presents simple associations between parcel status (subdivided into townhouses or not), with the various sociodemographic and other indicators shown. Causation cannot be inferred directly. Still, the simplest explanation for the observed trends is that locations with rapidly increasing incomes and property values were, all else equal, likely more attractive for redevelopment, including SF2TH, where regulations and private deed restrictions allowed.

facilitated substantial SF2TH redevelopment in Houston (Gray and Furth, 2019; Gray and Millsap, 2020). The results in this article do not permit a comparison before and after the 1998 reforms because the data span only the period from 2005 to 2020, but SF2TH redevelopment in Houston accelerated post-Great Recession to a pace likely not seen in any other U.S. city in recent times.

Single-family-to-townhouse redevelopment is a comparatively rare event on the citywide scale. Even though the 1998 lot size reforms and their later extension could be viewed as major success stories in spurring the production of townhouses, townhouse development on formerly single-family lots is relatively rare even under Houston's near-ideal conditions. Although it must be recognized that these estimates are likely not perfect, the analysis in this article found that only 0.5 percent of single-family lots underwent SF2TH redevelopment between 2007 and 2020. Even ambitious and successful reforms to R1 such as Houston's, in other words, are unlikely to spur rapid transformation in the single-family stock at the scale of a whole U.S. city. Most single-family housing is likely to stay single-family housing in the first decades after reform.

The same might not be true, however, at the neighborhood scale. Certain neighborhoods may be ideally situated for redevelopment and face more rapid change. Indeed, certain Houston neighborhoods, such as Rice Military and Montrose, were radically transformed by SF2TH redevelopment during the period analyzed.

In Houston, townhouses on formerly single-family parcels are less numerous than those built on formerly nonresidential parcels. The share of overall post-1998 townhouse development in Houston that took the form of redevelopment of formerly single-family parcels was likely less than 20 percent, although due to data limitations, the true percentage cannot be calculated precisely from the data analyzed for this article. This low share likely reflects multiple factors. The economies of scale achievable on larger (i.e., nonresidential) tracts may be attractive to developers. Existing residential neighborhoods may be subject to restrictive covenants limiting redevelopment. Even in a liberal regulatory regime, opposition from neighbors may still impede the redevelopment of parcels in established single-family neighborhoods. Moreover, the specific design of Houston's lot size reduction ordinances likely incentivizes the acquisition of larger parcels—developers can reach smaller townhouse lot sizes, for instance, if they provide common open space in their developments. This incentive could spur them to prefer larger, commercial parcels over smaller, residential ones in many cases. Whatever the exact reason, it is obvious that even where the development of a given housing product is allowed on both commercial and residential land, Houston's experience shows that it is not an inevitability that the latter will predominate.

Single-family-to-townhouse redevelopment represents a significant intensification of land use and fiscal yield where it occurs. Although SF2TH redevelopment represents a less dramatic physical transformation than, say, the replacement of a single-story strip mall with a midrise apartment building, it still results in a notable increase in how intensively the affected parcels are used. The median SF2TH redevelopment produces 4.2 times more floor area on the parcel than what existed before the prior single-family house on it was torn down. Notably, redevelopment increased both the density and the unit sizes of housing compared with what existed on the same parcels pre-redevelopment. These redevelopments provided more housing per household, not only per acre.

The increased valuation for property taxation purposes for all the properties that underwent SF2TH redevelopment was fully sixfold higher post-redevelopment compared with pre-redevelopment, suggesting that SF2TH redevelopment is almost certainly a fiscal winner for the city and other taxing districts even when considering additional demand for municipal services.

Single-family-to-townhouse redevelopment is much likelier in the urban core and on certain parcels (large lots with old, small existing houses). Notwithstanding the rarity of SF2TH redevelopment on the citywide scale, in Houston, it has concentrated in particular locations. It is intensely concentrated in the urban core—much more so than townhouse development in general, which already has a notable urban tilt. Likely, the acquisition and teardown of an existing single-family house requires considerable land values for it to be justified for SF2TH redevelopment. It is most likely to take place on larger single-family parcels where the existing house is small and old or low in value relative to the land on which it sits. This most recent finding, of course, has implications for those concerned about historic preservation in Houston or in other cities contemplating repealing R1.

Block votes are comparatively rare citywide but apparently effective in keeping SF2TH redevelopment out of certain neighborhoods. Block votes are comparatively rare on the citywide scale. Only 4.7 percent of single-family lots not in a block vote district as of 2007 came to be covered by one, or had one pending, by 2022. This percentage is higher than the share of such parcels that underwent SF2TH redevelopment (0.5 percent), but it is obvious that providing the block vote mechanism did not come anywhere close to halting SF2TH redevelopment on the citywide scale. If one takes a "zoomed-out" perspective, then block votes do not impede SF2TH redevelopment.

However, a "zoomed-in" perspective gives a more nuanced interpretation. Areas with heavy concentrations of block votes tend to border on, but mostly not overlap with, areas with a lot of SF2TH redevelopment. Thus, it can be inferred that certain sizable areas of the city that might otherwise be expected to have market conditions favorable for SF2TH redevelopment seem to have many blocks where this redevelopment has been thwarted.[16] This dynamic can be seen in the patchwork spatial pattern of large areas of concentrated townhouse redevelopment adjoining other large areas that are thick with block votes. This finding buttresses Gray and Millsap's (2020) supposition that block votes allow homeowners to confront tradeoffs between property values and their aversion to immediately proximate redevelopment, with varying results according to the particular mix of life circumstances and preferences of homeowners on a given block.

The spatial patterns of SF2TH redevelopment are not consistent with gentrification as a primary explanatory factor. The hypothesis that gentrification was a primary driver of SF2TH redevelopment does not fit well with our empirical results. For a neighborhood to be commonly understood to be gentrifying during a given period requires two ingredients: (1) A population that,

[16] Some evidence in favor of this supposition: Generally speaking, parcels with lower I:L ratios are less intensively used in relation to their land value, thus can be expected to be more prone to redevelopment (Landis et al., 2006). Among the parcels in the dataset with valid property values, analysis finds that unsubdivided properties incorporated into block votes during the time period analyzed here had a median I:L ratio of 0.94, significantly less than for unsubdivided properties never incorporated into block votes, or 1.90. As a point of reference, parcels that underwent SF2TH redevelopment had a median I:L ratio of 0.14 versus 1.85 for those that did not (exhibit 5). These results are consistent with the idea that block votes are likely suppressing at least some SF2TH redevelopment. The authors thank Emily Hamilton for suggesting this comparison.

at the beginning of the time period, includes an overrepresentation of historically marginalized groups and (2) a trajectory of change over time in which the share of advantaged groups increases. To be sure, SF2TH redevelopment in Houston is consistent with the second requirement. It is concentrated in tracts that from 2000 to 2015–2019 lost children, Black, and Hispanic residents and gained White residents, college educated adults, owner-occupied housing share, and house values. However, it does not meet the first requirement: When controlling for other relevant factors, SF2TH redevelopment was more likely to occur in neighborhoods with above average (although not the highest) property values and with fewer Black residents, as of 2000.

In other words, the pattern of SF2TH redevelopment is not consistent with a narrative that an influx of townhouse development led to Houston's historically disadvantaged groups having to leave their neighborhoods. Instead, it seems to have been a case of neighborhoods that were modestly wealthy to begin with getting wealthier. Neighborhoods with low house values may have had insufficient land values to attract developers or homebuyers, and the highest cost blocks may have been more likely to already have protective deed restrictions in place. Block votes may have played some role in the latter, although they were similarly most likely to be used in neighborhoods in the upper middle, rather than the top, of the citywide distribution of house values. It seems plausible that high-income blocks are more likely to have already had deed restrictions in place, and thus have less need for block votes, but this supposition must be thought of as conjecture for the time being.

Although novel building forms, such as the tall and narrow dimensions of townhouses, often serve for many as a visual totem of gentrification by contrasting with existing familiar building types, the evidence does not strongly support the association in the case of Houston. Certainly, one can find examples of gentrifying neighborhoods, such as Third Ward immediately south of Downtown Houston, which experienced a spate of SF2TH redevelopment from 2000 to 2015–2019, but this pattern was not predominant. An implication for other U.S. cities is that a broad-based, citywide repeal of R1 that effectively sparks redevelopment may result in somewhat more advantaged neighborhoods soaking up some of the housing demand now channeled to gentrifying neighborhoods.

Single-family-to-townhouse redevelopment does not appear to be associated with a gain in children. Many observers have lamented the lack of new housing in urban cores that is suitable for families with children. Houston has vigorously addressed this issue by pursuing regulatory changes that have allowed for the construction of tens of thousands of relatively spacious single-family townhouses that, in principle, could accommodate families with children. However, the tracts that have seen SF2TH redevelopment at the highest rates have lost children faster since 2000 than the city as a whole. It is impossible to know from our results if this loss of children is due to other factors, such as fear of crime or perceived low quality of public schools, or if townhouses are still not viewed in Houston as family-friendly housing (perhaps because of a lack of yard space or vertical layouts), despite their comparative spaciousness vis-à-vis apartments or other land-efficient housing types. It is also possible that the availability of townhouses resulted in a slower decline in the child population than would otherwise have been the case. However, one takeaway for cities

contemplating R1 repeal is that townhouse redevelopment may not on its own be a panacea for attracting children to the urban core.

What Remains Unknown

Although the research reviewed in this article sheds light on the 21st century phenomenon of SF2TH redevelopment in Houston, much more is to be learned. Although it produced a reasonable estimate and portrait of SF2TH transformations, it would be valuable to compare these transformations more precisely with other forms of townhouse redevelopment in Houston, such as those originating from commercial or industrial parcels. It would also be valuable to compare the various forms of townhouse redevelopment with other forms of small-lot redevelopment, above all the teardown and one-for-one replacement of single-family houses or the construction of single-family houses on vacant lots. Property tax data may offer opportunities to make inferences about the characteristics of the people who sold SF2TH parcels versus the incoming townhouse buyers. Finally, the recent proliferation of impactful scholarship from political scientists delving into land use regulation suggests the potential for new insights from analyzing block vote patterns against traditional precinct-level election data (Einstein, Glick, and Palmer, 2019; Trounstine, 2018). Of course, more broadly, one cannot say how the lessons learned from this path away from R1 zoning extend to other reform strategies focused on "missing middle" housing or higher-density development.

Conclusion

What should other cities contemplating R1 repeal learn from Houston's experience of having allowed townhouses to appear on single-family-dominated blocks a quarter century ago? Houston shows that a robust supply response exists provided that market conditions are ripe and the new land use regulations allow for the construction of a product that builders want to build and homebuyers want to buy (one or both of which seems to have been absent in Minneapolis' recent much-celebrated repeal of R1). At the same time, R1 repeal is unlikely to transform the face of an entire city over a short period. Instead, its rough equivalent in Houston proceeded incrementally, lot by lot, in certain areas much more than others, but at a pace and scale that was relatively modest in the aggregate. Houston's experience suggests that R1 repeal is unlikely, on its own, to exacerbate gentrification. There is even reason to think that repeal might alleviate gentrification by channeling a higher share of new development to middle-income neighborhoods.

Small-lot townhouse development may also open up new possibilities, such as allowing for below-market, family-friendly homeownership opportunities by nonprofit builders. The relatively modest prices of many new SF2TH units implies that the public subsidies needed to bring them within reach of below median households would not be outlandish. Even in its purely market-driven form, townhouse redevelopment on single-family parcels offers considerable benefits, such as intensified usage of urban land, an increased tax base, and the production of newly built, well-located, family-sized housing units that in the median case are much cheaper than large-lot single-family equivalents.

Ultimately, one must weigh the drawbacks and benefits of SF2TH redevelopment in Houston against the status quo that exists in other high-demand large cities. Precisely where single-family-townhouse redevelopment in Houston has been likeliest to take place—on spacious, centrally located parcels, occupied by small, old houses, in neighborhoods that lean affluent—is where one might expect to see the demolition of single-family houses and their replacement with large, new, and expensive single-family houses in many other U.S. cities. If the loss of older, deteriorated single-family housing stock in such locations is difficult, impossible, or perhaps even undesirable to halt, then it is worth asking what is a worthwhile replacement. The recent experience of Houston with infill townhouses offers an intriguing and, within the context of the United States, unusual answer.

Appendix A

Model Specifications

The models for redevelopment are as follows:

Model 1

$$logit(p_{SF2TH}) = \beta_0 + \beta_1 X_{ORIG} + \beta_2 x_{CBDdist} + \beta_3 x_{thv00} + \beta_4 x^2_{thv00} + \beta_5 X_{tsd00} + \varepsilon$$

Model 1 predicts p_{SF2TH}, or the probability that a given single-family parcel in Houston undergoes redevelopment into townhouse lots at any point between 2007 and 2020. β_0 is the y-intercept, and X_{ORIG} is a vector of original lot and house characteristics (original lot size, year original structure was built, and original structure floor area). To account for location, $x_{CBDdist}$, the "as the crow flies" distance in miles from the centroid of the parcel's tract to Houston's City Hall, is included. x_{thv00} is the median house value, as of 2000, in the parcel's tract. The model also includes a squared term, because of the hypothesized quadratic relationship between tract house value and probability of redevelopment. Finally, the model includes X_{tsd00}, a vector of tract sociodemographic characteristics in the year 2000 (population share under age 18, percent Black non-Hispanic, percent Hispanic, and share of adults ages 25 and older with a bachelor's degree or higher), plus an error term.

The model for block votes is almost identical to Model 1 but with one difference, noted in the following paragraph.

Model 2

$$logit(p_{BV}) = \beta_0 + \beta_1 X_{ORIG} + \beta_2 x_{CBDdist} + \beta_3 x_{thv00} + \beta_4 x^2_{thv00} + \beta_5 X_{tsd00} + \beta_6 x_{SF2TH} + \beta_7 x^2_{SF2TH} + \varepsilon$$

Instead of modeling the probability of a lot undergoing redevelopment into townhouses, as in Model 1, Model 2 models p_{BV}, the probability that a lot that was not in a block vote district as of the beginning of 2007 is incorporated into a block vote district sometime between 2007 and August 2022, inclusive. The independent variables are all the same as in equation 1, except they also include x_{SF2TH}, the number of SF2TH units built within the same census tract as the parcel at any time between 2007 and 2020, inclusive. A squared term for x_{SF2TH} is included.

Appendix B

Exhibit 8

Descriptive Statistics for the Dependent and Independent Variables in the Logistic Models

	Mean	Median	Min	Max	Standard Deviation
Dependent Variables					
Initially single-family lot as of 2005 underwent subdivision from 2007 to 2020 (dummy)	0.00484	0	0	1	0.0694
Initially single-family lot as of 2005 was incorporated into a block vote between 2007 and August 2022 (dummy)	0.0467	0	0	1	0.211
Original Lot and Structure Characteristics					
Original lot size (acres)	0.212	0.174	0.0230	9.975	0.223
Original structure year built	1960	1959	1840	2016	19
Original structure interior area (sf)	1,731	1,521	300	9,992	887
Distance from CBD (miles)	8.25	8.00	0.29	26.64	3.98
Tract-level Characteristics from U.S. Census, Year 2000					
Median house value (1999 USD)	$90,442	$64,295	$17,500	$1,000,001	$85,481
Population share under age 18	0.278	0.292	0.0296	0.471	0.0623
Population share Black non-Hispanic	0.281	0.101	0.000595	0.983	0.327
Population share Hispanic	0.366	0.301	0.00283	0.972	0.275
Share of people ages 25+ with bachelors or higher	0.221	0.132	0.00445	0.817	0.214
SF2TH Townhouses in Tract, Built from 2007–2020					
SF2TH townhouses in tract	11.88	0	0	719.00	56.64

CBD = central business district. SF2TH = single-family-to-townhouse.

Sources: Harris County Appraisal District (HCAD), US Decennial Census, and American Community Survey data, with calculations by authors

Acknowledgments

The authors are grateful to New York University's Furman Center and The Pew Charitable Trusts for their sponsorship of the research featured in this article. The Hogg Endowment also provided valuable support. The authors thank Noah Kazis for shepherding the article from inception; Ingrid Gould Ellen, Vicki Been, and Matthew Murphy for their detailed and insightful comments; and the staff at *Cityscape* for their careful work in editing the article (and patience with the first author). Emily Hamilton also generously provided feedback.

Authors

Jake Wegmann is an associate professor in community and regional planning at the University of Texas at Austin. Aabiya Noman Baqai is a doctoral candidate, also in community and regional planning, at the University of Texas at Austin. Josh Conrad is a doctoral candidate in historic preservation at the University of Texas at Austin.

References

Badger, Emily, and Quoctrung Bui. 2019. "Cities Start to Question an American Ideal: A House With a Yard on Every Lot." *New York Times*, June 18.

Banham, Reyner. 1971. *The Architecture of Four Ecologies*. London: Penguin Press.

Bronin, Sara C. 2023. "Zoning by a Thousand Cuts," *Pepperdine Law Review* 50. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3792544.

Chakraborty, Arnab. 2020. "Calls to End All Single-Family Zoning Need More Scrutiny," *Journal of the American Planning Association* 86 (1): 123–124.

Charles, Suzanne Lanyi. 2013. "Understanding the Determinants of Single-Family Residential Redevelopment in the Inner-Ring Suburbs of Chicago," *Urban Studies* 50 (1): 1505–1522.

Einstein, Katherine Levine, David M. Glick, and Maxwell Palmer. 2019. *Neighborhood Defenders: Participatory Politics and America's Housing Crisis*. Cambridge: Cambridge University Press.

Ellickson, Robert. 2021. "The Zoning Straitjacket: The Freezing of American Neighborhoods of Single-Family Houses," *Indiana Law Journal* 96 (2): 395–427.

Etienne, Harley F. 2020. "The Detached Single-Family Home Genie and Its Bottle," *Journal of the American Planning Association* 86 (1): 126–127.

Fannie Mae. n.d. *Fannie Mae Homebuying Mortgage Calculator*. https://fm.fanniemae.com/homeownership/resources/financial-calculators/mortgage-calculator.

Fox, Stephen. 2000. "The Houston Townhouse: It's Been Architects Versus the Market Since the Beginning. Today, the Market is Winning," *Cite: The Architecture and Design Review of Houston* 49: Fall.

Furth, Salim. 2020. "Stuck in the (Missing) Middle," *Market Urbanism blog*, September 8. https://marketurbanism.com/2020/09/08/missing-middle-critique.

Gabbe, C.J. 2018. "How Do Developers Respond to Land Use Regulations? An Analysis of New Housing in Los Angeles," *Housing Policy Debate* 28 (3): 411–427.

Gray, M. Nolan, and Salim Furth. 2019. *Do Minimum-Lot-Size Regulations Limit Housing Supply in Texas?* Arlington, VA: George Mason University, Mercatus Center Research. https://www.mercatus.org/students/research/research-papers/do-minimum-lot-size-regulations-limit-housing-supply-texas.

Gray, M. Nolan, and Adam A. Millsap. 2020. "Subdividing the Unzoned City: An Analysis of the Causes and Effects of Houston's 1998 Subdivision Reform," *Journal of Planning Education and Research*. https://journals.sagepub.com/doi/abs/10.1177/0739456X20935156.

Hamilton, Emily. 2023. *Learning from Houston's Townhouse Reforms*. Mercatus Center Policy Brief. Arlington, VA: George Mason University. https://www.mercatus.org/research/policy-briefs/learning-houstons-townhouse-reforms.

———. 2020. "What's a Stickplex?" *Market Urbanism blog*, October 1. https://marketurbanism.com/2020/10/01/whats-a-stickplex.

Hirt, Sonia A. 2015. *Zoned in the USA*. Ithaca, NY: Cornell University Press.

Kapur, Teddy M. 2004. "Land Use Regulation in Houston Contradicts the City's Free Market Reputation," *Environmental Law Reporter News & Analysis* 34: 10045.

Kendig, Lane. 2020. "Eliminating Existing Single-Family Zoning Is a Mistake," *Journal of the American Planning Association* 86 (1): 124–125.

King, David A., Michael J. Smart, and Michael Manville. 2022. The Poverty of the Carless: Toward Universal Auto Access," *Journal of Planning Education and Research* 42 (3): 464–481.

Kolomatsky, Michael. 2022. "Calculator: Which States Offer the Largest Lot Sizes for Home Buyers?" *New York Times*, September 8.

Kuhlmann, Daniel. 2021. "Upzoning and Single-Family Housing Prices: A (Very) Early Analysis of the Minneapolis 2040 Plan," *Journal of the American Planning Association* 87 (3): 383–395.

Landis, John D., Heather Hood, Guangyu Li, Thomas Rogers, and Charles Warren. 2006. "The Future of Infill Housing in California: Opportunities, Potential, and Feasibility," *Housing Policy Debate* 17 (4): 681–725.

Lemar, Anika Singh. 2021. "Overparticipation: Designing Effective Land Use Public Processes," *Fordham Law Review* 90: 1083.

Lewyn, Michael E. 2004. "How Overregulation Creates Sprawl (Even in a City Without Zoning)," *Wayne Law Review* 50: 1171.

Mangin, John. 2014. "The New Exclusionary Zoning," *Stanford Law & Policy Review* 25: 91.

Manville, Michael, Paavo Monkkonen, and Michael Lens. 2020. "It's Time to End Single-Family Zoning," *Journal of the American Planning Association* 86 (1): 106–112.

Park, John, and Luis Guajardo. 2021. *Re-Taking Stock: Understanding How Trends in the Housing Stock and Gentrification Are Connected in Houston and Harris County*. Houston, TX: Rice University, Kinder Institute. https://scholarship.rice.edu/handle/1911/110253.

Parolek, Daniel G. 2020. *Missing Middle Housing: Thinking Big and Building Small to Respond to Today's Housing Crisis*. Washington, DC: Island Press.

Pendall, Rolf, Robert Puentes, and Jonathan Martin. 2006. *From Traditional to Reformed: A Review of the Land Use Regulations in the Nation's 50 Largest Metropolitan Areas*, Research Brief, August. Washington, DC: The Brookings Institution, Metropolitan Policy Program. https://www.brookings.edu/wp-content/uploads/2016/06/20060802_Pendall.pdf.

Romem, Issi. 2016. "Can U.S. Cities Compensate for Curbing Sprawl by Growing Denser?" *BuildZoom blog*. https://www.buildzoom.com/blog/can-cities-compensate-for-curbing-sprawl-by-growing-denser.

Searle, Glen, and Peter Phibbs. 2020. "Ending Single-Family Zoning: Is There a Plan B?" *Journal of the American Planning Association* 86 (1): 121–122.

Shoup, Donald C. 2021. *The High Cost of Free Parking*, updated ed. New York: Routledge.

Siegan, Bernard. 1972. *Land Use Without Zoning*. Lanham, MD: Lexington Books.

Smith, Wallace Francis. 1964. *The Low-Rise Speculative Apartment*. Vol. 25, Berkeley: University of California, Institute of Urban and Regional Development, Center for Real Estate and Urban Economics.

Tretter, Eliot. 2016. *Shadows of a Sunbelt City: The Environment, Racism, and the Knowledge Economy in Austin*. Athens, GA: University of Georgia Press.

Trounstine, Jessica. 2018. *Segregation by Design: Local Politics and Inequality in American Cities*. Cambridge: Cambridge University Press.

U.S. Department of Housing and Urban Development (HUD). 2020. *FY 2022 Income Limits Documentation System*. https://www.huduser.gov/portal/datasets/il/il2020/2020summary.odn.

Wegmann, Jake. 2020a. "Death to Single-Family Zoning… and New Life to the Missing Middle," *Journal of the American Planning Association* 86 (1): 113–119.

———. 2020b. "Bayou City Townhouse Boom: Does Houston Have Something to Teach Us About Pro-Climate Transformation?" *Platform*, October 29. https://issuu.com/utsoa/docs/platform-forweb-singlepg-102820.

———. 2015. "Research Notes: The Hidden Cityscapes of Informal Housing in Suburban Los Angeles and the Paradox of Horizontal Density," *Buildings and Landscapes* 22 (2): 89–110.

Wegmann, Jake, and Sarah Mawhorter. 2017. "Measuring Informal Housing Production in California Cities," *Journal of the American Planning Association* 83 (2): 119–130.

Weiss, Marc A. 1987. *The Rise of the Community Builders: The American Real Estate Industry and Urban Land Planning*. New York: Columbia University Press.

Whittemore, Andrew H. 2021. "Exclusionary Zoning: Origins, Open Suburbs, and Contemporary Debates," *Journal of the American Planning Association* 87 (2): 167–180.

Whittemore, Andrew H., and William Curran-Groome. 2022. "A Case of (Decreasing) American Exceptionalism: Single-Family Zoning in the United States, Australia, and Canada," *Journal of the American Planning Association* 88 (3): 335–351.

Does Housing Growth in Washington, D.C., Reflect Land Use Policy Changes?

Leah Brooks
George Washington University

Jenny Schuetz
Brookings Metro

Abstract

Across the United States, rising housing costs have increased the political pressure on local elected officials to encourage more housing production. Local and state governments are experimenting with changes to land use regulations that could allow more housing to be built through infill development. Between 2000 and 2020, Washington, D.C., engaged in substantial infill development, increasing the housing stock by about 15 percent. This article examines whether areas in the city with particularly high growth saw large zoning changes. The authors find that most housing development occurred where underused commercial or industrial land was repurposed into high-density residential uses. Some high-growth neighborhoods experienced rezoning; others saw conversions of existing structures with little zoning changes. Notably, high-growth areas initially had very little land zoned for single-family homes.

Introduction

Since the Great Recession, the United States has failed to build enough homes to keep up with the growth in demand driven by population and job increases (Bernstein et al., 2021; Up for Growth, 2022). Housing costs have risen faster than household incomes, creating more financial pressure on low-to-middle-income households, especially renter households. This issue, in turn, has raised the political salience of housing affordability among elected officials seeking ways to encourage more housing production (Schuetz, 2022).

As part of this response, local and state governments across the United States are beginning to experiment with zoning reforms. These efforts include attempts to legalize "gentle density," such as accessory dwelling units and duplexes, to statewide requirements to allow more dense housing

("upzone") around transit stations (Chesto, 2021; Grabar, 2018; Tobias, 2022). To guide future policy decisions, it is important to understand which reforms have the most potential to expand housing production, where, and under what market conditions. However, most of these reforms are too recent to have yielded measurable results in housing outcomes.

To provide insights into the relationship between housing production and land use policies, this article applies a different lens: looking retrospectively at 2 decades of rapid housing growth in Washington, D.C., what can be inferred from the neighborhoods that saw the greatest increases in housing? Did high-growth neighborhoods enact notable changes in zoning or other land use policies? What was their initial zoning status?

The authors care about the answers to these questions because, although regulatory constraints are one—potentially very important—determinant of housing production, they are certainly not the sole determinant. Housing development also depends heavily on market factors, such as land values, the cost of construction labor and materials, and the expected prices or rents of newly built homes. Overly restrictive zoning can limit housing growth, but permissive zoning will not produce growth if market factors are not favorable. Additionally, zoning is not the only possible regulatory constraint on housing growth; current residents and elected officials have a variety of political and legal channels to deter unwanted development.

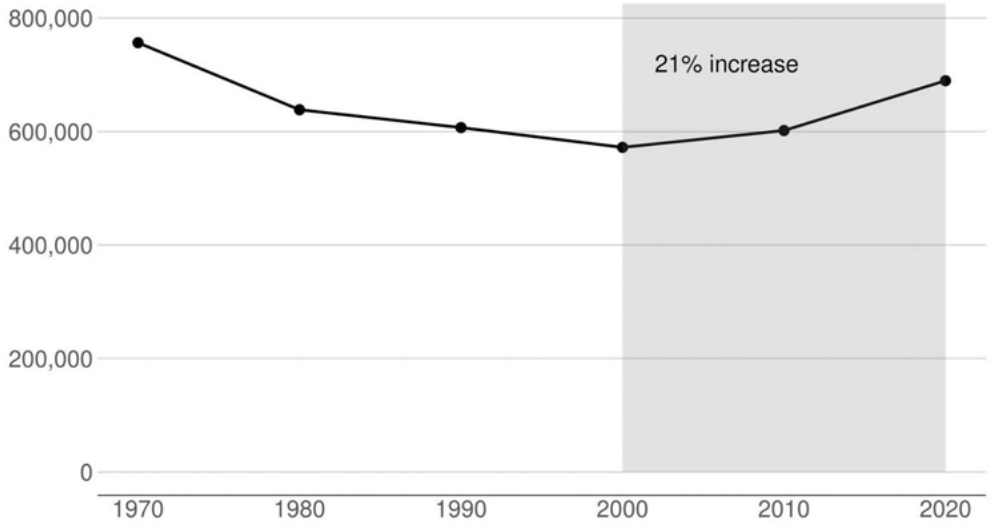
Washington, D.C., provides an intriguing empirical setting to examine the relationship between redevelopment and zoning. It has benefited from a strong labor market and increased housing demand during the past 2 decades. However, aside from parks, the city has almost no undeveloped land. Virtually all land was developed by the 1950s or designated as protected open space. Therefore, nearly all housing growth occurs through infill development, redeveloping parcels currently occupied by other uses (Brooks, Deneoux, and Schuetz, 2020). The District's elected leaders have been actively discussing how changes to zoning and housing approvals could facilitate more infill housing production (Baca, 2020; McCartney, 2019). (Like most older cities in the Northeast and Midwest, the District's boundaries are fixed. It is surrounded by independent political jurisdictions and cannot grow in land area by annexing unincorporated areas.)

As exhibit 1 shows, Washington, D.C., grew from slightly more than 570,000 residents in 2000 to about 700,000 in 2020. This 21-percent increase reversed more than 2 decades of population decline. Although the population can grow without new housing, Washington, D.C., had increases in population and housing units during this period. This growth occurred in the absence of any wholesale upzoning to allow multifamily zoning in single-family neighborhoods; such single-family neighborhoods account for most of the city's land. Thus, Washington, D.C., provides insights into where housing production takes place in the absence of large-scale changes to land use regulation.

Exhibit 1

Washington, D.C., Population Declines Through 2000 and Then Grows

Washington, D.C., Population by Decade



Sources: Decennial Census 1970–2000; American Community Survey 2010 and 2020

In the remaining sections, the authors provide descriptive statistics on where housing growth occurred—and did not occur—in Washington, D.C. This study examines how growth correlates with initial zoning status and zoning changes at the neighborhood level.[1] To better understand the mechanisms at work, the article undertakes qualitative case studies of two neighborhoods that added unusually large amounts of housing during this period. The analysis relies primarily on data from the 2000 Census and the 2020 American Community Survey; details on data sources and empirical methods are provided in the technical appendix.

During the 2000–20 period, the District revised its zoning laws, with new zoning districts and rules taking effect in 2016. Although this revision was a major legislative effort, the fundamental components of zoning—what size structures and what uses are allowed by right—changed on only a modest share of land in most neighborhoods (Flanagan, 2016). Notably, virtually all the land previously zoned for single-family homes remained zoned as single-family. Nearly 15 percent of land previously zoned for multifamily housing was downzoned—rezoned to allow less intensive use—to allow only single-family. The neighborhoods with the largest share of downzoned land are historically Black Wards 7 and 8, east of the Anacostia River. Most of the zoning changes that added capacity for new housing occurred by rezoning the land from non-residential districts (specifically a catch-all "Other" category) into single-family, multifamily, and mixed-use districts.

[1] Throughout, block groups are the neighborhood unit. A census block group is a small neighborhood, designated by the Census for statistical purposes, designed to contain between 600 and 3,000 residents (see Census documentation).

Examining the patterns of housing growth, the study found that most growth is concentrated where previously industrial or commercial land—often underused—was repurposed into housing. Relatedly, growth is also concentrated in areas with the least land zoned for single-family housing. Growth was not, however, tied to large-scale neighborhood rezonings.

The District's experience suggests that, in many cities, targeted land use interventions can accommodate substantial amounts of new housing. In the District's case, the city reallocated very small amounts of land from non-residential to high-density residential uses. This analysis does not shed light on the potential effects of upzoning existing residential areas because the District did not undertake this type of rezoning. Instead, it points to the conditions under which infill development can occur without such upzoning.

Which Washington, D.C., Neighborhoods Saw the Most Housing Growth?

As expected of a city whose population expanded by more than 20 percent, most District neighborhoods—measured in this analysis as Census block groups—saw increases in population density between 2000 and 2020.[2] Exhibit 2 shows a scatterplot of housing unit density (thousands of housing units per square mile) in these 2 years. Dots in the shaded triangle represent neighborhoods that increased in housing unit density, and dots outside the shaded area represent block groups that lost housing density. If a dot were to lie on the diagonal of the triangle, it would have the same housing density in 2020 as in 2000. More than 60 percent of the District's 433 block groups gained population during this time, although most saw only modest increases. However, a few neighborhoods account for a strikingly large share of the District's housing growth: block groups noted with larger dark circles are the five with the greatest change in the total number of housing units; block groups noted with squares are the neighborhoods with the next five-greatest increases in total housing units.[3] The article analyzes these fast-growing neighborhoods in greater detail in the following sections.

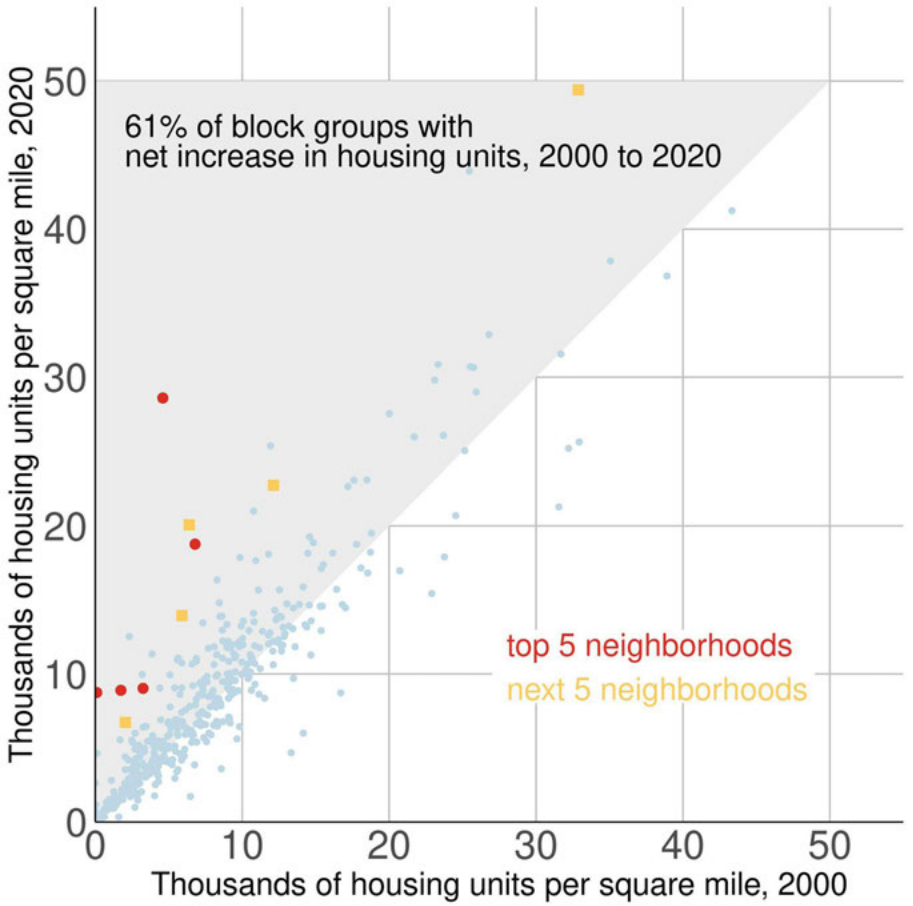
[2] See footnote 1 for definition of neighborhoods.

[3] An alternative classification is to examine the 10 neighborhoods with the greatest percentage increase in housing units. Of the 10 neighborhoods with the greatest increase in absolute number of units, 5 are in the top 10 when ranked by percentage change in units, and 7 are in the top 13 by percentage change in units.

Exhibit 2

Most District Neighborhoods Saw Modest Increases in Housing Unit Density From 2000 to 2020

Thousands of Housing Units per Square Mile by Census Block Group, 2000 and 2020



Notes: Housing density is calculated as housing units per square mile. Larger, darker circles represent the five block groups with the largest increases in the total number of housing units; squares represent the block groups with the next five largest increases in total housing units. All remaining block groups are the lighter, smaller circles. Some lighter, smaller dots lie above the darker circles and squares because the highest-growth neighborhoods are called out by growth in total units rather than by population density.

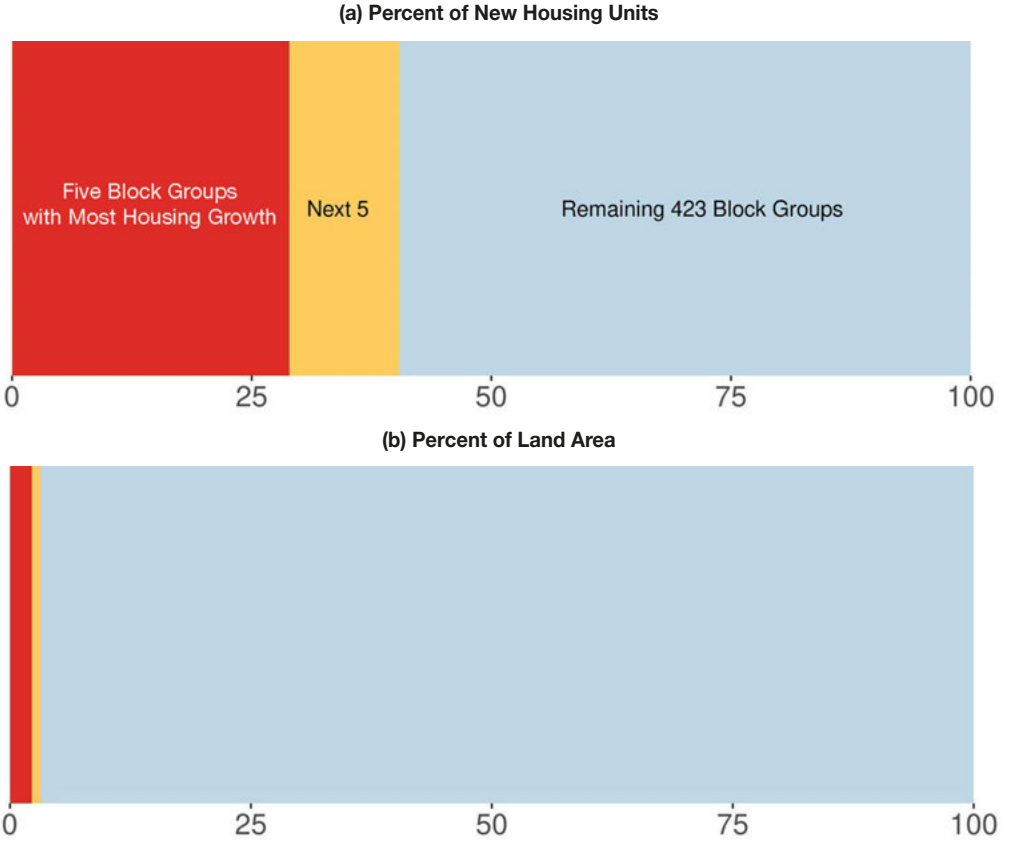
Sources: 2000 Decennial Census; 2020 American Community Survey

This housing growth was not spread evenly across the District's neighborhoods: the five greatest growth block groups account for nearly 30 percent of additional housing created from 2000 to 2020, and the next five block groups account for roughly 10 percent of additional housing (exhibit 3). For context, these 10 block groups account for well under 5 percent of land in the District. The remaining 432 block groups make up more than 95 percent of the land but only 60 percent of new housing.

Exhibit 3

Housing Growth Was Highly Concentrated in a Handful of Neighborhoods

Percent of New Housing Units, 2000 to 2020, and Percent of Total Land Area, 2020



Notes: Exhibit 3(a) shows the share of new housing units in the five block groups with the greatest increase in the number of housing units, the share of new housing units in the five block groups with the next greatest increase in housing units, and the share of new housing units in the remaining 423 block groups. Exhibit 3(b) shows the share of land area in each of those three categories using the same scheme.

Sources: 2000 Decennial Census; 2020 American Community Survey

Which Neighborhoods Saw the Greatest Increase in Housing?

Not only was housing growth concentrated in a few block groups, these block groups are quite spatially clustered (exhibit 4). The first part of exhibit 4 shows the 10 neighborhoods with the greatest housing growth, as measured by the increase in the absolute number of units. The second part of the exhibit locates those neighborhoods within the city at large. Although the District is 10 square miles, this city map shows that all the high-development neighborhoods are reasonably close to the central business district, in an area roughly 2 by 4 miles.

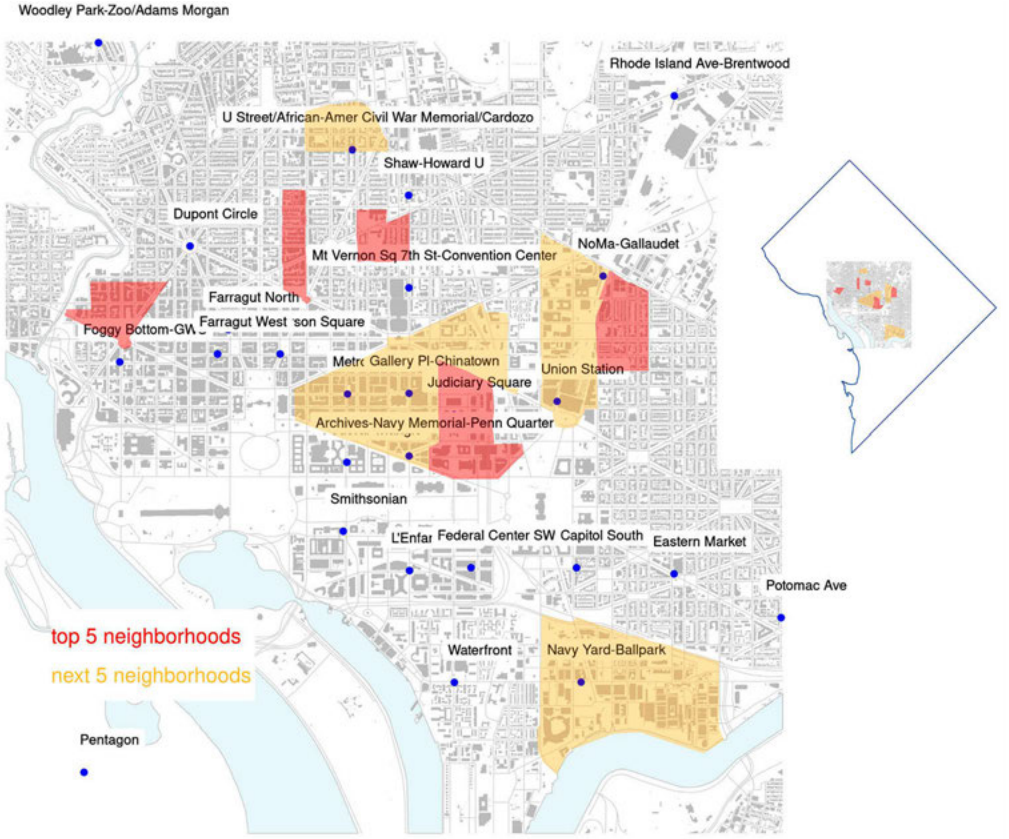
One large cluster of high-growth block groups appears adjacent to downtown near the Archives-Penn Quarter-Convention Center area in near Northwest. Another includes the near Northeast area slightly north of Union Station, near the NoMa metro (which opened for service in 2004)

and Union Market. Other areas of high growth include the Navy Yards area in Southeast, near the Nationals baseball park; the Shaw and U Street corridors in Northwest; and slightly north of the Foggy Bottom area in Northwest.

Exhibit 4

Fastest-Growing Neighborhoods Were Adjacent to Downtown, Near Union Station and Navy Yards

Top 10 Block Groups by Housing Growth, 2000-2020



Notes: The map shows 10 block groups with the largest increase in total housing units. Dots are Metro stations. See the data appendix for details on other map sources.

Sources: 2000 Decennial Census; 2020 American Community Survey

How Did Zoning Change in Washington, D.C., Between 2000 and 2020?

Cities promulgate zoning regulations to define allowed land uses, building dimensions, and density. Planners assign a zone to each piece of land in a city; in the District, planners currently have 164 zones from which to choose. For example, the R-1-A zone limits a piece of land to single-family homes, limits the total square footage of the building on the lot, requires a set number of parking spaces, and sets a minimum lot size. Originally, zoning was intended to separate commercial and

industrial uses from residential areas, protect homes from noise and pollution, and preserve light and air by limiting building height and bulk (Hirt 2014). Many critics of zoning argue that it goes much farther, reinforcing economic and racial segregation and limiting access to high-opportunity communities (Hsieh and Moretti, 2019; Rothstein, 2017; Schertzer, Twinam, and Walsh, 2021; Trounstine, 2020).

The share of land allocated to each zone varies considerably across the District's neighborhoods. Downtown and commercial corridors are zoned to allow offices, retail spaces, and various other types of commercial land uses, in most cases also allowing new residential development. Much of the District's land outside downtown is reserved for residential uses, with some small-scale neighborhood-serving commercial activity permitted.

This analysis focuses on the revisions to Washington, D.C., zoning that took effect in 2016. In most cases, these revisions were only technical and left in place the basics of zoning: what structures and uses are allowed by right. For this analysis, the study aggregates the District's 164 zones into five broad categories: single-family, multifamily, mixed-use, commercial/industrial, and other. This method necessarily limits the precision of the analysis but leaves the authors with a tractable and comprehensible set of categories. Exhibit 5a shows the share of District land allocated to these five categories under the prior zoning rules (in 2003), and exhibit 5b shows how much land originally zoned for each category stayed the same or was reallocated to a different broad category.

In 2003, about 36 percent of the District's land was zoned exclusively for single-family residential uses, whereas about 16 percent was zoned as multifamily residential.[4] The "other" category was the largest non-residential category, accounting for roughly 35 percent of District land. The largest component of this land is parks, including the very large Rock Creek Park and the National Mall; this category also includes land used for federal and local government buildings and other uses. About 12 percent of the land was zoned as commercial-industrial, with a very small amount designated as non-residential mixed-use.[5]

Notably, virtually all the land initially zoned for single-family housing was still zoned exclusively for single-family homes as of 2016. (Land zoned initially as mixed-use or commercial-industrial was also left in the same broad categories). Single-family exclusive zoning, particularly when paired with large minimum lot sizes, has been identified as one of the greatest barriers to increasing housing in already developed neighborhoods, where adding housing would require replacing existing single-family homes with multifamily, multi-story buildings (Ellickson, 2021; Furth and Gray, 2019; Glaeser, Schuetz, and Ward, 2006).

One limitation of broad-brush zoning categories is not being able to observe more nuanced changes to zoning rules, such as revisions to dimensional requirements or procedural rules, that could alter the effective housing capacity within zoning categories. In theory, keeping land zoned for single-family but cutting the minimum lot size in half might allow property owners to

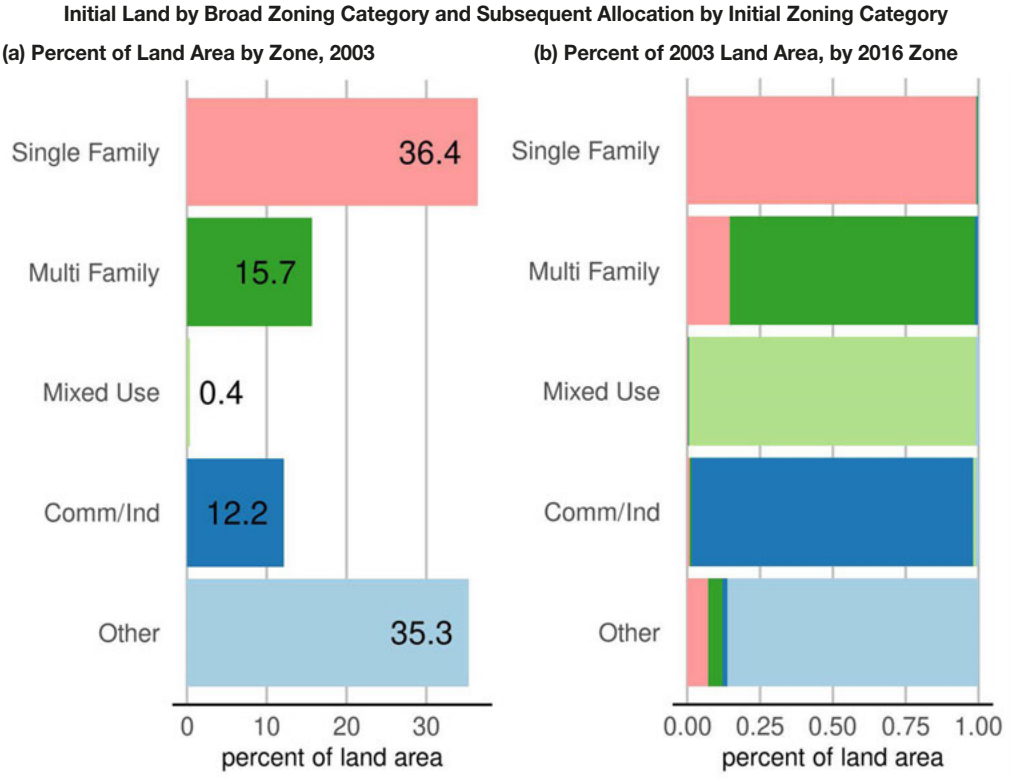
[4] For this analysis, mixed residential-commercial zones were assigned to residential categories, according to which type of housing was allowed by right. The core downtown areas permit multifamily housing by right, so they are counted as "multifamily" throughout the analysis.

[5] Commercial-industrial zones do not allow residential uses, with a few exceptions (onsite janitor, artist studios, and homes built before 1958).

subdivide parcels and build additional homes on the new lots. In practice, D.C.'s rezoning made at most modest changes to dimensional requirements that did not substantially alter housing capacity in residential areas (Flanagan, 2016).

Exhibit 5

Zoning Changes Added Housing Capacity by Reallocating Non-Residential Land to Residential Uses



Sources: Washington, D.C., 2003 and 2016 zoning shapefiles (full details are in appendices A and B)

Nearly 15 percent of the land previously zoned for multifamily was downzoned to allow only single-family homes. The neighborhoods that experienced the largest amount of downzoning are east of the Anacostia River in Wards 7 and 8; these historically Black neighborhoods are some of the least affluent parts of the District.

Most of the increased housing capacity that resulted from rezonings came from reallocating land previously in the "other" category: 7 percent of this land was changed to single-family, 5 percent to multifamily, and roughly 1.5 percent to commercial/industrial. The "other" category accounts for quite a lot of land, so in theory, the District could keep adding housing capacity by rezoning parcels from this category to allow multifamily and mixed-use development. In practice, however, much of this land is occupied by local or federal government facilities, including parks owned by the National Park Service, and is unlikely ever to be converted.

How Was Housing Growth Correlated With Initial Zoning Status and Zoning Changes?

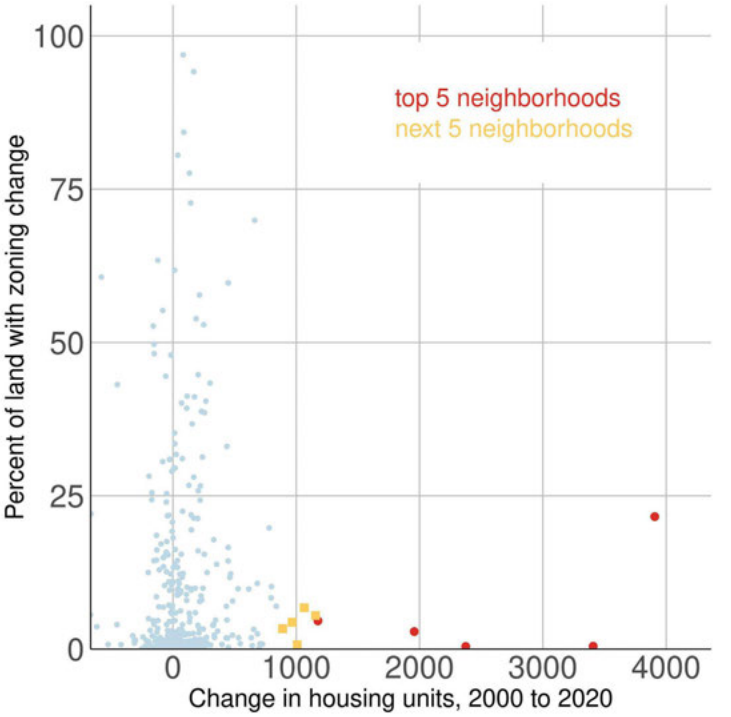
In exhibit 6, the authors evaluate whether any zoning change at all—to any category—is correlated with new construction. Specifically, they plot each block group's share of land with zoning change versus each block group's change in total housing units during this period. They use the scheme as in exhibits 3 and 4 to denote neighborhoods with the largest housing growth. Between 2003 and 2016—the years for which zoning designations were observed—the median block group had zoning changes to about 1.5 percent of its land. Among the top 10 block groups with the greatest increase in housing units, 9 of these block groups had zoning changes to less than 7 percent of land area. Only one of the highest-growth block groups, located in the Navy Yard, had nearly 25 percent of its land rezoned.

Many neighborhoods with very large changes in zoning had very small changes in housing units. However, this result reflects the nature of the zoning changes in these locations. Of the 10 block groups with the greatest percentage changes in zoning, all are east of the Anacostia River. In all 10, most of the change was to downzone multifamily land to single-family, effectively reducing capacity.

Exhibit 6

High-Growth Neighborhoods Did Not Undergo Large Zoning Changes

Percent of Block Group Land That Changed Zoning and Change in Housing Units, 2000–20



Notes: Zoning change is defined as movement between one of the five broad zone codes employed in this analysis. Larger and darker circles are the five block groups with the greatest absolute increase in housing units from 2000 to 2020; squares are the second five block groups with the next greatest housing increase. More details on the methodology are in appendix A.

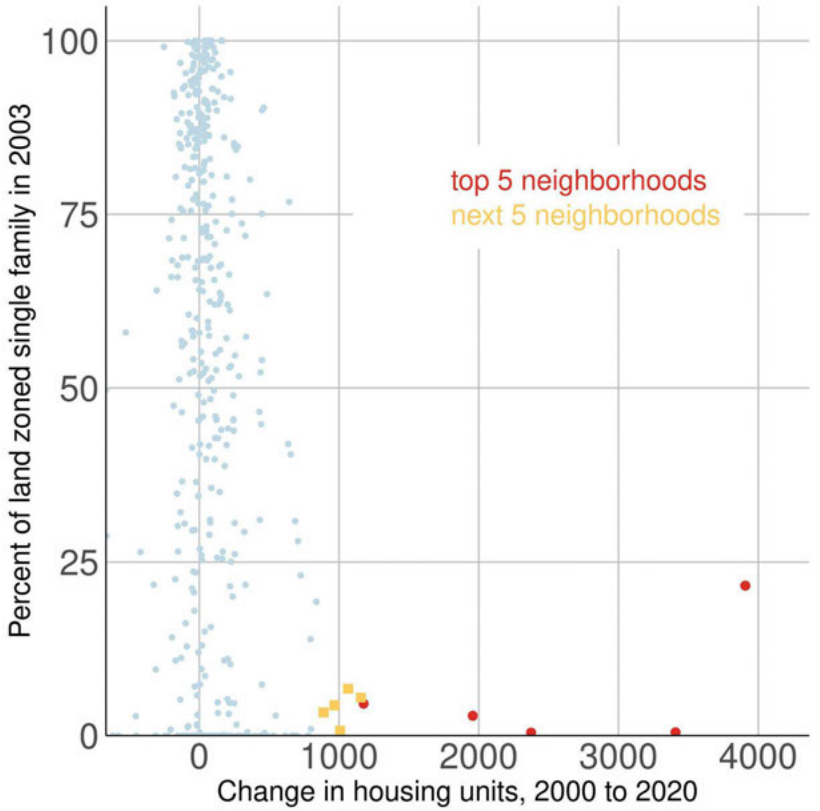
Sources: 2000 Decennial Census; 2020 American Community Survey

Although high-housing growth neighborhoods did not experience large rezonings, they share another zoning trait: relatively little land initially zoned exclusively for single-family homes (exhibit 7). Across all District block groups, the median block group has nearly 60 percent of land zoned exclusively for single-family homes. Among the 10 top housing growth neighborhoods, eight block groups had less than 10 percent of land zoned for single-family homes. The two outliers, with more than 50 percent of land zoned for single-family in 2000, had substantial vacant or extremely underused land. These neighborhoods are slightly west of Logan Circle and one, now known as NoMa, is slightly east of Union Station.

Exhibit 7

High-Housing Growth Neighborhoods Had Relatively Little Single-Family Zoning in 2000

Change in Housing Units, 2000 to 2020 Versus Percent of Block Group Land Zoned for Single-Family Housing in 2003



Notes: Single-family zoning is the share of land in a block group covered by a single-family zoning designation and comes from the 2003 zoning designations. Zoning data were measured in 2003 and 2016. The larger, darker circles are the five block groups with the greatest absolute increase in housing units from 2000 to 2020; squares are the second five block groups with the next greatest housing increases. More details on the methodology and sources are in appendix A.
Sources: 2000 Decennial Census; 2020 American Community Survey

Deeper Look: What Happened in Unusually High-Growth Neighborhoods?

To better understand what happened in high-growth neighborhoods, this study provides context for these block groups' demographic, economic, and physical characteristics at the beginning and end of the period. The focus now narrows to two block groups. One is in the Navy Yard and experienced the greatest absolute growth in housing units for all District neighborhoods. The other is in the West End and ranks in the next five-highest growth areas. These two neighborhoods illustrate somewhat different stories about where housing growth occurred (exhibits 8 and 9).

Exhibit 8

West End and Navy Yard Had More Housing and Population Growth Than the District Average (1 of 2)

Change in Population, Housing Units, Median Rent, and Median Income for Block Groups in the West End and the Navy Yard, an Average of All District Block Groups, and the Average of Above-Median Income (2000) Block Groups.

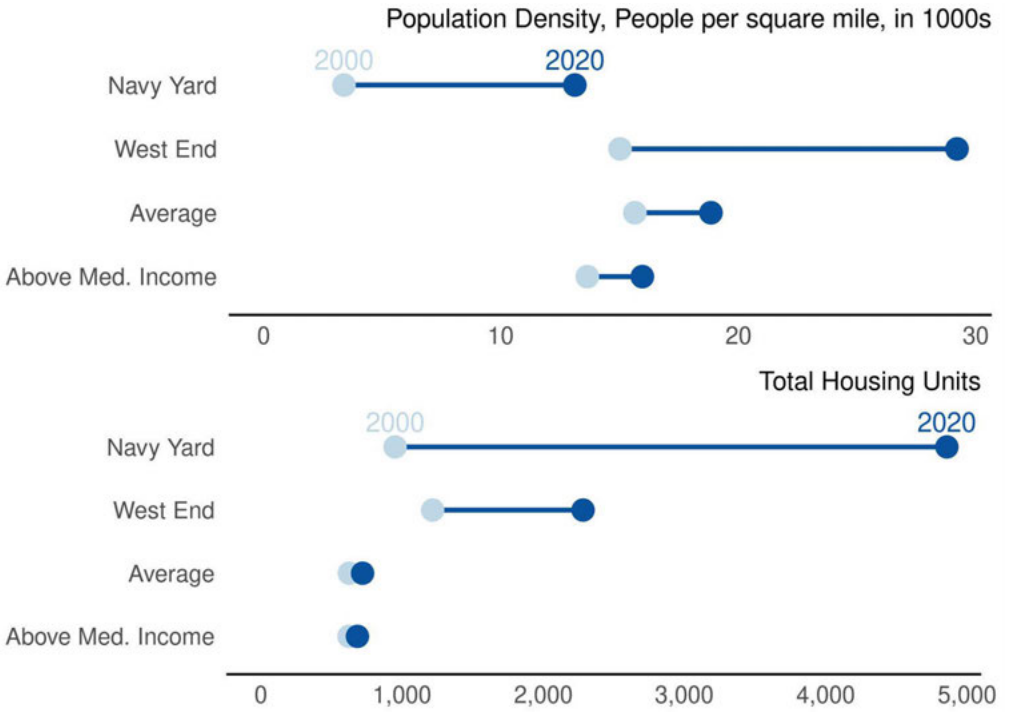
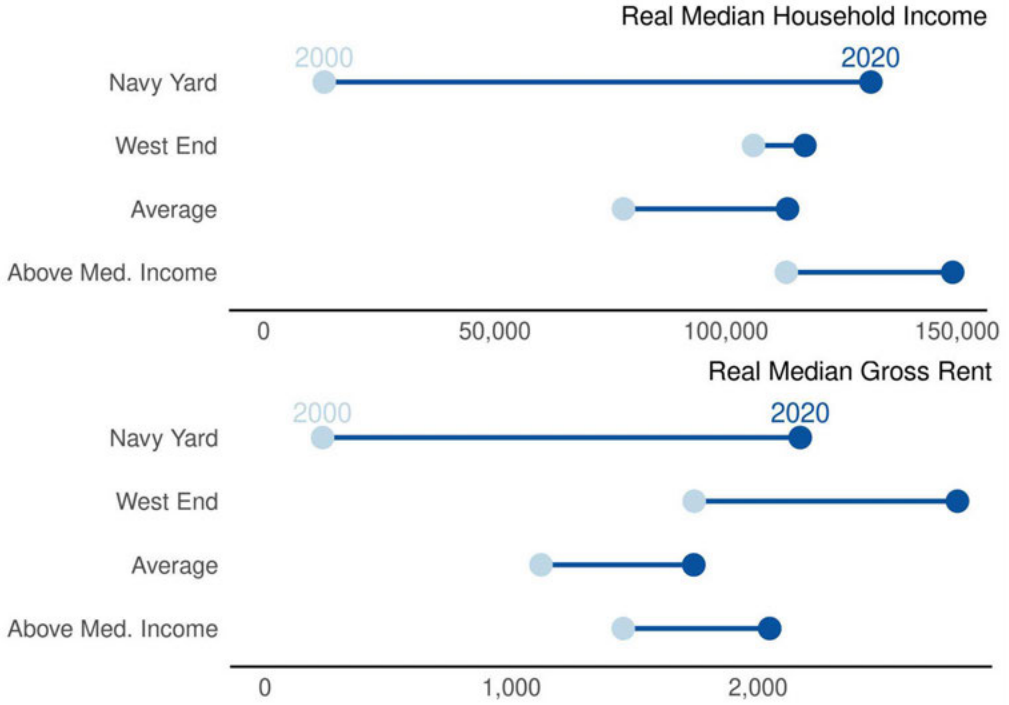


Exhibit 8

West End and Navy Yard Had More Housing and Population Growth Than the District Average (2 of 2)

Change in Population, Housing Units, Median Rent, and Median Income for Block Groups in the West End and the Navy Yard, an Average of All District Block Groups, and the Average of Above-Median Income (2000) Block Groups.



Notes: Income and rent are in 2021 dollars. "Average" reports the average value across all District neighborhoods. "Above Median Income" neighborhoods are those with median income above the citywide median (as calculated from block group data).

Sources: 2000 Decennial Census; 2020 American Community Survey

The West End block group illustrates how a substantial amount of housing can be added by converting existing structures, even without major zoning changes. The West End block group—bordered by Pennsylvania Avenue to the west/southwest, New Hampshire Avenue to the east/northeast, and N Street to the north—had a small but fairly affluent residential population as of 2000 and grew larger and richer during the subsequent decades.

The block group has seen substantial development of apartment and condominium buildings and several high-end hotels, restaurants, and retail stores. It also saw at least two very large conversions of commercial property to residential uses: one large office building (located at 1255 25th Street) became a residential rental and a hospital (the Columbia Hospital for Women) became condos (Foggy Bottom Association, 2021; Pennsylvania State University, 2009). Although the mixture of zoning as measured by land area has not changed much during this period—roughly two-thirds mixed-use and one-third multifamily in 2003 and 2016—the total number of units is strikingly

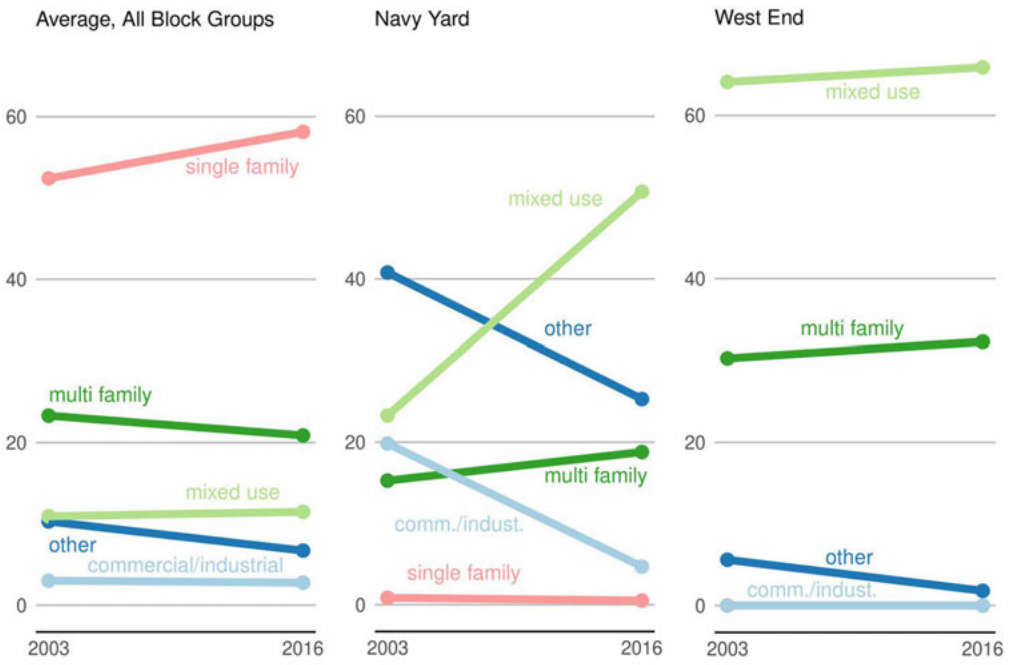
higher and does not account for the large number of hotel rooms built in this area during the past 2 decades (exhibit 9).

Although there is little change in land zoned by major category, it is not uncommon for large development (or conversion) projects to be facilitated by variances or other minor changes to zoning rules. The District government does not systematically record these variances, making them difficult to measure.

Exhibit 9

Change in Land Use Composition for West End, Navy Yards, and Average Block Group

Percentage of Land by Broad Zoning Designation in 2003 and 2016



Note: Shares of land area are reported by zoning category.
Sources: 2000 Census block groups; 2003 and 2016 zoning shapefiles

Navy Yard presents a more intentional story of housing growth as part of a broader redevelopment plan. During the course of 2 decades, joint efforts of the District local government, the federal government, private sector developers, and a newly formed Business Improvement District have transformed a low-density, low-value commercial-industrial site into a high-density, high-value, mixed residential-commercial area (Cassius, 2019; Stevens, 2012). In the early 2000s, then-Mayor Anthony Williams led efforts to recruit a major-league baseball team—formerly the Montreal Expos, now the Washington Nationals—to the region with the promise of a new ballpark. In addition to the ballpark (which opened in 2008), the neighborhood now has nearly 15,000 residents, extensive retail and entertainment corridors, hotels, and parks and recreation facilities along the Anacostia River. The newly built residences include quite a diversity of housing types,

including rental and owner-occupied homes, market-rate and subsidized properties, and at least one mixed-income subsidized property that replaced public housing (Lerner, 2019). Projects such as Navy Yard demonstrate that rezoning even small amounts of land for high-density multifamily units can yield substantial amounts of new housing.

As of 2000, the West End (but not the Navy Yard) had income above the citywide average (exhibit 8). Most neighborhoods that had above citywide median income likely had high demand. However, these neighborhoods had modest changes in population density and very small changes in housing units, combined with appreciable increases in rent.

Conclusion and Policy Recommendations

As housing affordability becomes a politically contentious issue in more parts of the United States, cities and states are experimenting with different policy levers to boost housing production. Targeted research is needed to fill in knowledge gaps about what types of policies are most effective in different housing market conditions. This analysis focuses on the experience of Washington, D.C., a city that has seen strong population growth and housing demand during the past 20 years yet had little undeveloped land.

The District has built substantial amounts of new housing in recent decades, almost entirely through infill development converted from other uses. New housing is spatially concentrated in a handful of neighborhoods. Although most high-growth neighborhoods did not see large zoning changes, they entered the period with very small amounts of land zoned exclusively for single-family homes. Case studies of two high-growth neighborhoods illustrate two different patterns. The West End added housing by converting a few large commercial and institutional buildings into housing without a substantial change in zoning. By contrast, Navy Yard is an example of long-term planned redevelopment, with intentional partnerships between local government and private sector developers to transform underused land into high-density mixed-use housing, retail, and entertainment.

These results offer several insights into how policies may constrain or support greater housing production. First, growth is more likely in predominantly non-residential or mixed residential-commercial neighborhoods. This outcome likely reflects the limits imposed by low-density residential zoning and the political process that guides development: having fewer neighbors to complain makes it easier for developers to build. This pattern may also reflect economies of scale in construction—especially with infill development in high-cost markets—that drive concentrated growth of large buildings in a few areas. Both soft costs of development (financing, design and engineering, and legal approvals) and materials and labor costs of vertical development contribute to economies of scale. Second, rezoning even small amounts of land can yield large increases in housing supply—if the rezonings allow sufficiently high density and the rents are high enough to support construction.

The District has so far chosen not to upzone its single-family neighborhoods—and some residents of single-family neighborhoods raised considerable opposition to any zoning changes during the

2022 Comprehensive Plan revision[6]—so the ability to draw inferences from this analysis about how much additional housing could be produced by legalizing "gentle density" (or for that matter, larger multifamily development) across large swathes of residential areas is limited. Some moderate-density neighborhoods (such as Columbia Heights, Shaw, and Petworth) have seen substantial numbers of conversions or replacement of rowhouses into small multifamily buildings, which is allowed under existing zoning. The District's more affluent residential neighborhoods prohibit this type of infill development. Traditionally, rezoning non-residential areas for residential has been an easier sell than convincing affluent residents in low-density neighborhoods to accept more development—although the pro-housing movement is gaining political momentum in the D.C. region and across the country (Pearson and Schuetz, 2022).

The District has relatively little industrial land that could be repurposed for residential or mixed-use space, because the District never had a large manufacturing sector (unlike many Northeast cities). The Ivy City and Union Market areas, which did contain warehouses for shipping and logistics, are already undergoing rapid redevelopment. This pattern of substantial housing growth in previously industrial space is not limited to the District. For instance, notable redevelopments of Atlantic Yards and Long Island City in New York follow this model. To this end, New York City intentionally rezoned industrial spaces to better reflect changes in labor and land markets (New York City Office of Planning, 2022). The New York City example shows the importance and limitations of this approach: formerly industrial sites have driven the city's housing production, but the number of such sites is finite and increasingly few.

Thus, this analysis ends on a note of caution. Although relaxing zoning can potentially yield greater density, it need not always. Relaxing zoning *allows* developers to build at higher density, but it does not and cannot *mandate* them to do so. Ultimately, developers will determine what types of structures and densities to build based on the financial returns of each project. Furthermore, the low-hanging fruit for the creation of urban housing units on a large scale is now underused commercial and industrial land. In the wake of the pandemic, neighborhoods with high concentrations of vacant retail and office space that have been hit hard by the shift to remote work may also be promising targets for new housing.

Appendix A. Data and Methodology Notes

Maps

Digital maps are used for 2000 and 2020 block group definitions.

Steven Manson, Jonathan Schroeder, David Van Riper, Tracy Kugler, and Steven Ruggles. IPUMS National Historical Geographic Information System: Version 17.0 [data set]. Minneapolis, MN: IPUMS. 2022. http://doi.org/10.18128/D050.V17.0.

[6] The Comprehensive Plan is the city's outline for its overall land use goals. All zoning must be consistent with the goals laid out in the Comprehensive Plan.

For exhibit 4, the following were used:

- Map of water in the District, from D.C. Open Data.
  - https://opendata.dc.gov/datasets/waterbodies-2017
- Map of building footprints in the District, from D.C. Open Data.
  - http://opendata.dc.gov/datasets/building-footprints, downloaded May 2019
- Metro map from D.C. Open Data.
  - http://rtdc-mwcog.opendata.arcgis.com/datasets/metro-rail-stations, downloaded May 2019

Demographic Data

The source for demographic data (population, housing units, etc.) is the U.S. Census Bureau.

- 1970 to 2020 at the city level, for exhibit 1.
  - Steven Manson, Jonathan Schroeder, David Van Riper, Tracy Kugler, and Steven Ruggles. IPUMS National Historical Geographic Information System: Version 16.0 [data set]. Minneapolis, MN: IPUMS. 2021. http://doi.org/10.18128/D050.V16.0.
- 2000 block group data.
  - Summary File 3 at the block group level.
  - Downloaded via the Census Bureau's Application Programming Interface (API), July 7, 2022.
- 2020 block group data.
  - American Community Survey, 2016–20.
  - Block group level data.
  - Downloaded via the Census Bureau's API on July 7, 2022.

Zoning Data

These data detail which land in the District is subject to which zone code in 2003 and 2016.

- 2003 Zoning Data.
  - From https://opendata.dc.gov/documents/dcgis-data-archive-july-2003/explore.
  - We use layer ZoningPly.
- 2016 Zoning Data.
  - Shapefile from https://opendata.dc.gov/datasets/DCGIS::zoning-regulations-of-2016/.

Consumer Price Index

The consumer price index was used to convert all relevant dollar values into 2021-year dollars.

The All Urban Consumers series was used, downloaded from https://data.bls.gov/pdq/SurveyOutputServlet on May 16, 2022.

Annual average values are from Column N.

Appendix B. Analytical Methods

Consistent 2000 Block Groups

The goal of this study is to make time-consistent block groups to analyze the same area over time. To do so, the 2020 block group data were put into 2000 block group terms.

The original 2000 block group map has 433 block groups, and the original 2020 block group map has 571 block groups. The final analysis sample uses 433 block groups.

To make this sample, the maps of the 2000 and 2020 block groups were overlaid. Many block groups have the same borders or change little. Usually, block groups split over time to ensure that their population does not grow too much.

When a 2020 block group does not have the same borders as the 2020 one, the demographics of the 2020 block group were weighted to attribute it to a 2000 block group. For example, suppose that 40 percent of the land area of 2020 block group A lies in 2000 block group X, and the remaining 60 percent of 2020 block group A lies in 2000 block group Y. In this case, the authors assigned 40 percent of block group A's population to 2000 block group X and the remaining 60 percent to 2000 block group Y.

Zoning and Zoning Change

To study zoning change, the authors first re-categorize zoning codes into five broad categories—single-family, multifamily, commercial/industrial, mixed-use, and other—to facilitate analysis.

By overlaying the 2003 and 2016 zoning maps, the team then evaluated which pieces of land changed from one of these broad categories to another. Therefore, each piece of land was classified by combining its broad 2003 zoning code and its broad 2016 code.

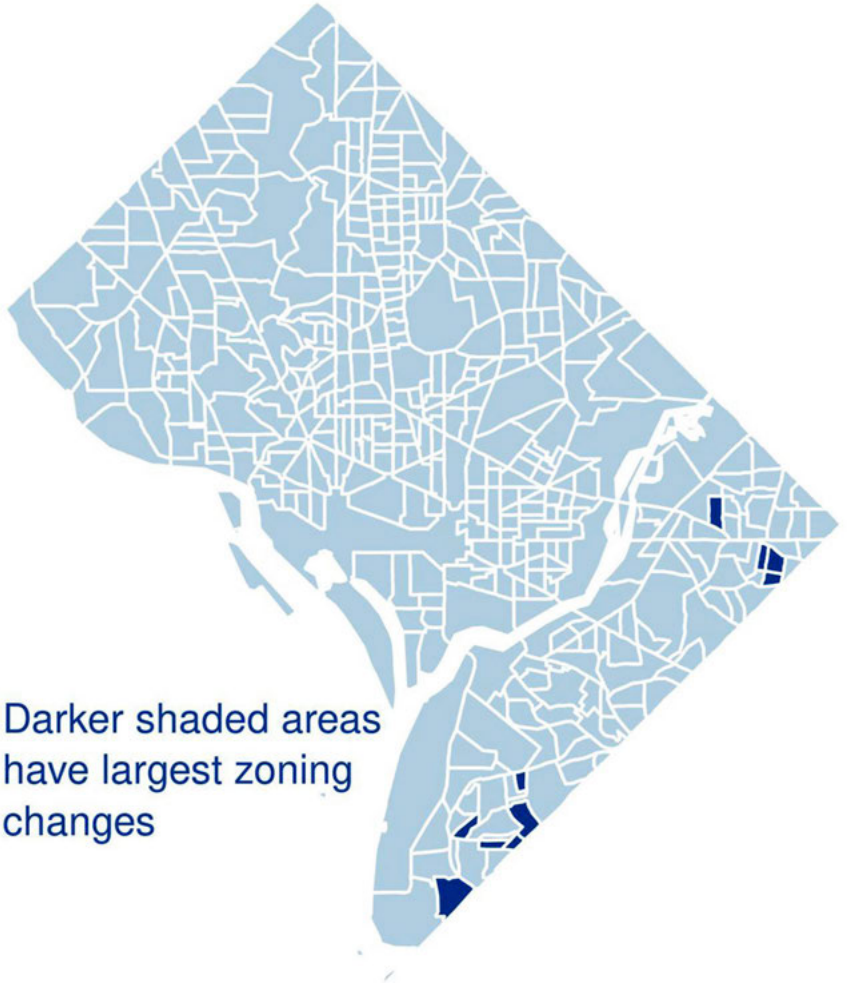
The 2003 and 2016 zoning status of each block group was found by intersecting the 2003/2016 zoning map with the 2000 block group map. The authors then calculated, for each block group, the amount of land in each combination of 2003 and 2016 zoning codes.

Appendix C. Information on Neighborhoods With Large Zoning Changes

The map in exhibit C-1 shows the 10 neighborhoods with the largest shares of land rezoned from one of the five broad categories to another.

Exhibit C-1

Neighborhoods With the Largest Change in the Percent of Total Land Area Rezoned, 2003 to 2016



Notes: This exhibit shades the 10 neighborhoods with the largest change in the percent of total land area rezoned, 2003 to 2016. See appendices A and B for complete details and citations.
Sources: Washington, D.C., 2003 and 2016 zoning shapefiles (full details are in appendices A and B)

Acknowledgments

Thank you to Mia Dana for careful and thoughtful research assistance. We thank Pam Brown for the information on Foggy Bottom's recent history. We are very appreciative of help on the zoning designations from Michael Sakinejad, Zoning Data Coordinator for D.C.'s Office of Planning, and Alex Santos for connecting us with him. Our paper is materially improved thanks to editorial advice from Noah Kazis and Ingrid Ellen.

Authors

Leah Brooks is an associate professor at the Trachtenberg School, George Washington University. Jenny Schuetz is a senior fellow at Brookings Metro.

References

Baca, Alex. 2020. "Mayor Bowser Sent Amendments to DC's Comp Plan to the Council. Here's What You Need to Know," *Greater Greater Washington*, April 24. https://ggwash.org/view/77268/dc-releases-its-amendments-on-the-comp-plan.

Bernstein, Jared, Jeffrey Zhang, Ryan Cummings, and Matthew Maury. 2021. *Alleviating Supply Constraints in the Housing Market*. White House Council of Economic Advisors. https://www.whitehouse.gov/cea/written-materials/2021/09/01/alleviating-supply-constraints-in-the-housing-market/.

Brooks, Leah, Genevieve Deneoux, and Jenny Schuetz. 2020. *The Washington D.C. Region Needs More Housing, and Satellite Data Can Tell Us Where to Build*. Brookings Institution. https://www.brookings.edu/blog/the-avenue/2020/06/03/the-washington-dc-region-needs-more-housing-and-satellite-data-can-tell-us-where-to-build/.

Cassius, Sarah. 2019. "Public Space for All? Examining the Role of Privatization, Visions of Redevelopment, and BID Governance in the Capitol Riverfront." Ph.D. diss., Columbian College of Arts and Sciences, George Washington University.

Chesto, Jon. 2021. "Housing Choice Brings the Biggest Changes to Massachusetts Zoning Laws in Decades," *Boston Globe*, February 8.

Ellickson, Robert. 2021. The Zoning Strait-Jacket: The Freezing of American Neighborhoods of Single-Family Houses. Unpublished paper. Yale Law School.

Flanagan, Neil. 2016. "Get to Know DC's New Zoning With This Map," *Greater Greater Washington*. July 27. https://ggwash.org/view/42304/get-to-know-dcs-new-zoning-with-this-map.

Foggy Bottom Association. 2021. "Funkstown No 7: The Columbia Hospital for Women and How Foggy Bottom Got Its Trader Joe's." https://www.foggybottomassociation.org/post/funkstown-no-7-the-columbia-hospital-for-women-and-how-foggy-bottom-got-its-trader-joe-s.

Furth, Salim, and Nolan Gray. 2019. Do Minimum Lot Size Regulations Limit Housing Supply in Texas? Working paper. Arlington, VA: George Mason University Mercatus Center.

Glaeser, Edward, Jenny Schuetz, and Bryce Ward. 2006. *Regulation and the Rise of Housing Prices in Greater Boston*. Cambridge, MA: Rappaport Institute for Greater Boston, Harvard University.

Grabar, Henry. 2018. "Minneapolis Confronts its History of Housing Segregation," *Slate Magazine*, December 7.

Hirt, S. 2014. *Zoned in the USA: The Origins and Implications of American Land-Use Regulation*. Ithaca, NY: Cornell University Press.

Hsieh, Chang-Tai, and Enrico Moretti. 2019. "Housing Constraints and Spatial Misallocation," *American Economic Journal: Macroeconomics* 2: 1–39.

Lerner, Michele. 2019. "Public Housing Complex in DC's Navy Yards Re-Emerges as a Mixed-Income, Mixed-Use Development," *Washington Post*, December 5.

McCartney, Robert. 2019. "DC Mayor Muriel Bowser Wants More Low-Cost Housing in Affluent City Neighborhoods," *Washington Post*, October 15.

New York City Office of Planning. 2022. "Housing and Economy." https://www1.nyc.gov/site/planning/planning-level/housing-economy/housing-economy.page.

Pearson, Cassidy, and Jenny Schuetz. 2022. *Where Pro-Housing Groups are Emerging*. Brookings Institution. https://www.brookings.edu/blog/the-avenue/2022/03/31/where-pro-housing-groups-are-emerging/.

Pennsylvania State University. 2009. West End 25 Senior Thesis. Capstone Project Electronic Portfolio. https://www.engr.psu.edu/ae/thesis/portfolios/2009/cmm5035/.

Rothstein, Richard. 2017. *The Color of Law: The Forgotten History of How Our Government Segregated America*. New York: Liveright Publishing.

Schertzer, Allison, Tate Twinam, and Randall Walsh. 2021. "Zoning and Segregation in Urban Economic History," *Regional Science and Urban Economics* 94.

Schuetz, Jenny. 2022. *Fixer Upper: How to Repair America's Broken Housing Systems*. Washington DC: Brookings Institution Press.

Stevens, Michael. 2012. "Redeveloping a Vibrant Waterfront in Washington DC/The Capitol Riverfront," *Journal of Urban Regeneration and Renewal* 5 (2): 132–145.

Tobias, Manuela. 2022. "Duplex Housing Law Met With Fierce Resistance by California Cities," *CalMatters*, April 11. https://calmatters.org/housing/2022/04/duplex-housing-resistance/.

Trounstine, Jessica. 2020. "The Geography of Inequality: How Land Use Regulation Produces Segregation," *American Political Science Review* 114 (2): 443–455.

Up for Growth. 2022. "Housing Underproduction in the U.S." https://upforgrowth.org/apply-the-vision/housing-underproduction/.

Learning from Land Use Reforms: The Case of Ramapo, New York

Joseph Weil Huennekens
Columbia GSAPP

Abstract

Many state and local governments are currently reforming zoning to increase housing production, especially of dense, small multifamily options (often known as missing middle housing*). However, not all efforts to reform single-family zoning are new. For instance, the suburban town of Ramapo, New York, has continuously loosened development rules for nearly 4 decades, providing an unusually long timeline for a case study of zoning reform. This article uses quantitative and qualitative data to assess the impact of zoning reform in Ramapo. The case shows that the introduction of multifamily zoning—even in built-out suburban neighborhoods—can spur the large-scale production of new housing units. By contrast, laws that allow only for accessory units have more limited effects. The town's experience also demonstrates the importance of infrastructural investment to serve new housing supply, especially when added in suburban areas. Finally, it shows that, at least in an unusually pro-growth political environment, discretionary review and parking requirements do not automatically hinder housing production.*

Introduction

By some appearances, Lenore Avenue is an unremarkable suburban street. Trees shade the road, sidewalks are intermittent, and through traffic is blocked. The houses on Lenore Avenue appear conventional as well. Styles typical of New York's Rockland County—such as ranches and split levels—predominate. However, some houses on Lenore Avenue are much bigger than others. At first glance, these three-story homes might represent the type of new construction dwellings derisively referred to as *McMansions*. Looking closer, however, reveals that not all these homes are single-family. Some of the buildings have parking lots in the front and an unusually large number of doors and mailboxes—clear indicators that they are multifamily buildings. Other properties appear almost exactly as single-family dwellings. Yet, according to town records, these properties are also classified as multifamily dwellings.

Lenore Avenue is a typical block in the Monsey section of the suburban town of Ramapo, New York. It is within the R-15C district, a zoning designation created by the town board in response

to a demand by the growing ultra-Orthodox Jewish population in the area allowing for flexibility regarding denser housing configurations. Since its creation in 1986, the R-15C district has expanded, and the rules governing properties in the zone have been progressively loosened. Today, a maximum of six units are permitted on a 10,000-square-foot lot within the R-15C district—twelve units on a double lot. Collectively, these decades of zoning reforms have had a profound impact on the Monsey area, leading to the creation of a unique, quasi-urban neighborhood in suburban New York.

The R-15C district is an unusually advanced example of zoning changes that planners and policymakers argue should occur across the country. As the housing affordability crisis has spread, a growing number of experts and politicians have called on governments to loosen restrictive single-family zoning requirements to allow for a more diverse mix of housing options (Greene and Gould Ellen, 2020; Kazis, 2020; Wegmann, 2020). State and municipal governments have passed several zoning liberalization measures in response (Badger and Bui, 2019). These policy shifts are driven by the hope that, by allowing construction of the type of small multifamily options (often known as *missing middle housing*) currently precluded in most American communities, governments might increase housing supply and drive down costs.

Contemporary zoning reform efforts have a clear parallel with the policy changes that Ramapo has pioneered for nearly 4 decades. However, Ramapo's zoning reforms are also distinct from current efforts in two ways. First, most current zoning policy shifts are ongoing experiments grounded in assumptions about how developers will respond to supply and demand. By contrast, Ramapo's R-15C district is an existing empirical case study, providing a window into how housing markets and the real estate development industry respond to reform over a period of decades. Second, most contemporary zoning reforms—such as the celebrated triplex law in Minneapolis—have been pursued by urban municipalities. By contrast, Ramapo is a middle-ring suburb constructed along the familiar midcentury pattern of single-family homes, separation of uses, and a disjointed street grid. It thus provides a window into how the low-density suburban built environments that dominate the American landscape might evolve when zoning rules are changed.

This article analyzes Ramapo's zoning reforms to show how zoning policy interacts with neighborhood change in a real-world case. The analysis uses a mixed methods approach, triangulating quantitative data analysis with archival research and qualitative interviews, to show how policy change in Ramapo has affected neighborhood character, land use composition, housing markets, and infrastructure. The article comprises five major parts. The first section compiles a detailed timeline of the town of Ramapo's zoning policy changes in the Monsey area, showing the branching permutations of zoning and tracing the housing configurations that each zoning policy change spurred. The second section introduces the data and methods used to analyze the changes wrought by zoning reform. The third section introduces the analysis itself, using parcel-level data to look at how subdivisions, land use classifications, and units changed in the years following the zoning change. The analysis aims to isolate the effect of zoning changes on land use and unit production using difference-in-differences regression.

The fourth section provides an overview of the challenges and opportunities that accompanied neighborhood densification in Ramapo and the expected drawbacks of added density to the town's

infrastructure. It also briefly addresses the fraught local conversation (also a national one) about the relationship between dense housing and affordability. Finally, the last section of this article discusses what other communities can learn from Ramapo's experience legalizing multifamily dwellings—both in terms of what kind of production might be expected and the externalities that may follow. Four key lessons emerged from the empirical record: (1) in some markets, multifamily zoning will be significantly more conducive to housing production and land use change than the gentlest forms of density, such as permitting accessory dwelling units and two- or three-unit buildings; (2) zoning changes may be more attractive to builders if the laws allow the new units to be sold as condominiums, at least in suburban settings; (3) densification requires extra infrastructure investment if undertaken in a suburban environment; and (4) in an unusually pro-growth suburban jurisdiction, discretionary review and parking requirements do not necessarily hinder housing production.

Zoning History

Ramapo, New York, is one of five towns[1] in suburban Rockland County. Approximately 35 miles northwest of New York City, the town covers an expansive geographic area, a large portion of which is protected land in Harriman State Park. The unprotected portion of the town is diverse in character. It includes older villages developed during the Industrial Revolution, swaths of mid-20th century subdivision-style development, and exurban areas subject to large lot zoning. In the center of Ramapo, between the older villages of Spring Valley and Suffern, is the area known as Monsey. During the past 40 years, a dramatic densification effort has transformed one portion of Monsey into a quasi-urban space. The area is now a predominately multifamily neighborhood with a population density closer to New York City than to the rest of Rockland County—an anomalous built environment at the heart of an otherwise ordinary suburban area.

Early Years: Anti-Growth Pioneer

Although today Monsey is dense and quasi-urban, 100 years ago, the whole town of Ramapo was mostly rural. The region changed in the 1950s and 1960s when the construction of the New York State Thruway and the Tappan Zee Bridge linked the area with New York City. These federal infrastructure investments, combined with White flight from the cities, spurred rapid growth in Ramapo. The town grew more than 100 percent between 1960 and 1970 (U.S. Census Bureau, 2022), triggering a strong anti-growth backlash. First, in 1966, the town of Ramapo eliminated as-of-right multifamily zoning within its borders (Meck and Retzlaff, 2008). Then, in 1969, town authorities went further by implementing a points-based growth management plan tying building permits to infrastructure investment. This innovative plan was upheld in the 1972 case of *Golden v. Ramapo*—setting a national precedent for performance zoning schemes (Meck and Retzlaff, 2008).

Ramapo's government pursued a largely anti-growth line throughout the 1970s, but at the same time, small pockets of informal multifamily housing began to emerge. This informal density was especially (although not exclusively) found in Monsey, parts of which were populated by a growing number of ultra-Orthodox Jews (Saeed and Incalcaterra, 2001). In the mid-20th century, a small

[1] A town is a meso-level jurisdictional category in New York State that carries land use decisionmaking power for all areas that are not further incorporated into villages.

number of Hasidic Jews relocated from Brooklyn to Ramapo (Mintz, 1992), settling in portions of the town that had previously housed summer bungalow colonies for Jewish residents of New York City (Hollander, 2017). One sect, the Skver, moved en masse, forming their own village, New Square, on the edge of Ramapo in 1961. Another sect, the Vizhnitz, settled in central Monsey, forming their own village, Kaser, in 1991.

Over time, a diverse mix of religious Jews followed these pioneers to the suburbs, creating a burgeoning religious Jewish community composed of Hasidic and non-Hasidic sects (Berger, 2014). The community began to grow rapidly, driven by natural population growth and continuous migration from Brooklyn. However, this exceptionally high demand for housing was met with an artificially constrained supply, because Jewish law requires families to walk to synagogue on the Sabbath (Mintz, 1992). Some families responded to the shortage by illegally converting their single-family homes into multifamily ones, a practice that eventually expanded to include newly built houses (Laudor, 1980).[2] For at least a decade, the town government looked the other way at informal conversions, with some officials alluding to an official amnesty policy (Sanderson, 1978). However, as conversions spread to include new construction, a ferocious backlash from secular town residents emerged, with hundreds of residents organizing civic associations to oppose multifamily buildings (Rifkin, 1980).

The Creation of the R-15C District

As the illegal conversions controversy spread, Ramapo's government struggled to develop an effective solution. Some elements of the town bureaucracy counseled crackdowns, such as the town building official who said at the time that "in certain areas of Monsey the legal house is the exception ... it must be stopped or, we'll have an absolute slum" (Allan, 1986a). Others, especially elected officials, favored accommodation, arguing that the town should "recognize the lifestyle already established there" (Colton, 1979). Eventually, the town board floated a proposal to formalize some extralegal construction by creating a multifamily district (Colton, 1979). Anti-growth residents were scandalized, because many had also moved from Brooklyn to, in the words of one activist, "get away from what this downzoning[3] [sic] is bringing back to us" (Laudor, 1981). They mobilized to block zoning reforms, threatening to form villages to take land use regulatory power back from the town government if they did not prevail. NIMBY (that is, Not in My Backyard) civic activists also turned to the courts. Their legal efforts were successful in 1981 when the State Supreme Court threw out the town's first attempt at multifamily zoning (Colton, 1981).

In 1986, a new town supervisor, Herbert Reisman, was inaugurated, promising "a more harmonious Ramapo" (Dow, 1986). Reisman again took up the multifamily issue, launching a housing task force that ultimately called for the town to try again to implement multifamily zoning (Dow, 1986). This recommendation was partially a response to the growing political clout of the ultra-Orthodox community (Fararo, 1986). However, the town's move was not purely a result of

[2] The Adar Homes development is one example. This instance was a group of ostensibly single-family homes that anti-growth citizen activists organized to block on the grounds that the development was constructed purposely to allow for immediate conversion into multifamily dwellings.

[3] Confusingly, at this time in Ramapo, "downzoning" was used to refer to zoning changes that would allow for more intensive uses (what is normally called "upzoning" today).

ultra-Orthodox political pressure. As Reisman's "harmonious" language implies, the town board was also inspired by a philosophical belief in pluralism, expressed in the idea that government should accommodate all lifestyles. This framing found its way into the legal text of the multifamily zoning law itself,[4] which addressed accommodating "specialized households" with distinct "social and cultural needs."

Specialized lifestyles aside, not all Monsey residents (and especially not all Ramapo residents) welcomed multifamily dwellings. The new multifamily proposal poured fuel on village formation efforts, ultimately spurring the creation of five new jurisdictions: Wesley Hills, New Hempstead, Montebello, Airmont, and Chestnut Ridge (Allan, 1986b). This time, however, anti-growth advocacy and lawsuits were not enough to block the multifamily law. The town board officially altered the zoning code at the end of 1986, creating a new R-15C (*C* for *conversion*) zoning district in a portion of Monsey previously zoned R-15. Under the old R-15 zoning, only single-family homes were allowed on 10,000-square-foot lots (the vast majority), with two-family homes requiring lots larger than 20,000 square feet. In the new R-15C zone, property owners were granted the right to convert their single- or two-family homes into three-unit dwellings—the beginning of a 40-year zoning liberalization process in central Monsey.

Additional Changes, Additional Controversies

The 1986 creation of the R-15C district was a milestone for multifamily zoning in Ramapo. However, the specific rules that governed the zone's development continued to loosen. First, in 1987, the maximum floor area ratio (FAR) permitted in the district was slightly higher.[5] Next, in 1991, fees were lowered, and conversions were made subject to administrative review rather than planning board approval (*The Journal News*, 1991). Then, in 1992, the zoning code was amended to allow for the construction of new 3-family homes in the R-15C district rather than just conversions (*The Journal News*, 1992). This change paralleled the creation of a new Hasidic-dominated village, Kaser, in one portion of Monsey, which altered its zoning to allow even denser configurations (Henderson, 1991).

Despite the town's zoning reforms, informal densification continued throughout the 1990s (Lieberman, 1996). The controversy about multifamily housing also continued unabated. Some residents accused the town of looking the other way regarding housing and quality-of-life violations in the Monsey area, claiming that "garbage-strewn streets, torn-up lawns, parking on both sides of the narrow streets, and increased bus traffic leave one with a negative image of Ramapo" (Kramer, 1999). Others, including town officials, felt differently. Recognizing the intense need for housing within the ultra-Orthodox enclave, officials counseled that the town needed to continue to accommodate additional density to "provide housing that in effect would meet those [religious Jewish] needs but still maintain some semblance of safety" (Boylan, 1997).

In 2000, the town launched a master plan update, hoping to strike a balance between the continual need for affordable housing, especially among ultra-Orthodox Jews, and the fears of many non-Orthodox residents that density threatened their "quiet way of life" (Craddock, 2001). The town

[4] Local Law No 7–1986

[5] Local Law Amending Local Law 5–1985

was spurred to act, in part, by the passage of the federal Religious Land Uses and Institutionalized Persons Act (RLUIPA) that same year. That law destabilized the balance of power between municipal officials and ultra-Orthodox developers by granting religious organizations powerful new tools to challenge local zoning.[6]

The consultants hired by the town to create the master plan were initially critical of the ad hoc growth permitted in the R-15C zone. The first draft of the town's new comprehensive plan, released in 2002 and updated in 2003, called for the conversion district to be replaced by official multifamily zones, with additional density tempered by conservation and open space acquisition in more rural parts of town (Brophy, 2002). However, the final version of the plan, adopted in 2004, took a different tack. It retained the R-15C district and expanded its borders (Frederick P. Clark Associates, 2004).

The plan also recommended introducing accessory units to parts of Ramapo. In the R-15C district, one accessory unit was allowed per parcel in certain areas. Given the required setbacks, this unit was usually attached to the primary dwelling. This revision meant that a three-unit home in the R-15C district could now become a four-unit property.[7] The town board also created a new zoning district called R-15A. This new district retained the original R-15 zoning in terms of bulk but allowed one accessory unit per parcel. Initially, all the R-15 zones in the town were meant to turn into R-15A. However, following the controversy, R-15A was applied only to two sections of Monsey. This compromise created the three types of R-15 zoning seen in central Monsey today.[8] One portion retains the original R-15 zoning, which permits one-family homes on 10,000-square-foot lots, semi-attached one-family homes on 15,000-square-foot lots, and two-family homes on lots more than 20,000 square feet. Another portion is designated R-15A, which differs from the R-15 rules by allowing one accessory unit per parcel. The final portion is designated R-15C, which allows more intensive multiunit development (exhibit 1).

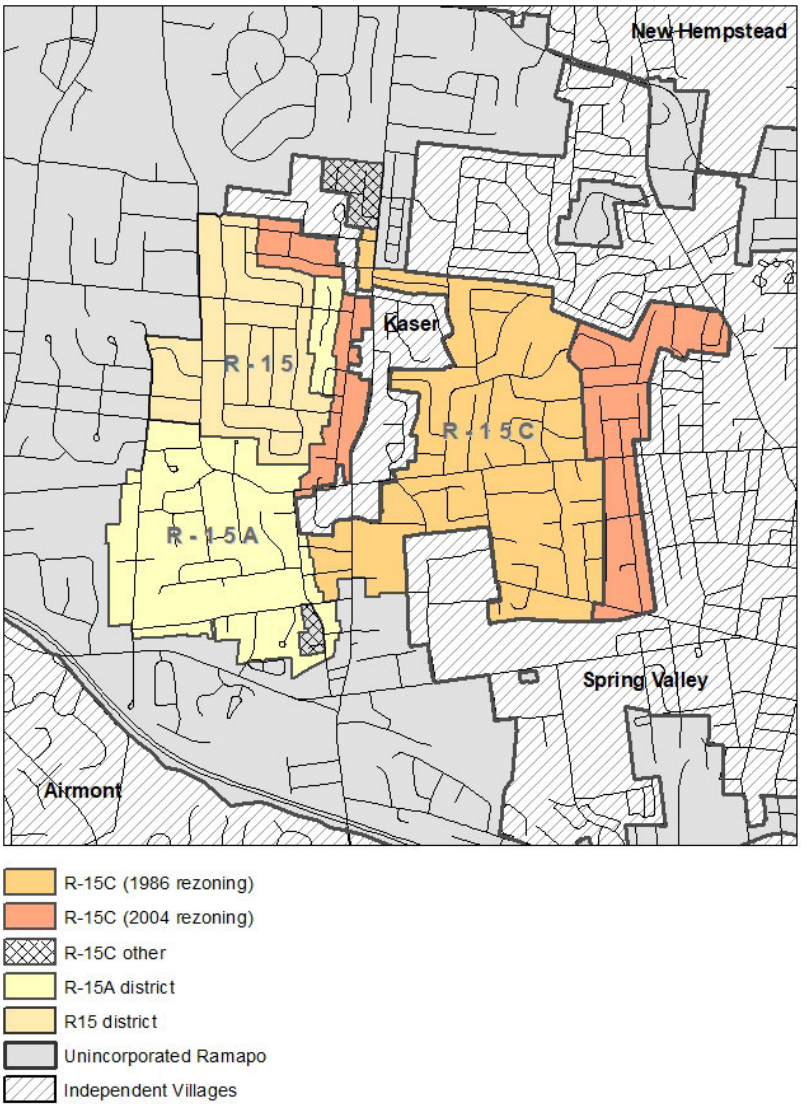
[6] In direct response to RLUIPA, the town also created four separate "adult educational zones" to accommodate kollels, or Jewish higher learning institutions, with attached multifamily housing dorms (Local Law 9–2004).

[7] Local Law 10–2004

[8] The comprehensive update also introduced new Multiple Residential (MR) zoning districts that allowed for larger, more conventional multifamily dwellings. A few larger parcels in the Monsey area were eventually rezoned to this new MR zoning, but this rezoning was to facilitate more conventional new multifamily construction, not the conversion of existing, built-out neighborhoods. This article, therefore, does not discuss MR zoning.

Exhibit 1

Map of Central Monsey



Note: Map shows the different zoning districts in the central Monsey area.
Source: Joseph Weil Huennekens, "Town of Ramapo Zoning Map." Rockland County GIS Portal.

Recent History: Continued Modifications to the R-15C

Although Ramapo's passage of the accessory unit law allowed four-unit buildings in the R-15C area, central Monsey's development did not take off until other rules were changed. First, in 2007, accessory unit regulations were tweaked to allow one accessory unit per *primary* unit (rather than parcel) within townhouse-style buildings in the R-15C zone. A parcel developed in such a style

could now have six units: three primary units and three accessories.[9] The maximum allowable size of an accessory unit was also increased at this time. Then, in 2012, the town board voted to authorize separate ownership of accessory units and uncap the number of bedrooms allowed in an accessory unit.[10] This modification meant accessory units could now be included as condominium offers, with the units subject to resale restrictions meant to ensure affordability.

The 2007 and 2012 accessory unit modifications set off a boom in new construction in the R-15C zone. Developers increasingly purchased existing properties for demolition, constructing larger multifamily buildings in their stead. Parcels were also increasingly subdivided to allow for semi-attached multifamily condominium buildings on double lots, each with four or six units (exhibit 2). Most of the new buildings constructed in the area were wood-frame or "stick-built." Developers nearly always sought variances for new construction rather than adhering to the zoning envelope. This deviation was done to construct as close to the maximum envelope allowed by New York State building and fire code as possible. For example, builders might seek to exceed the maximum 35-foot height allowed (at that point) by the town zoning code to get closer to the 40-foot maximum height allowed in the state building code for non-fireproof stick-built construction.

Exhibit 2

Photographs of R-15C Development (1 of 2)

[9] Local Law 1–2007

[10] Local Law 1–2012

Exhibit 2

Photographs of R-15C Development (2 of 2)

Note: Multifamily homes in the R-15C district.
Source: Joseph Weil Huennekens

The large number of new units constructed following the 2004, 2007, and 2012 zoning reforms fostered new types of land use controversy, which were heightened by anxieties about the town's demographic transition. The 2010s was a time of significant political upheaval in Ramapo, with controversy swirling around the East Ramapo School District in particular[11] (Bandler, Lieberman, and Liebson, 2017). The town government was also buffeted by a series of scandals during this time. In 2016, a town official (and former Zoning Board of Appeals member) was arrested, and the state temporarily took control of the town's buildings department (Lieberman, 2016). The dysfunction continued in April of that year, with the arrest of then town supervisor Christopher St. Lawrence on suspicion of corruption (Weiser and Williams Walsh, 2016). This situation was followed, in 2017, by the arrest of the town's former building inspector on allegations of fraud related to the processing of building permits (Lieberman, 2017a).

[11] Ramapo is divided between two school districts, the Suffern Central School District and the East Ramapo Central School District. As the town grew increasingly ultra-Orthodox, public school funding in the East Ramapo district, which had grown to serve an almost exclusively Black and Brown public school population, was deprioritized in favor of services for yeshivas, leading to the imposition of a state fiscal monitor (Clark, 2014). More recent litigation alleged that the East Ramapo school board's electoral system was discriminatory toward the public school population because at-large seats guaranteed the board was dominated by the private-school (yeshiva) parent population (Feldman, 2020).

In recent years, under the leadership of a new town supervisor, Ramapo's politics have stabilized. New construction has continued apace, and additional tweaks have been made to the R-15C zoning rules. In 2018, resale restrictions were removed from accessory units, allowing them to be sold on the open market.[12] This change came about because resale restrictions, which limited value appreciation, were allegedly hurting the ability of property owners to secure mortgages. In 2019, the maximum size of accessory units was increased again.[13] Then, in 2020, the town altered the R-15C zoning code to allow developers to merge individual parcels into larger lots and construct more standard multifamily buildings.[14] So far, only a few projects have used this new "large lot overlay." However, it represents a remarkable culmination of Ramapo's zoning story—an example of how far the town has traveled from its past as an anti-growth pioneer to its contemporary status as one of the most permissive municipal land use systems in the New York City metropolitan area.

Data and Methods

Mixed Methods Approach

This article combines qualitative and quantitative data to take a comprehensive look at Ramapo's 40-year history of zoning reform. Quantitative data are the core of the third section of the article, which looks at the impact that zoning policy changes had on housing production and land use. This quantitative dataset was pieced together through a variety of municipal and private sector sources, as detailed in the paragraphs below. Qualitative data are the core of the fourth section of the article, which looks at the implications of zoning change on the town's built environment. These qualitative data include archival material from local newspapers; archival information from state, county, and municipal plans; information gleaned from semi-structured interviews conducted with local stakeholders; and informal knowledge gleaned through participant observation and casual conversation.

Parcel Dataset

This article analyzes a set of different local policies that were applied to a disjointed and fragmented area at different points in time. Individual parcels are the only unit of analysis that can be manipulated to accurately represent the shifting boundaries of the town's zoning districts. However, these types of parcel-level data were not publicly accessible in any comprehensive form that spanned the nearly 40-year history of zoning reform. Instead, a parcel level dataset was manually constructed from a variety of sources, organized around four cross-sectional periods: 1986, 2006, 2012, and 2021. Land use data from 2006 and 2012 came from land use shapefiles available through Rockland County's open data portal. These shapefiles classify each parcel by the land use that existed in the year in question. Land use data from 2021 came from the private sector data provider PropertyShark. Parcel-level data in PropertyShark were downloaded for each address within the central Monsey area (which included land use classifications) and then matched with the relevant parcels using the Town of Ramapo's 2019 parcels shapefile.

[12] Local Law 7–2018

[13] Local Law 4–2019

[14] Local Law 5–2020

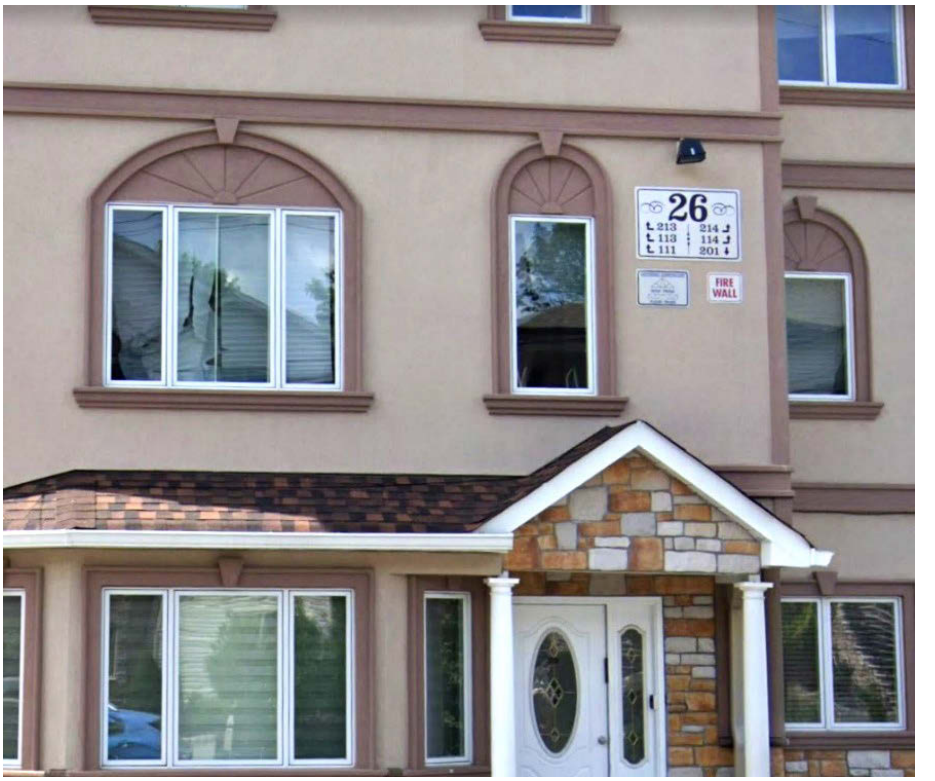
The 2006, 2012, and 2021 datasets included full land use classifications. However, no such data existed for 1986. Instead, the analysis imputed land use data for 1986 using a 1986 buildings shapefile from Rockland County. These data were cross-checked with 1986 assessment rolls available on microfilm at the Rockland County archive and assigned parcels that were listed in 1986 as non-homestead, or owned by a congregation or nonprofit, as having an institutional classification. Parcels with no buildings on them were assigned as vacant. All other parcels were assumed to be residential, given the zoning district. However, after this research, the question of whether a building was one- or two-family remained (because the initial residential zoning for the area allowed for two-family homes on oversized lots). The question was addressed by flagging properties that had a building on them circa 1986 and were more than 20,000 square feet in size (the minimum lot size for a two-family dwelling in the 1986 zoning). If these properties were classified as one-family in the 2006 land use shapefile, the analysis assumed that they were also one-family in 1986. However, if the oversized property was listed as two- or three-family in 2006, they were cross-checked with property deeds (available for some parcels on PropertyShark). Unless a deed was found that indicated single-family use after 1986, it was assumed these 34 properties were two-family in 1986.

The unit measurements required more imputation and assumptions than the land use classifications because the multifamily land use classification contains properties with different numbers of units. The land use data for the four time periods were used to calculate units. This method was relatively straightforward for most land use classes: a one-family parcel was assumed to contain one unit, a two-family parcel was assumed to contain two units, and a three-family property was assumed to contain three units. However, properties with four or more units are listed only as belonging in a multifamily land use class. Therefore, a more complex set of assumptions was implemented to determine approximate unit counts for multifamily properties. First, a manual windshield survey (via Google Maps) of the 436 properties listed as multifamily in 2021 was conducted. Many multifamily buildings in Ramapo include large address signs listing the number of (legal) units, and others include formal multiunit mailboxes (exhibit 3). In such cases, a manual calculation for the number of units was inputted.

However, many other properties did not show clear indications of unit counts and were more ambiguous. PropertyShark data, where available, were used to input unit counts for these properties. However, for a couple of hundred properties (listed as multifamily), manual estimates and PropertyShark unit counts were unavailable (exhibit 4). Some of these properties had a multifamily parcel count higher than three, because the property had been "condoed" or subdivided into condo parcel fractions. For these properties, the number of units was inputted as the number of these parcel fragments. However, this method still left close to 250 properties that did not have a manual count, a Property Shark count, or a parcel number equivalent to a multifamily condo (exhibit 4). These properties were assumed to have four units, a conservative assumption of the lowest possible number of units that would qualify the property as multifamily.

Exhibit 3

Example of Property with Clear Unit Numbers



Note: Image shows how some properties contain clear address numbers, facilitating a manual count of units.
Source: Google Maps Streetview

Exhibit 4

Unit Count Imputations for Multifamily Properties

	2006	2012	2021
Parent parcels with manual or Property Shark count	0	0	125
Parent parcels with multifam parcels > 3	15	145	101
Parent parcels with multifam parcels < 3, imputed as 4	23	81	248
Total	38	226	474

Note: Unit counts are assigned to parcels and assumptions are built into the count.
Sources: Manual windshield survey via Google Streetview; PropertyShark

All land use and unit data were aggregated at the parent parcel level. Normalizing the four datasets at the parent parcel level allowed a comparison of change over time at a standardized unit. This process was important to capture parcel-level change, because subdivisions and split lots are a common feature of development in the area. For example, a single one-family parcel in 1986 might, by 2012, include one two-family parcel and one three-family parcel, with five units overall. Lastly, two outlier areas were removed before performing the final data analysis. The first

was an area near the village of Kaser that was rezoned to R-15C in 2001 and redeveloped as a large multifamily complex. The second was a vacant parcel in the R-15C exclusion area (the area rezoned to R-15C in 2004) that was redeveloped as a single 132-unit complex. These parcels were removed to establish more accurate counts of the type of land use change that could be expected on a more typical 10,000- to 20,000-square-foot suburban lot.

Difference-in-Differences Models

In the following section of the article, quantitative data are analyzed in both a descriptive and analytic manner. Descriptive statistics are used to demonstrate the magnitude of change following zoning reform. Difference-in-differences regression is used to tell a more causal story: that is, to deduce what land use and unit change could be traced specifically to the impact of rezoning by measuring change over and above what would be expected otherwise.

The limited amount of public data meant that only four cross-sectional measures were available for use in the difference-in-differences models: 1986, 2006, 2012, and 2021. This data limitation presented a problem because the most important zoning reforms proceeded during a period from 2004 to 2012. In 2004, the areas were rezoned for greater density; in 2007, an accessory law was expanded to grant even more units in the R-15C district; and in 2012, accessories were allowed to be sold on the open market. Due to this ambiguity and factoring in the lag time of construction, for purposes of the difference-in-differences model, 1986 and 2006 were labeled as pre-treatment years, and 2012 and 2021 were labeled as post-treatment years. Assigning 2012 as a "before year," although theoretically justified given that it was the culminating year of the period of zoning reform, would have produced much higher estimates in terms of units. However, for this article, 2012 was assigned as a post-treatment year to create a more conservative estimate, with one within-the-reform-period year (2006) assigned as a pre-treatment year and one within-the-reform-period year (2012) assigned as a post-treatment year.

The difference-in-differences models contained estimates for the impact of two treatments first administered in 2004. The first treatment was multifamily zoning (which was first applied to the R-15C exclusion area in 2004, with the "dose" increased by the 2007 and 2012 accessory reforms). The second treatment was accessory zoning (first given to the R-15A area in 2004, with the "dose" increased by the 2012 reforms). Parcels in the core R-15C area (the initial zone, created in 1986) were removed from the sample to measure only areas affected by the 2004 changes. This removal left 4,343 observations, representing parent parcels in the three areas (R-15C exclusion, R-15A, and R-15) during the four time periods. There were two models, the first with a dependent value of one-family parcels and the second with a dependent variable of units. The models measured both treatments (R-15C and R-15A) together according to the following specification:

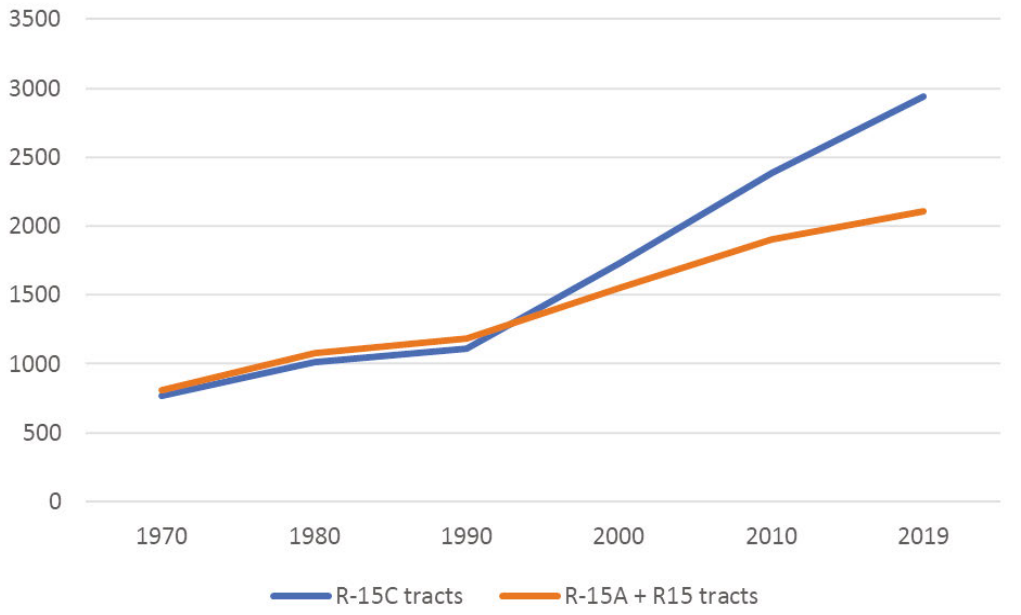
$$DV = \alpha + \beta Post + \beta R15c + \beta R15a + \beta treatment1\ (Post * R15c) + \beta treatment2\ (Post * R15a) + \varepsilon$$

Difference-in-differences models work on the assumption that the treatment and control groups display parallel trends prior to treatment. The first indication of parallel trend comes from census data, which show that the census tracts that were the closest proxy for the R-15C, R-15A, and R-15 zones moved in close tandem prior to 1990 (the first census year after the creation of the core

R-15C district in 1986) (exhibit 5). This finding gave confidence that, at least theoretically, these areas of Monsey were historically similar prior to the commencement of zoning reform.

Exhibit 5

Census Tract Parallel Trends

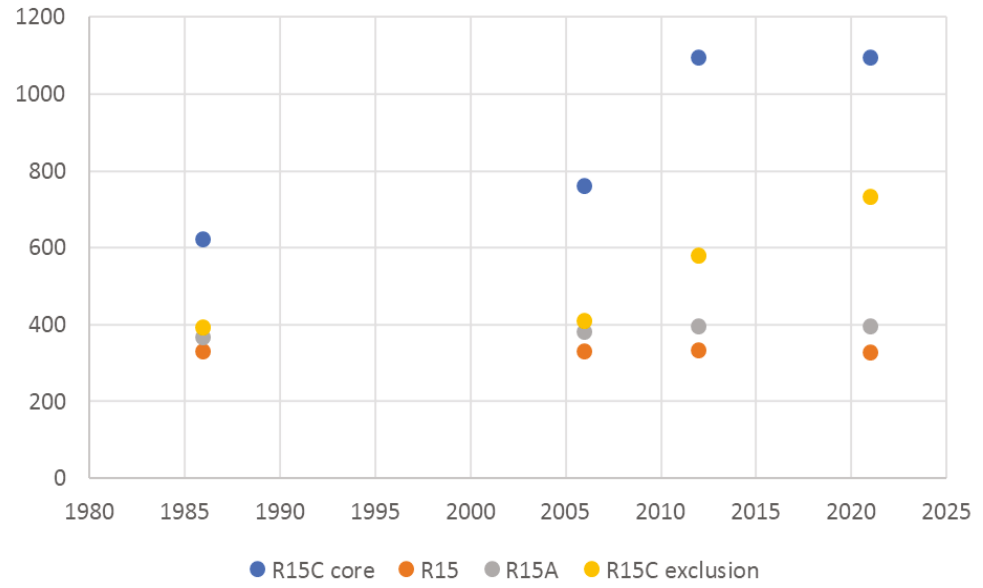


Notes: Census unit counts normalized to 2010 census tract boundaries. 2010 tracts 121.02 and 121.05 correspond roughly with R-15C zoning district. 2010 tracts 121.03 and 121.06 correspond roughly with R-15 and R-15A areas.
Sources: 1970, 1980, 1990, 2000, and 2010 Census; American Community Survey 5-year data, 2015–19

However, the difference-in-differences models do not measure the impact of the 1986 change. Instead, they measure the impact of the 2004 changes that rezoned small portions of the R-15 zone to R-15C (the area termed the R-15C exclusion zone) and rezoned another portion of R-15 to the new R-15A designation. The R-15C exclusion area is a small and geographically fragmented area that does not overlap clearly with any census geography. This renders an additional parallel trend test necessary. Luckily, the R-15C exclusion zone—along with the R-15 zone and the remaining portion of Monsey that stayed R-15—all display parallel trends prior to 2006 within the parcel dataset as well (exhibits 6 and 7). As expected for the parallel trend assumption to hold, the R-15C core area diverged from the other areas immediately after 1986. The R-15C exclusion area stays broadly congruent with the R-15A and R-15 until the 2012 reading. Together, this information gives meaningful assurance that the areas of central Monsey all behaved similarly prior to zoning treatment, whether that treatment was administered in 1986 or in the period between 2004 and 2012.

Exhibit 6

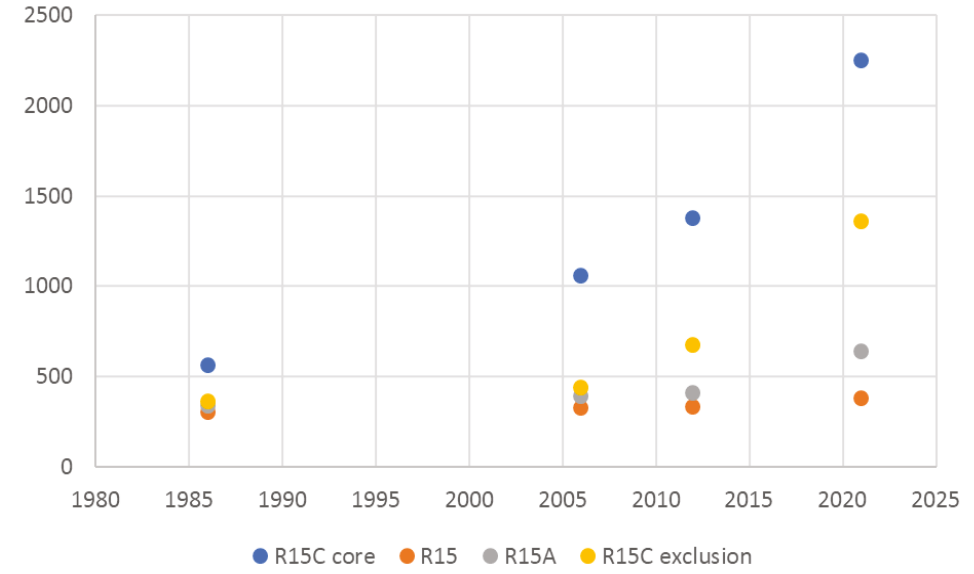
Parent Parcel Parallel Trends, By Number of Parcels



Note: Number of parcels per zoning district over time, showing the four cross-sectional years of the difference-in-differences models.
Sources: Rockland County GIS portal; PropertyShark

Exhibit 7

Parent Parcel Parallel Trends, By Number of Units



Note: Number of units per zoning district over time, showing the four cross-sectional years of the difference-in-differences models.
Sources: Rockland County GIS portal; PropertyShark; manual windshield survey via Google Streetview

Land Use Change and Housing Production

The R-15C zoning district unleashed a wave of development that transformed Ramapo. Between 1970 and 2019, the two census tracts[15] that most closely overlap with the R-15C area went from having a population of 2,900 to more than 16,000 people—a stunning 456-percent increase (U.S. Census Bureau, 2022). Those two tracts had a population density of more than 22,000 per square mile, according to the 2015–19 5-year American Community Survey estimate, far closer to New York City (which, as of 2020, had a population density of about 29,000 per square mile) than to the rest of suburban Rockland (which as of 2020 had a population density of 1,950 per square mile). Of course, part of this high population density figure is related to the exceptionally large size of most ultra-Orthodox families. However, even the number of households per square mile resembles an American city more than similar middle-ring suburbs.[16]

Monsey's tremendous growth is clear in census data. However, such data only describe the changes that occurred at the community level; they do not reveal where precisely these changes occurred nor what caused them. Accordingly, this section of the article augments census data with parcel-level land use data from 1986, 2006, 2012, and 2021 to get a more precise sense of land use change. Using these parcel-level data, this section addresses two issues regarding residential densification. First, this section explores a set of descriptive questions about how land use change progressed, including which parcels turned from single-family to multifamily housing and what number of parcels turned. Second, the section explores the role of policy change in spurring densification.

Parcels and Subdivisions

Although Central Monsey was already largely built by the 1970s, the number of parcels in the R-15C area increased dramatically following rezoning. In 1986, the initial rezoned area (hereafter, core R-15C) contained approximately 620 parcels. By 2006, the number of parcels in the core R-15C area had grown to approximately 760, and by 2021 there were approximately 1,090 (exhibit 8). This increase resulted from the subdivision of existing lots, especially the division of the older parent parcel (that is, the original platted parcel as it existed in 1986) into fractions as part of condominium offerings. Between 1986 and 2021, the number of single-family parcels in the core R-15C zone declined from 530 to only about 150, whereas the number of multifamily parcels increased from 0 to more than 710 (exhibit 9). The portion of central Monsey that was excluded from the initial rezoning in 1986—but added into R-15C after the 2004 master plan update (hereafter, R-15C exclusion zone)—showed the same trend, just on a delay. The number of single-family parcels was relatively stable until 2006, after which single-family parcels declined, but multifamily ones increased.

[15] Data use the 2010 census tract boundaries. For the 2020 census, central Monsey's tract boundaries were redrawn and about four tracts now correspond with the area.

[16] These tracts have slightly more households per square mile than Baltimore, Maryland, and slightly fewer than Pittsburgh, Pennsylvania.

Exhibit 8

Parcel Change Over Time

	Parcels		
	1986	2006	2021
R-15C (core)	620	760	1,093
R-15C (exclusion)	391	408	732
R-15A	329	330	327
R-15	365	381	394

Note: Number of parcels per zoning district over time, showing increase in parcel subdivisions within rezoned areas.
Sources: Rockland County GIS portal; PropertyShark

Exhibit 9

Number of Parcels by Land Use Type

	Year	Vacant	One Family	Two Family	Three Family	Multifamily	Institutional
R-15C (core)	1986	68	530	16	0	0	7
	2006	32	346	147	91	98	23
	2021	61	153	108	58	713	32
R-15C (exclusion)	1986	34	354	3	0	0	2
	2006	17	316	46	5	4	4
	2021	37	133	36	24	502	10
R-15A	1986	31	312	13	0	0	8
	2006	23	302	33	3	4	9
	2021	31	243	55	9	57	16
R-15	1986	30	299	0	0	0	0
	2006	3	319	2	0	0	4
	2021	2	309	9	2	5	3

Note: Land use classifications per parcel per zoning district over time, showing decrease in single-family parcels over time.
Sources: Rockland County GIS portal; PropertyShark

Land Use Change

The proliferation of multifamily parcels in the R-15C zone indicates how development proceeded over time. However, because of extensive subdivision (and condo parcelization), parcel quantities might inflate the magnitude of change in an *experiential* sense. For example, if a block initially had 10 single-family parcels, 3 of which converted into six-unit condominiums, the overall change in parcel composition would be dramatic: the block would go from having 10 parcels, all single-family, to having 25 parcels, 18 of which were multifamily. However, at the scale of the street, that change might not *feel* as dramatic. After all, only 3 of the 10 original lots would be multifamily, and most of the street would look the same.

Therefore, to measure on-the-ground change, looking at land use change at the parent parcel level is useful—that is, how the individual plots of land that existed in 1986 changed over time. By this measure, the change from single-family to multifamily in the R-15C district is still quite dramatic. Only 27 percent of parcels in the core R-15C zone that had been single-family in 1986 remained wholly[17] single-family by 2021, and about 38 percent of parcels that had been single-family in

[17] "Wholly" includes instances in which a single-family parcel would be subdivided. One new lot would remain single-family, and a two-, three-, or multifamily dwelling would be constructed on the other new lot.

1986 had at least one multifamily dwelling by 2021 (exhibit 10). As might be expected, vacant parcels densified at an even faster rate. An estimated 49 percent of parcels that were vacant in 1986 in the core R-15C zone had a multifamily dwelling on them by 2021. By contrast, only 6 percent of vacant parcels had a one-family home on them, indicating that, after the zoning change, the incentive to build new single-family homes practically disappeared.

Exhibit 10

Land Use Change for Parent Parcels, 1986–2021

		% Vacant in 2021	% One Family in 2021	% Two Family in 2021	% Three Family in 2021	% MultiFamily in 2021	% Institutional in 2021
R-15C (core)	One Family in 1986	0.08	0.27	0.15	0.08	0.38	0.05
R-15C (exclusion)		0.07	0.33	0.09	0.04	0.44	0.02
R-15A		0.06	0.70	0.12	0.02	0.06	0.03
R-15		0.01	0.94	0.03	0.00	0.01	0.01
R-15C (core)	Vacant in 1986	0.06	0.06	0.24	0.11	0.49	0.04
R-15C (exclusion)		0.21	0.26	0.06	0.06	0.38	0.03
R-15A		0.21	0.48	0.09	0.03	0.09	0.09
R-15		0.03	0.90	0.00	0.00	0.03	0.03

Notes: Land use classifications per parent parcel between 1986 and 2021 by zoning districts. Parcels that were classified as either vacant or one-family in 1986 were classified in 2021. The shift in classifications for the two R-15C areas are particularly notable.

Sources: Rockland County GIS portal; PropertyShark

The dramatic conversion of one-family parcels into multiunit properties seen in the R-15C zone was not replicated in the R-15A zone (the area of central Monsey rezoned to allow one accessory unit per parcel). More than 70 percent of one-family properties in the R-15A area stayed that way after the area was rezoned, and only 12 percent of homes that were one-family in 1986 were two-family by 2021. Even vacant parcels in the R-15A district were more likely to become one-family dwellings than any other use—showing that, within the accessory zoning area, one-family construction continued even after zoning was altered.

Unit Change

From a land use perspective, the character of the R-15C district changed dramatically following zoning reform, although the R-15A accessory zone changed much less. But what of units? Measuring unit change is not as easy as measuring land use change because publicly accessible land use data in Ramapo does not include unit counts for multifamily properties. This study's estimates were created using a manual windshield survey, private sector data counts, and a set of conservative assumptions for properties where data were missing. These caveats aside, the picture that emerges is one of robust unit production in the R-15C district—and much more sluggish production in comparison areas.

In the core R-15C zone, housing units increased from an estimated 560 in 1986 (pre-rezoning) to an estimated 2,250 in 2021—a growth rate of about 300 percent in 35 years (exhibit 11). Growth was nearly as high in the R-15C exclusion area after parts of Monsey were rezoned to R-15C in 2004. Although unit counts were relatively stable between 1986 and 2006 in that area prior to

rezoning, housing production exploded once the area was rezoned to R-15C—going from an estimated 440 units in 2006 to more than 1,350 by 2021. By contrast, fewer units were created in the R-15A zone (rezoned to allow for one accessory unit per parcel) and the R-15 area (which was never rezoned). Estimates show that about 300 new units were created in the R-15A area since 1986, or a growth rate of 89 percent during those 35 years (exhibit 9). The R-15 zone grew even less. Estimates show that fewer than 80 new units were created in the area between 1986 and 2021, reflecting a 26-percent growth rate during those same 35 years.

Exhibit 11

Change in Units Over Time

	1986	2006	2021	Change 1986 – 2021	% Change 1986 – 2021
R-15C (core)	562	1,373	2,248	1,686	3.00
R-15C (exclusion)	360	439	1,358	998	2.77
R-15A	337	391	636	299	0.89
R-15	299	323	377	78	26.09

Note: Change in units per zoning district over time.
Sources: Rockland County GIS portal; PropertyShark; manual windshield survey via Google Streetview

Difference-in-Differences

Descriptive statistics about parcel subdivisions, land use, and housing units give a sense of the variable rates of neighborhood change between districts; however, they do not provide a causal explanation for the change. Urban change is constant, and not all the densification in a certain district stems from zoning reforms. Difference-in-differences regression provides one way to get a more precise measure of change that isolates the impact of the policy. In the method, change is measured over and above what might be expected to have occurred otherwise, given preexisting trends. This assessment is done by comparing a treated area that received a change with an untreated comparison area (akin to a control) that did not receive treatment. Both areas are compared before and after the point of treatment, with the untreated area providing a proxy for how growth would have proceeded in the treated area absent the treatment.

The data for the difference-in-differences models make up a cross-sectional dataset of parent parcels with four measurement years: 1986, 2006, 2012, and 2021. The years 1986 and 2006 are defined as *pre-treatment years*, and 2012 and 2021 are defined as *post-treatment years*. Using four periods gives a more conservative estimation than simply comparing before and after (exhibit 12). Two different regressions were run with two different dependent variables. Each model in turn measures the impact of two treatments. The first treatment is the shift from existing R-15 zoning (single-family zoning with two-family homes allowed on large lots) to R-15C zoning (multifamily zoning with four to six units allowed on a single lot); the second treatment is the shift from R-15 zoning to R-15A zoning (the same as R-15, but with an additional accessory unit allowed per lot). The R-15C exclusion area is selected because it is the portion of R-15C that jumped directly from single-family zoning to multifamily zoning when the area was rezoned in 2004. Parcels in the core R-15C zone are not included in this model, so the model only measures the impact of changes that were undertaken at the same time. In sum, the two models measure the effects of (1) R-15C

multifamily zoning on parcel subdivisions, (2) R-15A accessory zoning on parcel subdivisions, (3) R-15C multifamily zoning on units, and (4) R-15A accessory zoning on units.

In the first model, the dependent variable is the number of one-family parcels. This model thus measures the impact of the two zoning changes on the number of one-family parcels, with parent parcels as the unit of analysis. The coefficient for treatment 1 (multifamily R-15C zoning area after rezoning) in the one-family parcels model is -0.371 with a 95 percent confidence interval (CI) of [-0.431, -0.312] (exhibit 13). This result indicates that multifamily zoning change induced about 0.35 fewer one-family parcels per parent parcel than expected, given preexisting trends. The coefficient for treatment 2 (accessory R-15A zoning area after rezoning) is -0.112, with a 95 percent CI [-0.172, -0.051]. This result means accessory zoning led to about 0.12 fewer single-family parcels per parent parcel than expected.

The second difference-in-differences model measures the impact of the same two zoning changes on the number of units. Treatment 1 is again the effect of shifting from existing R-15 zoning to R-15C zoning (multifamily zoning with at least four units allowed on a single lot), and treatment 2 is again the effect of shifting from R-15 zoning to R-15A zoning (one accessory unit allowed per lot). The coefficient for treatment 1 (multifamily R-15C zoning area after rezoning) in this model is 1.445, with a 95 percent CI [1.262, 1.629] (exhibit 13). This result indicates that multifamily zoning change induced about 1.5 new units per parent parcel on top of the unit growth that would otherwise have been expected given preexisting trends. The coefficient for treatment 2 (accessory R-15A zoning area after rezoning) is 0.299, with a 95 percent CI [0.112, 0.485] (exhibit 11), which means that accessory zoning induced 0.3 more units per parent parcel on top of the unit growth that would otherwise have been expected if no zoning changes had been made. The far more modest coefficients of treatment 2 compared with treatment 1 highlight the same finding as the descriptive data: accessory laws alone induced more modest unit production, whereas Ramapo's multifamily zoning laws spurred more dramatic unit growth.

Exhibit 12

Estimates of Parcel and Unit Change

	Naive Estimate	Before/After Estimate	Difference-in-Differences Estimate
Multifamily Zoning			
One family parcels	– 0.57	– 0.53	– 0.37
Units	2.62	2.38	1.45
Accessory Zoning			
One family parcels	– 0.19	– 0.22	– 0.11
Units	0.82	0.59	0.30

Notes: Naïve estimate represents the change in means between 1986 and 2021 for the treatment area. The before/after estimate is the difference between the change in means between 1986 and 2021 for the treatment area minus the change in means in the control area for the same period. The difference-in-differences estimate is the change in means in the treatment area over the change in means in the control area. Four cross-sectional measures (1986, 2006, 2012, and 2021) were used.

Sources: Rockland County GIS portal; PropertyShark; manual windshield survey via Google Streetview

Exhibit 13

Difference-in-Differences Estimates

One Family Parcels	Coefficient	Std. Error	t	p	95% conf. interval	
Post zoning reform	0.012	0.023	0.540	0.589	– 0.032	0.056
R-15C exclusion zone (multifamily zoning)	0.082	0.022	– 3.82	0.000	– 0.125	– 0.040
R-15A zone (accessory zoning)	– 0.099	0.022	– 4.53	0.000	– 0.142	– 0.056
Treatment1 (R-15C*post)	**– 0.371**	**0.031**	**– 12.17**	**0.000**	**– 0.431**	**– 0.312**
Treatment2 (R-15A*post)	**– 0.112**	**0.031**	**– 3.6**	**0.000**	**– 0.172**	**– 0.051**
N	4343					
r squared	0.128					
adjusted r squared	0.127					
Units	**Coefficient**	**Std. Error**	**t**	**p**	**95% conf. interval**	
Post zoning reform	0.128	0.069	1.850	0.064	– 0.007	0.263
R-15C exclusion zone (multifamily zoning)	0.076	0.066	1.160	0.248	– 0.053	0.206
R-15A zone (accessory zoning)	0.055	0.067	0.810	0.415	– 0.077	0.186
Multifamily treated (R-15C*post)	**1.445**	**0.094**	**15.450**	**0.000**	**1.262**	**1.629**
Accessory treated (R-15A*post)	**0.299**	**0.095**	**3.140**	**0.002**	**0.112**	**0.485**
N	4343					
r squared	0.186					
adjusted r squared	0.185					

std. error = standard error. conf. interval = confidence interval.

Sources: Rockland County GIS portal; PropertyShark; manual windshield survey via Google Streetview

Policy Challenges

The creation of the R-15C district spurred a major increase in housing production in the Monsey area, but what were the implications of this rapid growth on the town's social and physical environment? The potential for negative consequences of development is known to anyone who has attended a public meeting: some neighbors fear increased traffic, others complain about the loss of environmental features, and others lament that new development is just plain ugly. Missing from the standard public meeting is the fact that housing production also carries with it positive externalities, the most basic of which is an (expected) mitigation of housing costs as new supply comes online. This section of the article analyzes these externalities using qualitative evidence gleaned from archival sources and semi-structured interviews. The analysis starts by investigating some of the challenges that accompanied the development boom in central Monsey, especially regarding public infrastructure and the aesthetics of the built environment, then discusses the impact of the zoning change on affordable housing discourse in the area.

Infrastructure

As central Monsey densified, concern often centered on the capacity of public infrastructure to accommodate growth. In interviews, critics of development questioned whether the town's public sewers, water supply, or street grid—all initially built on assumptions of more limited suburban-style development—could handle increased usage. More sympathetic observers countered that infrastructure in Ramapo has been strained for decades—yet the town had made enough improvements to continue to function and attract new residents. Tracing the *cause* of infrastructure strain is no easy task. Not all issues can be traced back to development, let alone the specific development in the R-15C district. Nonetheless, the historical record does provide some indications about the relationship between infrastructure strain and development. Reviewing that record reveals a mixed story: investment has not kept up with population growth in certain realms, such as sewage and water capacity, whereas other systems, such as the road network, appear more resilient.

At the time of the 2004 master plan update, the capacity of Ramapo's sewage infrastructure to accommodate new development was already in question (Frederick P. Clark and Associates, 2004). Unfortunately, some of these fears came to pass. New Jersey residents living downstream of Ramapo filed a multimillion-dollar lawsuit against the sewer district that serves the town, successfully proving in court that the local sewer plant had overflowed into the Upper Saddle River multiple times between 2006 and 2010. These discharges were tied to capacity issues during storm events and on regular days. Some observers (including the local newspaper) connected the problem with overdevelopment in areas such as the R-15C district (Incalcaterra, 2014). Despite subsequent investments in capacity, emergency sewage discharge occurred again in 2022, which environmental activists also connected with "extensive development in the area" (Castelluccio, 2022). Whether the problems were explicitly tied to the specific development in the R-15C zone is unclear. However, the sewage overflows highlight the need for additional investment to keep up with usage.

The town's water pressure is a related capacity issue. Concern about water pressure in the town took on new urgency following a fatal fire in 2021 at a nursing home in the village of Spring Valley, New York. One firefighter lost his life battling the blaze (firefighters are volunteers in Ramapo—another suburban holdover), as did one nursing home resident (Lieberman, 2022). This fatal fire raised concerns, first and foremost, about lax building inspections in Ramapo[18] (Lieberman and Kramer, 2021). However, it also highlighted the water system in the town. The hydrant nearest the complex did not have adequate water pressure to fight the blaze, and firefighters were forced to stretch hoses from nearly two-thirds of a mile away at the closest functioning pump (Kramer and Lieberman, 2021). Following the tragedy, state officials launched an inquiry into Ramapo's water system. As with sewers, many observers drew a connection between the town's multifamily development boom and water issues. One state assembly member argued that the inquiry needed to focus on "how our water infrastructure is being taxed by development decisions" (Kramer and Lieberman, 2021).

[18] The fire preceded another major fire at an illegally constructed grocery store in Monsey. Firefighting is also made difficult in Ramapo by a preponderance of informal units. Multiple interview participants accused the town of turning a blind eye to the potential for additional illegal units during the permitting process, such as by approving plans showing additional doors or basement kitchens that might indicate future subdivision into more units than permitted.

Ramapo's street grid is a third piece of infrastructure described as being over capacity. In qualitative interviews, even relatively pro-development participants complained about traffic. However, unlike sewage and water capacity, there is little evidence tying increased density to traffic in central Monsey. At the time of the 2004 master plan update, traffic on the two arterial roads that flank the R-15C zone, Route 59 and Route 306, was already a major issue. New York State's annual average daily traffic (NYS AADT) counts from the NYS Department of Transportation averaged about 20,000 and 18,000 on the two stretches of Route 59 that were closest to the R-15C district and about 11,000 and 14,000 on the stretches of Route 306 closest to Monsey. However, these counts represented something of a peak. Since the mid-2000s, traffic on both roads has declined: traffic counts on Route 59 in 2021 measured around 15,000. This decline is surprising considering the thousands of new housing units constructed in the vicinity of the two roads. However, the decline may have arisen because the new inhabitants of multifamily units are far less likely to own cars than the suburban norm. In 2020, 25 percent of respondents in Monsey did not have access to a vehicle, compared with only 6 percent in Rockland County as a whole (U.S. Census Bureau, 2022). Although Route 59 and Route 306 are still considered congested (Spack, 2017), dense development has not exacerbated traffic in the way that might be expected, given the relative dearth of public transit in the Monsey area.

Aesthetics

The physical appearance of the built environment is another area of concern in Ramapo—mentioned frequently in qualitative interviews and in the archival record. Aesthetic concerns may seem trivial compared with the pressing issue of water pressure, sewer capacity, or even traffic. However, struggles about design are a key component of Ramapo's land use history—appearing almost immediately on the creation of the R-15C district and escalating as more and more of central Monsey was rebuilt. (Snel, 1986). Ramapo's zoning code includes requirements for landscaping and screening in the R-15C district and grants the local government the right to make aesthetic evaluations of new construction on the basis of compatibility during the discretionary review (Town of Ramapo Zoning Code, 376-91). Despite these safeguards, aesthetic issues were frequently cited in qualitative interviews as one of the downsides of densification.

Some of the aesthetic issues in central Monsey are built into the converted nature of the R-15C district. Development within central Monsey has occurred on a lot-by-lot basis, so a single block in the area may contain a mix of typologies. The cascading set of land use changes in the area has also led to a few different rounds of building and rebuilding, with new-construction six-family buildings sitting next to standard high-ranch single-family homes or converted (and expanded) former single-family homes. Developers' tendency to subdivide lots also means that homes are typically graded at different levels, which can exacerbate the sense of height difference on a block and, according to some observers, create runoff challenges.

Parking is another aesthetic issue in the district. Although the town of Ramapo progressively loosened bulk and use restrictions in central Monsey, parking regulations have remained essentially unchanged. One parking space is mandated per unit (both primary and accessory) within the R-15C district, in addition to one space per "nontransient roomer or boarder" (Town of Ramapo Zoning Code, Chapter 376). As a result, new multifamily construction requires a fairly large

number of spots. Because developers in Monsey tend to build right to the required side setback (or seek a variance to build even closer to the property line), parking is generally provided in the front of the building. This lack of space means that parking typically covers the entirety of the front yard, with little space left for trees or landscaping.

Affordability and Fair Housing

The town of Ramapo, which crafted the R-15C district in part to create additional affordable housing options for the rapidly growing population of central Monsey, assumed that new multifamily development would create additional housing options and temper price escalation in a high-demand environment—an assumption fully grounded in the policy literature and in the basic economic model of supply and demand. However, the relative affordability of new construction has subsequently been a major point of contention in Ramapo. In interviews, civic activists have contended that the new housing supply in Monsey is not truly affordable—especially not the condominiums constructed in the wake of the 2012 rule change allowing accessory parcels to be sold as separate units. The complex demographic landscape of the town further complicates these debates. Social justice-oriented civic groups, including the local chapter of the National Association for the Advancement of Colored People (NAACP), argue that most new construction in the area is built for, and exclusively marketed to, ultra-Orthodox buyers. They thus question whether housing options (even if they are affordable) ultimately benefit the full spectrum of the town's population.

Determining a causal relationship between housing supply and housing cost is outside the scope of this article. Although affordability is one of the most hotly contested issues in Ramapo, even a rudimentary assessment of housing affordability in Monsey is hampered by a dearth of reliable pricing data. Census data on housing costs are self-reported, and private sector pricing data for the area are partial, because many of the property sales reported in Monsey are conducted through direct personal transactions.[19] This brief discussion is not meant to resolve the question of how best to perceive the affordability of these units, nor to disentangle the contributions of supply and demand to their pricing. It is meant only to provide valuable context for understanding the type of development underway and the unique context of housing supply in Ramapo.

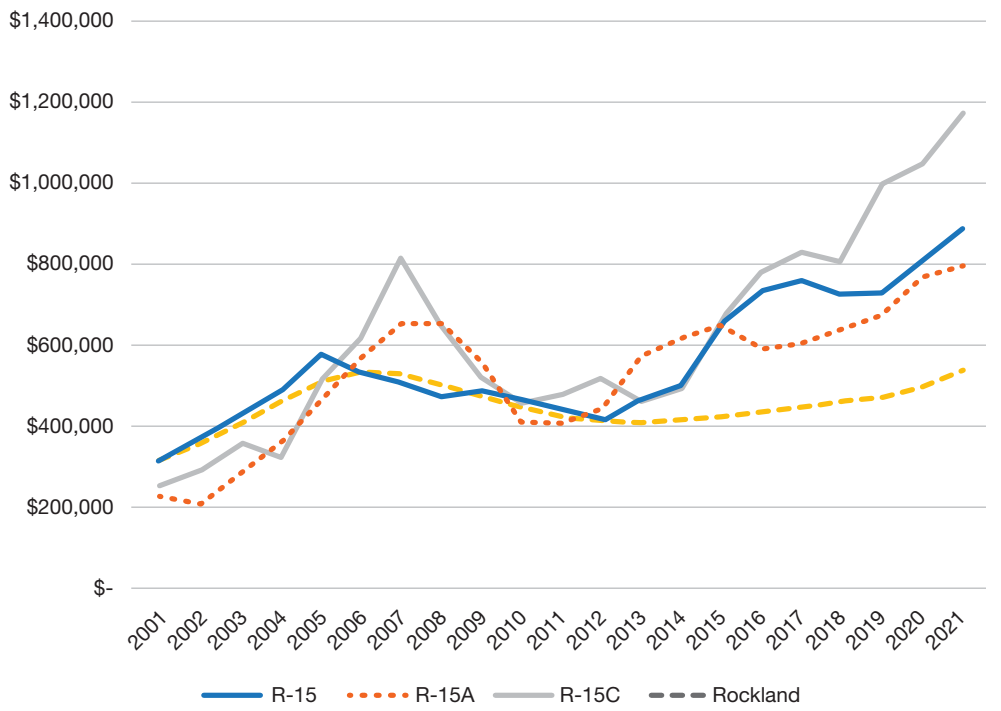
The information that can be drawn from sales data and from anecdotal evidence from local real estate advertisements supports both arguments made in Ramapo: (1) new units provide affordable options that otherwise would not exist in such a high-demand environment, and (2) affordable options are inaccessible to large portions of the greater Ramapo population. On the one hand, the R-15C district successfully spurred the creation of hundreds of multifamily missing middle options. Condos in multifamily buildings in the area generally sell for less than single-family homes in the same zone, and the multifamily zoning changes also spurred the creation of many more rental options than would otherwise exist. Moreover, in most years, sale prices (normalized by the number of units in a sale) are lower in the R-15C district than in surrounding areas of Monsey that do not allow for multifamily buildings, although the zones do appear to be growing more similar over time (exhibits 14 and 15).

[19] Rental prices are also opaque. Apartments marketed to ultra-Orthodox families are often advertised in different channels than for the standard market: by word of mouth, free circulars available at stores, or ultra-Orthodox online forums.

On the other hand, in recent years, housing costs in the Monsey area have far exceeded those of Rockland County as a whole (exhibits 12 and 13). Large, brand-new condominiums with five or six bedrooms in central Monsey can sell for close to $1 million—obviously far outside even the most generous definition of affordability (Zillow, n.d.). Soaring demand from the ultra-Orthodox community has also spilled into other areas, including the relatively low-income and racially diverse village of Spring Valley east of Monsey. Developers have expanded condominium construction there, leading to accusations of gentrification, racism, and fair housing violations (and counteraccusations of antisemitism) (Bandler, Lieberman, and Liebson, 2017; Brum, 2017). For example, in 2013, the local chapter of the NAACP filed a lawsuit against one new Spring Valley development, alleging that units were exclusively marketed to ultra-Orthodox buyers (Lieberman, 2017b). This lawsuit was settled in the plaintiffs' favor in 2017, highlighting the legitimate frustration of some residents about just how affordable and accessible the new housing supply in the area really is.

Exhibit 14

Average Sales Price, 3-Year Moving Average

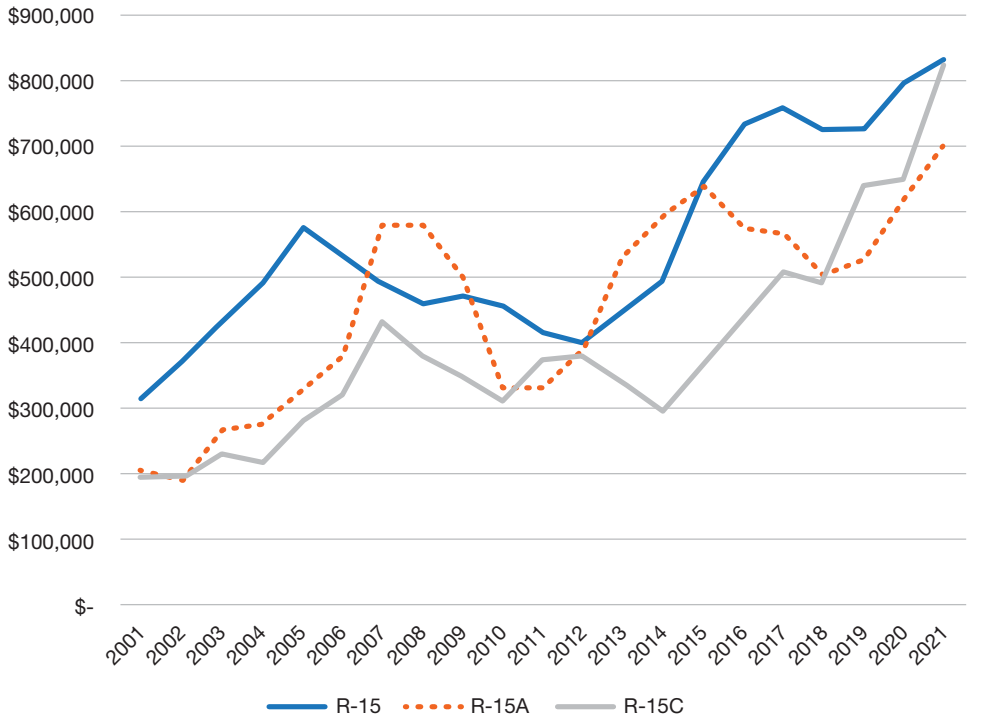


Notes: Average sale price per zoning district is average for sales over $20,000. Apartment buildings are excluded. Rockland County data are home values, not sale prices, and are included only for reference.

Sources: PropertyShark; Zillow Home Value Index

Exhibit 15

Average Sales Price, Per Unit Basis, 3-Year Moving Average



Notes: Average sale price per zoning district is average for sales over $20,000. Unit price is sale price divided by number of units in the property.
Source: PropertyShark

Learning from Ramapo

Ramapo provides a multidecade window into what can happen to the land use, housing market, and neighborhood character of a suburban community that pursues zoning reform. Its extended timeline holds a host of lessons for other communities, many of which are just starting to contemplate the types of reform that Ramapo pioneered decades ago.

However, the ability to learn from Ramapo is hindered by some of its unique qualities. Ramapo is an extreme case for at least two reasons (Flyvbjerg, 2006). The first is cultural. The built transformation of central Monsey has been accompanied by the transformation of the wider town of Ramapo into what might be best characterized as an ultra-Orthodox Jewish *ethnoburb* (Li, 2009). This entanglement between demographic and physical change makes it difficult to parse which outcomes in the case are specific to the unique social conditions of the community (that is, its predominantly ultra-Orthodox character) and which outcomes stem from more universal forces or conditions (such as a high-demand housing market). The second reason is political. The town government of Ramapo is exceptionally pro-growth, and the electorate includes a formidable ultra-Orthodox voting bloc laser-focused on increasing the housing supply for their community. This

detail impedes generalization between Ramapo and other places, because pro-growth advocacy is still quite rare in other suburban locations, even with the emergence of the YIMBY (that is, Yes in My Backyard) movement, and few local governments are subject to the type of pro-supply pressures that Ramapo is under.

As a result, Ramapo is only directly analogous to a small set of communities: a handful of other ultra-Orthodox suburbs and extreme cases of pro-growth politics and high population growth, such as in oil boomtowns. However, more typical communities still have much to learn from the Ramapo case. Ramapo can serve as a theoretical best case (or worst, depending on one's perspective) for how densification might proceed in a high-demand environment with a pro-growth planning regime. Ramapo provides a rare window into the long-term effects of densification policies under ideal pro-supply political conditions, akin to what is called a *reasonable worst-case development scenario* in environmental planning. Ramapo can also serve as a falsification test for certain theories about zoning reform—that is, as a test showing what is necessary for a suburban place to transform into a denser environment. Even where suburbs reach urban levels of density, they do so in a suburban way. Ramapo provides a window into what that might look like.

Proceeding in that light, what are the lessons of land use reform in Ramapo? First, Ramapo's accessory unit laws triggered only modest change, even in a high-demand and pro-growth environment. Rather, the upzoning of existing neighborhoods to multifamily zones triggered widespread change. Second, laws allowing for condominiums appeared important in providing an attractive housing product to builders in Ramapo and may be important in other suburban settings as well. Third, the Ramapo case shows that densification requires extra infrastructure investment in a suburban environment. Fourth, in Ramapo's exceptionally pro-growth (and suburban) context, discretionary review and parking requirements did not necessarily hinder housing production.

To elaborate on the first point, the Ramapo case indicates that, even under an extremely pro-growth planning system, ordinances that allow only small increases in the permitted number of units per parcel provide only gradual unit growth over time. The creation of the R-15A district (the section of Monsey that allows one accessory unit per parcel) and the first 20 years of the R-15C ordinance (which allowed dwellings to be converted into up to three units) triggered only minor land use changes. In contrast, reforms that eventually allowed four- and six-unit properties on a single lot in the R-15C district (and 8 and 12 units on a double lot) triggered the production of thousands of new units. This construction was especially true after multifamily properties were authorized to be parceled out as condominiums. Whether because of constraints related to financing or because of resident preferences to own their own homes, removing residency requirements and allowing accessory units to be sold as condos proved significant. Together, the multifamily reforms and the lifting of condominium restrictions resulted in widescale land use change: the majority of parcels switched to multifamily use after those changes, and developers practically ceased to construct single-family (or even two- and three-family) homes within the multifamily zone.

The research presented in this article does not allow for a definitive answer as to why larger multifamily development proved more successful at increasing supply than accessory unit laws and conversions. For example, did the building typology allow for unit types more attractive to buyers or lower production costs for developers? Were the additional profits that could be generated by

one or two additional units insufficient to prompt existing owners to sell? The answers to these questions would help other jurisdictions assess whether the more limited production of accessory dwelling units and triplexes reflected local conditions or something more generalizable. Even so, the research serves as a reminder that certain land use reforms, focused on the gentlest forms of additional density, may fail to generate substantial production, even in extremely high-demand and pro-growth environments.

The Ramapo case also demonstrates that decades of sustained development carry costs. The town's suburban infrastructure, especially the suburban sewer and water system, has not always been able to handle urban densities, especially without substantial (and costly) upgrading. Further, the Ramapo case shows that multifamily construction in a high-demand environment does not guarantee affordability. Although multifamily units may be affordable compared with what prices would have been otherwise, they are not necessarily accessible to the full spectrum of the community. These points show the importance of complementary housing and planning policies.

Lastly, the R-15C district sheds some intriguing light on the processes necessary for a place to transform. This information is where Ramapo's use as a falsification test comes in: a place that shows that certain widespread assumptions about zoning reform may not hold under *all* conditions. For example, conventional wisdom holds that discretionary review processes hold up development and constrain housing production (Metcalf, Garcia, and Karlinsky, 2020). However, in Ramapo, developers actively seek variances, preferring the flexibility (and extra building capacity) of a site-specific variance despite the costs in terms of time and fees. The aesthetic review process in Ramapo, another type of discretionary review, also has not precluded rapid development.[20] Parking requirements are thought to constrain production (Gould 2022); however, in Ramapo, developers tend to meet or exceed parking requirements. It follows that, under certain political conditions, eliminating discretionary review or parking requirements may not be as important for housing production as institutional reforms that alter the speed and ease of discretionary review. This conclusion is not to say that discretionary reviews do not tend to add cost and uncertainty to the housing production process; rather, it is a reminder that the impact of discretion is also a function of whose discretion is being exercised.

Other communities, especially those built on the same midcentury suburban model as Ramapo, should heed the lessons of the Ramapo case. Ramapo's zoning reforms show that, with the right institutional framework and housing market, single-family tract housing developments can be upgraded to become much denser neighborhoods. The R-15C district, in particular, shows that single-family neighborhoods are not necessarily built out. Municipalities can induce the production of large amounts of missing middle housing if they are bold enough to legalize true multifamily buildings. However, municipalities should enter these efforts cognizant of the special challenges that dense housing brings when constructed atop existing suburban infrastructure. These downsides are far from insurmountable—and are no excuse for inaction. They are real, however, and responsible policymakers should ensure that densification proceeds along with the requisite infrastructure upgrades and housing affordability policies necessary to sustain safe and just residential environments.

[20] Although, as relayed in the policy challenges section, the aesthetic review board was seen as a rubber stamp by some in the community.

Acknowledgments

The author thanks the NYU Furman Center and the Pew Charitable Trusts for helping to fund the research, and Noah Kazis, Vicki Been, Ingrid Gould Ellen, and Matthew Murphy for constructive feedback on earlier drafts of this article. The author also thanks the Ramapo stakeholders who shared their knowledge of the R-15C district and local planning issues.

Author

Joseph Weil Huennekens (ORCID: 0000-0002-4549-9509) is a Ph.D. candidate in urban planning at Columbia University. His research interests include changing suburbs, exclusionary zoning, and planning practice.

References

Allan, Marc D. 1986a. "Multifamily Housing Violations Run Rampant," *The Journal News*, September 18.

———. 1986b. "Ramapo Homeowners Want Out of Proposed Multi-Family Zone," *The Journal News*, September 20.

Badger, Emily, and Quoctrung Bui. 2019. "Cities Start to Question an American Ideal: A House with a Yard on Every Lot," *The New York Times*, June 18.

Bandler, Jonathan, Steve Lieberman, and Richard Liebson. 2017. "Ramapo Nears Breaking Point: Special Report," *The Journal News*, January 8. https://www.lohud.com/story/news/local/rockland/ramapo/2017/01/08/ramapo-ny-breaking-point/95369994/.

Berger, Joseph. 2014. *The Pious Ones: The World of the Hasidim and Their Battles with America*. Harper Collins.

Boylan, Kate. 1997. "Ramapo Planner Finishes Last Term," *The Journal News*, July 14.

Brophy, Brian. 2002. "Community View: Explaining Ramapo's New Master Plan," *The Journal News*, November 14.

Brum, Robert. 2017. "Monsey Mega-Developer: Don't Assume It's Orthodox-Only," *The Journal News*, August 11.

Castelluccio, Michael. 2022. "Raw Sewage Spills into the Saddle River," *Preserve Ramapo*, May 9. https://preserve-ramapo.com/raw-sewage-spills-into-the-saddle-river/.

Clark, Amy Sara. 2014. "East Ramapo Schools Under State Supervision," *Jewish Telegraphic Agency*, June 18. https://www.jta.org/2014/06/18/ny/east-ramapo-schools-under-state-supervision.

Colton, David. 1981. "Judge Throws out Ramapo Zone Change," *The Journal News*, July 17.

———. 1979. "Town Ready to OK Multi-Family Homes," *The Journal News*, October 21.

Craddock, Blair. 2001. "Crowd Protests 144-Unit Triplex Housing Project," *The Journal News*, July 4.

Dow, Kathy. 1986. "'More Harmonious Ramapo' Task Force Sets Its Sights on Town's Future," *The Journal News*, April 3.

Fararo, Kim. 1986. "Ramapo Hopes Time Is Right for Multi-Family Zoning," *The Journal News*, June 13.

Feldman, Ari. 2020. "Judge Rules East Ramapo School District Disenfranchised Black and Latino Voters," *The Forward*, May 26. https://forward.com/news/breaking-news/447322/east-ramapo-judge-rules-violation/.

Flyvbjerg, Bent. 2006. "Five Misunderstandings About Case-Study Research," *Qualitative Inquiry* 12 (2): 219–245.

Frederick P. Clarke Associates. 2004. Town of Ramapo Comprehensive Plan.

Google Maps Streetview. n.d. https://www.google.com/maps.

Gould, Catie. 2022. "Why Communities Are Eliminating Off-Street Parking Requirements—and What Comes Next," *Land Lines*, October 12. https://www.lincolninst.edu/publications/articles/2022-10-shifting-gears-eliminating-off-street-parking-requirements.

Greene, Solomon, and Ingrid Gould Ellen. 2020. *Breaking Barriers, Boosting Supply How the Federal Government Can Help Eliminate Exclusionary Zoning*. Washington, DC: Urban Institute. https://www.urban.org/sites/default/files/publication/102963/breaking-barriers-boosting-supply_0.pdf.

Henderson, Tim. 1991. "Village of Kaser Proposes High-Density Housing Plan," *The Journal News*, June 23.

Hollander, Shevy. 2017. "What's in a Street Name?" *Monsey View*, August 22.

Incalcaterra, Laura. 2014. "Judge Deciding Rockland Sewer Agency Penalties," *The Journal News*, May 8. https://www.lohud.com/story/news/local/rockland/2014/05/08/rockland-sewer-agency-violated-clean-water-act-says-judge/8858197/.

Kazis, Noah. 2020. *Ending Exclusionary Zoning in New York City's Suburbs*. New York, NY: NYU Furman Center. https://furmancenter.org/research/publication/ending-exclusionary-zoning-in-new-york-city8217s-suburbs.

Kramer, Iris. 1999. "Letter to the Editor: Ramapo Must Stop Looking the Other Way," *The Journal News*, May 28.

Kramer, Peter, and Steve Lieberman. 2021. "Water Pressure Probe Launched by State into Spring Valley Fatal Fire," *The Journal News*, April 9. https://www.lohud.com/story/news/local/rockland/spring-valley/2021/04/07/state-psc-launches-investigation-into-low-water-pressure-fatal-fire/7129092002/.

Laudor, Richard. 1981. "Ramapo Zoning—2 Sets of Rules?" *The Journal News*, September 20.

———. 1980. "300 Residents Protest Multi-Family Homes," *The Journal News*, June 12.

Li, Wei. 2009. *Ethnoburb: The New Ethnic Community in Urban America*. Honolulu, HI: University of Hawai'i Press.

Lieberman, Steve. 2022. "Evergreen Fire: Officials Frustrated as State Report on Water Pressure Lingers; the Latest," *The Journal News*, November 8. https://www.lohud.com/story/news/local/rockland/2022/11/08/evergreen-fire-rockland-water-pressure-investigation-lingers/69627069007/.

———. 2017a. "Anthony Mallia—Facing 188 Felony Counts—Terminated as Ramapo Building Inspector in Pact," *The Journal News*, June 28. https://www.lohud.com/story/news/local/rockland/2017/06/29/anthony-mallia-facing-188-felony-count-terminated-ramapo-building-inspector-pact/438189001/.

———. 2017b. "NAACP, Park View Settle HUD Housing Discrimination Case in Spring Valley," *The Journal News*, February 21. https://www.lohud.com/story/news/local/2017/02/21/naacp-housing-discrimination-hud/98188652/.

———. 2016. "Ramapo Eyes Firm to Run Planning, Zoning after Inspector Arrested," *The Journal News*, September 23. https://www.lohud.com/story/news/local/rockland/ramapo/2016/09/23/ramapo-firm-zoning-building/90900422/.

———. 1996. "Residents Tackle the Rental Crunch," *The Journal News*, February 6.

Lieberman, Steve, and Peter Kramer. 2021. "A Ramapo Supermarket Racked up Dozens of Building Violations and Then the Fire Struck," *The Journal News*, April 23. https://www.lohud.com/in-depth/news/investigations/2021/04/21/ramapo-backs-mottys-scofflaw-fight-over-railroad-land/7090849002/.

Meck, Stuart, and Rebecca Retzlaff. 2008. "The Emergence of Growth Management Planning in the United States: The Case of Golden v. Planning Board of Town of Ramapo and Its Aftermath," *Journal of Planning History* 7 (2): 113–157.

Metcalf, Ben, David Garcia, and Sarah Karlinsky. 2020. "Four Tools for Stimulating Economic Recovery Through New Homebuilding," *SPUR News*, June 23. https://www.spur.org/news/2020-06-23/four-tools-stimulating-economic-recovery-through-new-homebuilding.

Mintz, Jerome R. 1992. *Hasidic People: A Place in the New World*. Cambridge, MA: Harvard University Press.

New York State Department of Transportation. n.d. NYS Annual Average Daily Traffic (AADT). n.d. https://www.kaggle.com/datasets/new-york-state/nys-annual-average-daily-traffic-aadt.

Property Shark. n.d. "Property Search." https://www.propertyshark.com/mason/.

Rifkin, David. 1980. "The Law Must Be Obeyed," *The Journal News*, July 15.

Rockland County GIS Portal. n.d. https://www.rocklandgis.com/portal/.

Saeed, Khurram and Laura Incalcaterra. 2001. "Illegal Homes House Many, Are Difficult to Counter," *The Journal News*, March 12.

Sanderson, Linda. 1978. "Drainage, Housing Issues Stir Anger," *The Journal News*, January 26.

Snel, Alan. 1986. "Ramapo Approves Architecture Board," *The Journal News*, May 29.

Spack, Mike. 2017. "Traffic Engineering Briefing: When Is a Road Congested?" *Mike on Traffic*, September 28. http://www.mikeontraffic.com/when-is-a-road-congested/.

The Journal News. 1992. "Zone Change Would Allow 3-Family Homes in Ramapo," March 26.

———. 1991. "Apartment Fee Set," June 2.

Town of Ramapo. n.d. "Zoning Code and Map: Interactive Zoning Map." https://www.ramapo.org/page/zoning-code-and-map-135.html.

U.S. Census Bureau. 2022. "QuickFacts: Monsey CDP, New York." https://www.census.gov/quickfacts/fact/table/springvalleyvillagenewyork,rocklandcountynewyork,monseycdpnewyork,US/HSG860220.

Wegmann, Jake. 2020. "Death to Single-Family Zoning…and New Life to the Missing Middle," *Journal of the American Planning Association* 86 (1): 113–119.

Weiser, Benjamin, and Mary Williams Walsh. 2016. "Ramapo Town Supervisor Arrested in Federal Fraud Case," *The New York Times*, April 14. https://www.nytimes.com/2016/04/15/nyregion/ramapo-town-supervisor-arrested-in-federal-fraud-case.html.

Zillow. n.d. "Buy." Zillow.com.

Upzoning With Strings Attached: Evidence From Seattle's Affordable Housing Mandate

Jacob Krimmel
Federal Reserve Board

Betty Wang
University of Hong Kong

The views and analysis expressed here do not represent those of the Board of Governors or the Federal Reserve System.

Abstract

This article analyzes the effects of a major municipal residential land use reform on new home construction and developer behavior. It examines Seattle's Mandatory Housing Affordability (MHA) program, which relaxed zoning regulations while encouraging affordable housing construction in 33 neighborhoods in 2017 and 2019. The reforms allowed for more dense new development, or "upzoning," but they also required developers to either reserve some units of each project at below market rates or pay into a citywide affordable housing fund. Using a difference-in-differences estimation comparing areas the reforms affected versus those not affected, the authors show that new construction fell in the upzoned, affordability-mandated census blocks. The quasi-experimental border design finds strong evidence of developers strategically siting projects away from MHA-zoned plots—despite their upzoning—and instead to nearby blocks and parcels not subject to the program's affordability requirements. Lowrise multifamily and mixed-use development drive these effects. The findings speak to the mixed results of allowing for more density while simultaneously mandating affordable housing for the same project.

Introduction

The broad academic consensus is that stringent land use regulations are behind many major sociopolitical issues facing cities today, including housing unaffordability, residential segregation,

and lagging economic growth.[1] Among the most common forms of regulation are limits to urban density that may restrict the size or height of multifamily residences or ban multiunit buildings outright. Such low-density zoning is viewed as the root cause of affordability issues for many in-demand cities (Glaeser and Gyourko, 2018). For instance, land zoned for single-family detached homes accounts for 94 percent of all land zoned for residential use in San Jose, 75 percent in Los Angeles, and 70 percent in Minneapolis.[2]

Although the ill effects of tightening land use controls are well established, far less practical knowledge is available on how to ameliorate the situation. It is not clear to academics or policymakers exactly how existing zoning codes and regulations should be changed to spur new construction where housing shortages are most acute; nor is it straightforward to enact such reforms, even if consensus existed. At present, state and local policymakers around the country are implementing or discussing a wide range of housing affordability reforms, from changing zoning codes to enacting rent controls.[3]

A key challenge facing policymakers seeking to boost supply and lower housing costs, in the long run, is finding a suite of reforms that are politically feasible in the short run. For example, although agreement is widespread among economists that allowing more dense construction will, in theory, boost supply and bring down prices, voters and politicians remain wary. A prominent concern is that upzoning leads only to constructing expensive units that would not directly alleviate affordability issues among rent-burdened existing residents. However, empirical evidence on the effects of upzoning is scarce, mainly because these policy changes are rare, especially at larger geographic scales.

This article analyzes Seattle's Mandatory Housing Affordability (MHA) reform, one of the largest citywide density and affordable housing reforms in the United States. Seattle presents an ideal setting to answer the question of how to tackle housing shortfalls and affordability issues. The city's population has boomed, and house prices have soared in recent years. Although the metropolitan area population has grown 30 percent during the past 2 decades, Seattle is building fewer new units per year than when it had 1 million fewer inhabitants. As a result, since 2000, median house prices have nearly tripled; one in seven residents is severely rent burdened. Although a growing political will is for large-scale housing reform, much of Seattle's land remains zoned only for detached single-family residences.[4]

[1] Although all cities in the United States have some form of land use regulatory rules, restrictiveness, and corresponding housing shortages vary widely across metropolitan areas. See Gyourko, Hartley, and Krimmel (2021) for variation in land use restrictions across metropolitan areas.

[2] A small number of cities also adopt urban growth boundary lines to limit the extensive margin along which cities could grow (most notably, Portland, Oregon).

[3] These reforms include, for example, sweeping accessory dwelling unit reforms in California and Oregon (https://www.hcd.ca.gov/policy-and-research/accessory-dwelling-units/), rent control proposals in Boston (https://www.boston.com/real-estate/real-estate-news/2023/01/18/boston-rent-control-michelle-wu-plan/), a ban on single-family zoning in Minneapolis (https://www.planning.org/blog/9219556/measuring-the-early-impact-of-eliminating-single-family-zoning-on-minneapolis-property-values/), and inclusionary zoning in Washington, D.C. (https://dhcd.dc.gov/service/inclusionary-zoning-iz-affordable-housing-program/).

[4] The authors' conversations with officials from the city of Seattle, community groups, and developers indicate that pro-density and pro-affordability reforms have been discussed for at least the past 10 years. The authors also note that Seattle recently adopted reforms to boost accessory dwelling unit production in single-family neighborhoods.

The MHA reform presents a case study of how one high-cost city struck a balance between its efforts to alleviate affordability issues and local political opposition from both single-family homeowners resistant to change and rent-burdened households fearing displacement. The MHA program upzoned 33 noncontiguous neighborhoods between 2017 and 2019. In these areas, MHA allowed for greater density while mandating that all new commercial and multifamily residential construction contributes to affordable housing. The reform combines two policy levers that some economists consider to conflict with one another: Increasing development capacity through upzoning and requiring private development to create income-restricted affordable housing. Geographically, the MHA touches very little single-family zoned land, thus making minimal alterations to the city's landscape while attempting to increase overall housing production. MHA is applied almost exclusively to areas already zoned for multifamily, commercial, or high-density single-family homes (for example, townhomes and rowhouses)—an important factor for MHA's political feasibility.

Seattle is one of the first large cities to adopt this "upzoning with strings attached" model, a prominent policy vehicle being discussed across the county. Thus, Seattle's MHA represents an interesting example for other cities considering density reforms to alleviate affordability issues. Whether (and when) such a policy would spur or stifle housing development, especially affordable housing development, remains an empirical question. What is the "right mix" of sticks (requiring affordability contribution) and carrots (allowing more development capacity and density) for the developers?

This article first presents empirical evidence on the quantity response to the regulatory changes: Are more housing units permitted and built following the rezoning? The main empirical finding suggests strategic developer behavior following the reform at selected zones, guided by a cost-benefit tradeoff. Using a differences-in-differences analysis on a quasi-random sample of geographic areas that straddle the boundary of MHA zones, the results show no overall supply decline but strong *strategic substitution* of new construction away from blocks and parcels subject to the MHA. It is worth noting that the substitution is more likely for lowrise residential zones than highrise residential zones. This strategic substitution is a mixed result, because supply increases but not in all MHA zones as intended. In particular, the article finds that conditional on a permit being issued. It is more likely to be issued to a non-MHA block zone after the policy took effect in April 2019. Looking at the number of units, this study finds that differentially fewer units are added to MHA lowrise zones after the reform. Worryingly, most of the drop in the number of units in MHA zones is coming from the multifamily segment of the market, where most of the housing products are three- and four-story townhomes and duplexes. The multifamily segment is of particular note because lowrise and small multifamily homes are seen as more affordable alternatives to luxury apartments for low- and moderate-income renters.

Overall, this study's findings suggest preliminary mixed results for the MHA. Although upzoning allows for the construction of larger, taller multifamily buildings, it appears that MHA's affordability requirements act as a tax on some additional development. Importantly, any project on an MHA-zoned parcel was subject to the affordability requirement, regardless of whether the project was

"taking advantage" of the upzoning reform.[5] On balance, it appears that the cost of the affordability requirement to developers outweighed the benefit of additional units via upzoning, especially in lowrise zones.

Institutional Background

Seattle has experienced an intensifying housing affordability crisis during the past 2 decades, driven in part by the growth of big technology companies like Microsoft Corporation and Amazon.com, Inc., which have boosted labor demand and, therefore, housing demand. The median home price has tripled since 2000, and rental rates for a one-bedroom have increased 35 percent during the past 5 years. Also, a large racial gap exists in rent burdens: 35 percent of the city's African-American renter households are severely rent burdened compared with 19 percent of White renter households. Seattle's population grew 15.7 percent between July 2010 and July 2016, faster than almost any other large city in the country. In the city's 2035 Comprehensive Plan, Seattle housing officials identified that 20-year growth estimates would require the production of an additional 27,500 to 36,500 units, not including existing unmet needs. The shortage was anticipated to be particularly severe for units restricted to 30 and 50 percent of area median income. At this time, approximately 65 percent of the city's land was zoned for exclusively single-family usage.

The MHA reform allows for greater building heights and higher floor area ratio (FAR) limits in designated MHA zones. It also requires a developer contribution in exchange for the density bonus. The contribution comes in two forms that the developer could choose: "Payment" or "performance." Payment, a one-time monetary payment based on a predetermined schedule, goes directly into the city's affordable housing fund; performance requires developers to build rent- and income-restricted units on site. The contributions are designed to mitigate the perceived negative effects of new development.

The MHA reform upzoned 33 neighborhoods, allowing taller buildings and denser construction in three major types of buildings: Commercial, multifamily, and mixed-use. Any project in an MHA-rezoned area may choose between payment or performance. This program exempts single-family zones, but every project in an MHA rezone triggers the affordability requirement. This program design would ideally provide a distribution of mixed-income housing and a source of public revenue that the city housing agency could leverage toward more private funding for targeted development. The level of developer contribution required ("M," "M1," or "M2"), measured either through units built (performance option) or dollars contributed to the affordable housing fund (payment option), is determined by the extent to which the zone has changed from its prior classification. The program generated $68 million (and roughly 850 affordable units) in its first full year in 2020, with most developers taking the payment option.

One key thing to note is that this MHA program is not an unexpected "shock." Two years of community engagement and policy analysis informed the program's details. The guiding principles generated from that process for the MHA program include creating more rent-restricted affordable housing for low-income people; minimizing displacement and the effects on neighborhood

[5] For instance, it does not matter if a developer built a duplex that would have been allowed under pre-MHA zoning rules or a triplex that would have been only allowed under post-MHA zoning.

character; increasing the variety of housing choices, including homeownership and family-size housing; developing additional housing opportunities near schools, transit, and jobs; and coordinating growth with infrastructure investments.

In fact, the current program is an expansion of the city's preexisting voluntary Incentive Zoning program. The biggest difference from Incentive Zoning to MHA was that it became *mandatory* in designated geographies, in that it applies to all new permits issued within MHA zones after the reform. MHA was initially rolled out in 6 "urban villages" between 2015 and 2017 before being expanded on the same terms citywide in an additional 27 urban villages in April 2019.[6] This article uses April 2019 as the "post" period, because the overwhelming majority of neighborhoods affected and permits issued occurred after this wave of the reform. Importantly, the designers of MHA see the program as a necessary steppingstone for more ambitious future upzonings, both in terms of increases in allowable density and geographic scope.

Neighborhood assessments, completed as the city's comprehensive planning process, informed the geographic design of the MHA rezonings. The demographic and neighborhood trends of each urban village were examined to determine whether the area has a low or high "risk of displacement" and "access to opportunity."[7, 8] The architects of MHA intended to spur the most housing production in areas with a low risk of displacement and high access to opportunity.

Exhibit 1 shows that MHA rezonings affect quite a wide geography of neighborhoods. The left panel of exhibit 1 shows all MHA rezonings. The right panel breaks the rezoning down into three tiers based on the intensity of the zoning change. In the majority of cases, called the "M tier," the zoning code did not change, but taller buildings or higher FAR, or both, were allowed. A suffix was added to the zoning code after MHA took effect for these cases. For example, a lowrise 3, or LR3, becomes LR3(M). These rezones allow for roughly one story of additional development capacity. As a percentage of developable land in MHA rezoned areas, 78 percent of land falls under this mild change. The other 22 percent of land falls under M1 and M2 tiers, providing for more significant changes than the M tier.[9] The right panel shows the three color shadings corresponding to the three tiers. The most moderate M tier is the lightest shade. Housing officials carefully choose to map M tiers, opposed to M1 or M2 tiers, in high-risk or low-opportunity areas to minimize displacement risk and avoid hurting access to opportunity. The aim was to ensure that affordable units were added in lowrise multifamily zones rather than allowing for highrise luxury apartments. However, this modest upzoning, paired with MHA's affordability mandate, did leave M-tier areas at particular risk of lower supply responses.

[6] An urban village is the city's inventive term for certain mixed-use neighborhoods designated to accommodate common housing and business growth.

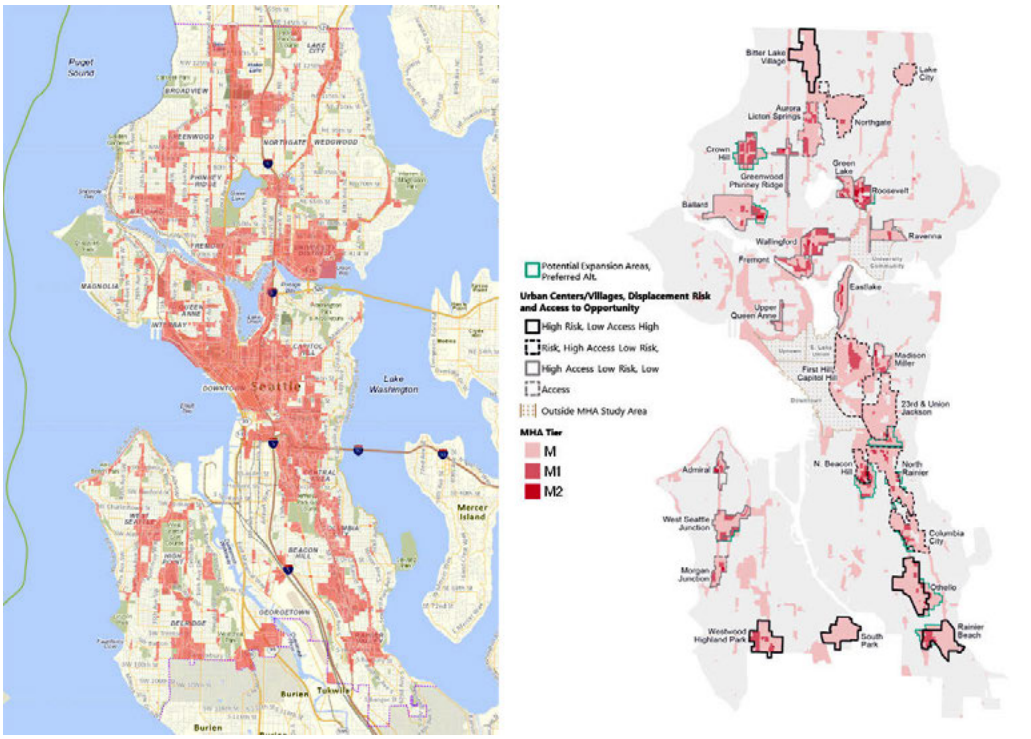
[7] Risk of displacement is determined by 14 indicators, including the racial composition of a neighborhood's residents, their educational attainment, its proximity to high-income neighborhoods, and development capacity.

[8] Access to opportunity includes factors such as local educational outcomes, property value appreciation, and proximity to resources such as parks, healthcare facilities, or public transit.

[9] Seattle classified its zones into five broad categories based on the density of permitted development. The M1 tier, which accounts for 20 percent of MHA rezoned areas, includes rezonings that moved the land up an entire category. The M2 tier, which accounts for only 2 percent of rezoned areas, involves upzones that shifted the land by two or more categories.

Exhibit 1

Mandatory Housing Affordability Areas and the Intensity of Upzoning



M = tier indicating zoning code did not change. M1 = tier including rezonings that moved the land up an entire category. M2 = tier involving upzones that shifted the land by two or more categories.

Source: Seattle GeoData and Department of Construction & Inspections zoning map, City of Seattle, 2017

To understand the size of the MHA rezoning treatment effect, this article looks at the actual permitting activities following MHA rezones. At the permit level, 75 percent of all permits issued in MHA-rezoned areas between April 2019 and July 2022 occurred in areas subject to the four most common zoning changes. Exhibit 2 summarizes these four changes. These four types of rezoning were also the most common when ranked by the total square footage of the lots on which new buildings were permitted, although their ranking differed across the two measures. For example, although the fourth largest number of permits were issued in places that changed from the LR3 zone to LR3(M), those permits accounted for the largest area on which new development occurred. Of all 34 million square feet of MHA-rezoned land on which new development occurred, 52.3 percent belongs to one rezone of LR3 to LR3(M).

Exhibit 2

Most Commonly Observed Four Rezones by Number of Building Permits and Lot Size

Rezone	Rezone Full Name	Count of Permits	Percent (%) of Total Permits	Lot Size (sq. ft.)	Percent (%)
RSL to RSL(M)	Residential Small Lot	418	18.4	3,169,433	9.1
LR1 to LR1(M)	Lowrise 1	386	17.5	2,302,597	6.6
LR2 to LR2(M)	Lowrise 2	329	14.9	2,373,404	6.8
LR3 to LR3(M)	Lowrise 3	271	12.3	18,243,500	52.3
All others		803	36.3	8,787,566	25.2
Total		2,207	100	34,876,500	100

LR = lowrise. M = tier indicating zoning code did not change. RSL = residential small lot.
Note: Percentages may not total 100 percent due to rounding.
Source: City of Seattle, Mandatory Housing Affordability Director's Report 2018

Exhibit 3 shows the four types of rezoning in which the largest number of net units were created. Here, a partial overlap exists with the earlier set, but certain commercial areas also appear due to the permitting of especially large developments in these areas.

Exhibit 3

Most Commonly Observed Four Rezones by Number of Net Units Created

Rezone	Rezone Full Name	Count of Permits	Percent (%)
DMC 240/290-400 to DMC 240/290-440	Downtown Mixed Commercial	3,188	12.0
LR3 to LR3(M)	Lowrise 3	1,887	7.1
LR2 to LR2(M)	Lowrise 2	1,301	4.9
C1-655 to NC3-75(M)	Commercial to Commercial/ Mixed use	1,142	4.3
All others (all fewer than 1,000 permits for one type of rezone)		18,996	71.1
Total		26,514	100

C = commercial. DMC = downtown mixed commercial. LR = lowrise. M = tier indicating zoning code did not change. NC = commercial/mixed use.
Note: Percentages may not total 100 percent due to rounding.
Source: authors' calculations.

The key takeaway is that the increased development capacity that most MHA rezonings created was relatively limited. Hence the "carrots" for developers—the development capacity increase—might not be big enough to outweigh their costs from the affordability payment or performance requirement.[10] The allowable FAR increases from 2.0 to 2.2 after MHA took effect, which means the height limit increases from 40 to 50 feet, adding another floor.[11] Other zoning code changes generally enjoy similar magnitude as LR3 does.

With a relatively modest density bonus, the "affordability tax" on developers is comparatively high. Housing officials estimate that the legislation will result in 17,000 more total housing units for 20 years than would be generated by development in its absence; 5,600 of those would be

[10] Appendix exhibit A2 shows an example of the specific building prototype for the most prevalent rezone change, LR3 to LR3(M) (Assefa et al., 2018).

[11] For LR3 inside Urban Villages.

rent- and income-restricted units. Importantly, estimates operated on the assumption that one-half of developers would choose to build affordable units on site, and one-half would choose to contribute to the affordable housing fund. However, in the first year that MHA was in full swing, an overwhelming majority of developers (98 percent) chose the payment option. This response suggests either that the performance option constitutes a large "affordability tax" on the developers or that the payment option levels were set too low.

Data and Analysis

To examine the effect of the MHA reforms on new home permitting and construction, two publicly available maps from Seattle GeoData (part of Open Data Seattle) are merged: the map of Residential Building Permits Issued and Final since 1990 and the city's MHA Zones map. The permit data are address-level geocoded and include information on the development site, permitting stage, plans for units created and demolished (by unit type), and other geographic data.

Then a panel dataset is constructed at the census block level over time. MHA zones do not always perfectly overlap with census block polygons, so a census block is categorized as an MHA block if at least 50 percent of its area falls within an MHA zone. Under this definition, only 11 percent (3,960 out of 35,279) of census blocks are within the MHA. MHA zones account for a very small share of census blocks, but many more blocks are geographically proximate to an MHA zone. Although slightly more than 1 in 10 census blocks has at least 50 percent of its area in an MHA zone, more than 31 percent are within a census tract that overlaps with an MHA zone somewhere within its boundaries. In this way, many census blocks are not upzoned, but they are in the neighborhood (census tract) of somewhere that *is* upzoned.[12]

Exhibit 4 presents population and socioeconomic summary statistics. The first three columns are block groups that were completely rezoned under MHA, those partially rezoned under MHA, and those that are fully non-MHA.[13] These block groups correspond roughly to the preexisting-built environment of Seattle neighborhoods, with MHA zones being in the most densely developed areas. The summary statistics change monotonically across all socioeconomic variables. Moving from the fully MHA block groups to fully non-MHA ones, people are fewer, housing units are fewer, incomes are higher, poverty is lower, and the percentage of owner-occupied housing is higher. Put differently, the fully MHA block groups—with a poorer population of more renters located around major commute lines—are precisely where housing affordability and displacement concerns are the greatest.

[12] The appendix has more details on the construction of the dataset.

[13] Note that no summary statistics by census block exist because population, income, and demographic variables at the block level are not available in 5-year ACS samples.

Exhibit 4

Summary Statistics by Census Block Group Mandatory Housing Affordability Status

	Fully MHA	Border MHA/ Non-MHA	Fully Non-MHA	All
Population	1,627.34	1,395.45	1,513.35	1,491.63
	(615.13)	(405.84)	(614.88)	(571.77)
Housing Units	867.31	601.72	568.19	599.35
	(420.51)	(215.70)	(243.76)	(266.20)
Median Income (2017 dollars)	66,810.58	93,625.62	96,007.03	93,320.46
	(26,051.03)	(37,717.84)	(41,502.25)	(40,300.85)
Median House Value (Thousands of 2017 dollars)	464.16	567.94	450.99	482.63
	(157.12)	(232.88)	(245.52)	(242.58)
Share College+	0.59	0.6	0.44	0.49
	(0.19)	(0.19)	(0.22)	(0.22)
Share in Poverty	0.17	0.1	0.08	0.09
	(0.16)	(0.09)	(0.08)	(0.10)
Share Owner-Occupied	0.23	0.59	0.68	0.63
	(0.15)	(0.21)	(0.26)	(0.27)
Share White	0.6	0.67	0.62	0.63
	(0.21)	(0.23)	(0.20)	(0.21)
Observations	107	365	948	1,420

MHA = Mandatory Housing Affordability.

Notes: Summary statistics at census block group (CBG) level, according to 2013–17 American Community Survey 5-year estimates. Means of CBG listed for each column (for example, mean of CBG median income) and standard deviation in parentheses.

Source: Authors' analysis via 2013–17 American Community Survey 5-year data

Fully non-MHA block groups are not a suitable control group for fully MHA block groups. As such, analysis is limited to the partial MHA block groups, which are defined as "border" MHA blocks for identification. One drawback of the border analysis is that although fully MHA block groups (column 1) do not have an adequate non-MHA comparison, these areas saw the most intense upzoning (the M1 and M2 zones). In effect, the 'treatment' is stronger in areas that lack a good control group and weaker in areas where an adequate control exists.

Empirical Findings

Consider two hypothetical outcomes of the policy change. The "first best" outcome is an increase in overall supply in the MHA zones. With the mandatory affordability requirements, this increase in overall supply also means an increase in affordable units. At the other extreme, if the reform is not designed correctly, the change in developer incentives could deter new construction both inside and outside MHA zones. The success of MHA rests on developers' response to a cost-benefit tradeoff. On the one hand, MHA allows developers to build and sell more units; on the other hand, each MHA-zoned project comes with a "developer tax" from the affordable housing requirement (either payment or performance).

The main empirical finding suggests that developers behaved strategically after the reform took effect, which this tradeoff guides.[14] In particular, while housing production did not decline overall, there was strong *strategic substitution* of new construction away from MHA zones. This policy outcome can be considered a middle ground between the initial hypothetical outcomes: MHA enactment did not halt all new development, but new units were not built where intended.

A difference-in-differences regression is estimated at the census block level to quantify the substitution effect. Exhibits 5 through 7 show the generalized difference-in-differences result on different dependent variables. Estimates for key coefficient β_3 are on the first row.[15]

Exhibit 5

Extensive Margin: At Least One Permit Is Issued, Block by Month

	(1)	(2)	(3)	(4)	(5)	(6)
Post X MHA	– 0.004***	– 0.004***	– 0.004***	– 0.005***	– 0.005***	– 0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Post	– 0.000	– 0.000				
	(0.000)	(0.000)				
MHA Block	0.009***	0.005***		0.005***		
	(0.001)	(0.001)		(0.001)		
R–squared	0.002	0.007	0.028	0.003	0.023	0.022
DV Mean	0.002	0.002	0.002	0.007	0.007	0.007
Geo. Sample	All Tracts	All Tracts	All Tracts	Border Tracts	Border Tracts	Border BlkGrp
YearMo FE			Yes	Yes	Yes	Yes
Geo. FE		Tract	Block	Tract	Block	Block
Observations	3527900	3527900	3527900	1049600	1049600	862700

****p < .01.*

BlkGrp = block group. DV = dependent variable—in this table, whether at least one permit is issued at the block-month level. FE = fixed effects. Geo. FE = geographic fixed effects. Geo. Sample = geographic sample. MHA = Mandatory Housing Affordability. Mo = month.

Notes: Standard errors are in parentheses. Standard errors clustered at census tract. Sample limited to at most 5 years before MHA.

Source: Authors' analysis

Exhibit 6

Number of Permits, Block by Month (1 of 2)

	(1)	(2)	(3)	(4)	(5)	(6)
Post X MHA	– 0.007***	– 0.007***	– 0.007***	– 0.009***	– 0.009***	– 0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Post	0.000*	0.000*				
	(0.000)	(0.000)				
MHA Block	0.015***	0.011***		0.012***		
	(0.002)	(0.002)		(0.002)		
R–squared	0.002	0.005	0.025	0.002	0.022	0.020
DV Mean	0.003	0.003	0.003	0.011	0.011	0.010

[14] Appendix exhibits A4 and A5 present summary statistics on the average monthly number of net units and value in MHA versus non-MHA zones *in aggregate*, before and after the policy change.

[15] See the appendix for the formal difference-in-differences equation 1.

Exhibit 6

Number of Permits, Block by Month (2 of 2)

	(1)	(2)	(3)	(4)	(5)	(6)
Geo. Sample	All Tracts	All Tracts	All Tracts	Border Tracts	Border Tracts	Border BlkGrp
YearMo FE			Yes	Yes	Yes	Yes
Geo. FE		Tract	Block	Tract	Block	Block
Observations	3527900	3527900	3527900	1049600	1049600	862700

**p < .10. ***p < .01.*

BlkGrp = block group. DV = dependent variable—in this table, the number of permits at the block-month level. FE = fixed effects. Geo. Sample = geographic sample. Geo. FE = geographic fixed effects. MHA = Mandatory Housing Affordability. Mo = month.

Notes: Standard errors are in parentheses. Standard errors clustered at census tract. Sample limited to at most 5 years before MHA.

Source: Authors' analysis

Exhibit 7

Number of New Units, Block by Month

	(1)	(2)	(3)	(4)	(5)	(6)
Post X MHA	– 0.069**	– 0.069**	– 0.069**	– 0.057***	– 0.057***	– 0.065***
	(0.030)	(0.030)	(0.030)	(0.018)	(0.018)	(0.016)
Post	– 0.000	– 0.000				
	(0.001)	(0.001)				
MHA Block	0.189***	0.120***		0.119***		
	(0.026)	(0.016)		(0.013)		
R–squared	0.001	0.001	0.014	0.001	0.016	0.015
DV Mean	0.023	0.023	0.023	0.052	0.052	0.041
Geo. Sample	All Tracts	All Tracts	All Tracts	Border Tracts	Border Tracts	Border BlkGrp
YearMo FE			Yes	Yes	Yes	Yes
Geo. FE		Tract	Block	Tract	Block	Block
Observations	3527900	3527900	3527900	1049600	1049600	862700

*** p < .05. ***p < .01.*

BlkGrp = block group. DV = dependent variable, in this table it is the number of new units at the block-month level as indicated in the title of the table. FE = fixed effects. Geo. FE = geographic fixed effects. Geo. Sample = geographic sample. MHA = Mandatory Housing Affordability. Mo = month.

Notes: Standard errors are in parenthesis. Standard errors clustered at census tract. Sample limited to at most 5 years before MHA.

Source: Authors' analysis

Exhibits 5 through 7 tables are organized in six columns. The first three columns use the sample of all census tracts, with no fixed effects (column 1), tract fixed effects (column 2), and year-month and block fixed effects (column 3). To get to the causal effect of MHA, the analysis is limited to a quasi-experimental sample in columns 4 through 6 for estimating equation 1.[16] In particular, the sample of "Border Tracts," is used, which are tracts that straddle an MHA boundary. This sample eliminates tracts that are entirely within MHA zones and entirely outside of MHA zones. A total 397 tracts exist, and 118 are border tracts by this study's definition. The estimation is at the census block level, which is a finer geography than census tracts. All the variation in the "Post X MHA" coefficients comes from the comparison within neighborhoods, where some blocks in that neighborhood are upzoned and others are not.

[16] See the appendix for details regarding equation 1.

If the MHA upzoning program worked as hypothesized, much more permitting activity would transpire, and more new supply would exist in the upzoned blocks within a border tract. However, the opposite occurs—the development is happening more in blocks not upzoned within the same neighborhood.

The identifying assumption is that, within a tract, the growth potential of housing demand is the same whether the housing project falls onto either side of the MHA line. A tract is a fine geographic level that makes this assumption reasonable. Columns 4 and 5 use the quasi-random sample of border tracts, with tract and year-month fixed effects (column 4) and block and year-month fixed effects (column 5). Column 6 zooms into the finer geographic level of block groups and uses the finer block groups at the border (partially MHA), with year-month and block-fixed effects.

The three variables that measure quantity response are whether a permit was issued at all (exhibit 5), the number of permits issued (exhibit 6), and the net units permitted (exhibit 7). These three exhibits examine housing supply activity in Seattle's census blocks from 5 years prior to Mandatory Housing Affordability through the most recent data (April 2022). All three exhibits are set up the same way: Columns 1, 2, and 3 examine effects for all Seattle, adding fixed effects across the columns, and columns 4 through 6 limit the sample to areas on the MHA borders.

The analysis finds quantitatively strong and consistent empirical evidence for substitution of supply away from MHA zones. Across all specifications on all three quantity-dependent variables, the number of permits and the number of units permitted per month decreases in MHA blocks after the reform takes effect.

Exhibit 5 examines whether at least one permit was issued in a census block, finding that MHA rezonings decreased the likelihood of a permit being issued, particularly at the border tracts. The dependent variable is defined as an indicator variable that equals 1 if at least one permit is issued in that block-month or 0 if none are issued. The estimate of -.004 on "Post X MHA" is very consistent across all specifications and the two geographic samples. The magnitude is economically meaningful. It is twice as large as the dependent variable mean in the full sample of all tracts (the first three columns).[17]

Interestingly, as the analysis moves to the finer geography of border tracts, the (absolute) magnitudes are bigger, which suggests that the substitution action is happening in the border tracts. That is, permitting activity is switching *within* and not *across* neighborhoods. Notice also that the dependent variable means an increase from 0.002 in columns 1 through 3 (the all tracts sample) to 0.007 in columns 4 through 6 (the border tract sample). One could interpret this increase as an annual likelihood of receiving a permit increasing from 2.4 percent overall to 8.4 percent for border-MHA neighborhoods, indicating that throughout this period (including 5 years before MHA), much more housing is permitted in these MHA-border neighborhoods than in either fully non-MHA or fully MHA areas. These results are consistent with developers deciding first to build in a certain neighborhood, then strategically choosing to build on parcels in that

[17] Put differently, this magnitude means that after MHA goes into effect, an MHA block is differentially 4.8 percent less likely to receive a permit in a given year (-0.004 x 12 months) than a non-MHA block in that same timeframe. On average, the likelihood a block receives a permit on an annual basis is about 2.4 percent (0.002 x 12 months), which is why this magnitude could be described as both large and economically meaningful.

neighborhood not subject to the MHA's affordability requirements. This strategic behavior [suggests that the potential benefits accruing to developers from the MHAs upzoning component failed to outweigh the costs to developers of the affordability requirements.

Exhibit 6 looks at the number of permits issued, again finding a reduction driven by MHA rezonings. The magnitudes are small (-0.007 per month), but the base is also very small (0.003), so economically, the effect is quite large. Columns 1 and 2 show that MHA blocks generally see more permitting activity throughout the sample period. Column 3 adds block and month-fixed effects, and the point estimate is unchanged, meaning that permitting differentially decreases in MHA zones. The final column limits the sample only to those *census tracts* that at least partially intersect an MHA zone. Because tracts are much larger than blocks, this specification removes all control census blocks that are far from an MHA zone, thus potentially differing unobservably from treatment areas. The point estimate is unchanged and even a bit stronger, but it remains statistically significant. The overall permitting activity tended to move across MHA boundaries after the policy took effect.

The results for the number of new units created is very similar and robust. This evidence implies that substituting behavior occurs along the border of MHA zones, which suggests strategic developer behavior is at play. Developers want to profit from the growing demand in these MHA zones, but the construction cost is too high after the reform. By moving to the bordering blocks, they avoid those costs but still enjoy the spillover from in-demand neighborhoods.

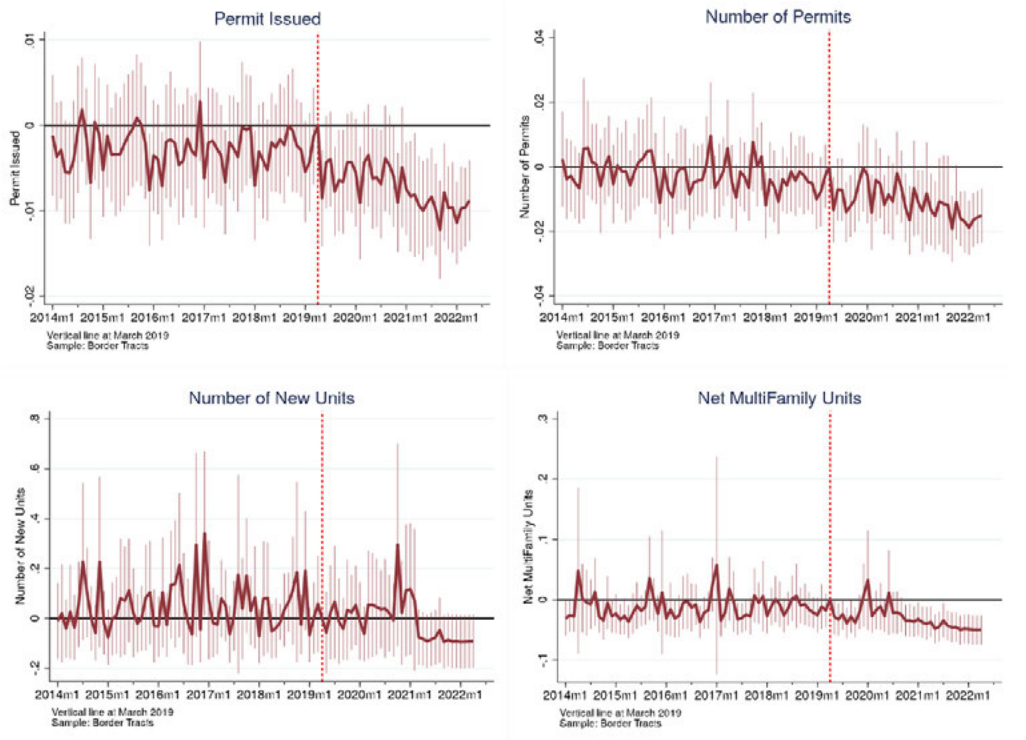
Event Study Plots

The four event study plots use the three variables previously discussed and the net change in multifamily units to illustrate these findings visually (exhibit 8). Column 5 from the three quantity tables in exhibits 5 through 7 is regarded as the preferred estimates for the event study plots. Even though column 6 arguably represents the finest geography, column 5 provides the finest data for the socioeconomic variables. However, these plots should tell the same story using either of the estimates. The coefficient estimates are similar across columns 5 and 6; if anything, column 5 underestimates the true effect. Exhibit 8 plots the relative treatment effect of MHA zones, because the non-MHA areas are normalized to 0.[18]

[18] The red bands are 95-percent confidence intervals around the point estimates. The x-axis is recentered around the "event date" of April 2019, with the green vertical line as the partition for pre and post-reform.

Exhibit 8

Event Study Results



Source: Authors' analysis based on Seattle permits data

These plots show that MHA enactment in April 2019 was associated with a lower likelihood of permit issuance in MHA zones (top left), fewer permits being issued per block (top right), slightly fewer units permitted overall (bottom left), and significantly fewer multifamily units permitted (bottom right). This final result of fewer multifamily units is particularly worrying, considering that a major goal of MHA was to encourage dense multifamily development.

Common striking patterns emerge from comparing the four plots. For all four event studies, housing production activity gradually declines in the treated MHA zones after the reform. The substitution is expected to continue, as the authors obtain more data for newer months (currently, the data are updated until April 2022).

Conclusion

This article provides empirical evidence on whether upzoning leads to new home construction if strings are attached to affordable housing. A difference-in-differences estimation is performed using a within-neighborhood variation, where some census blocks in that neighborhood are upzoned—and subject to affordable housing requirements—whereas others are not. The hypothesis was that much more permitting activity would occur in the upzoned blocks, because the benefits of

being able to build more densely was intended to outweigh the costs of any inclusionary zoning requirements. However, the opposite is observed in the data. A differentially larger supply response is found in blocks where the zoning has not actually changed and where affordable housing has not been mandated. Unfortunately, this result runs contrary to the program's dual goals of increasing overall housing supply in general and affordable housing units in particular.

Examining the locations of permitting activity, this article finds new construction is sited just across MHA lines at very fine geographies. Developers appear to be strategically substituting away from plots and parcels subject to the MHA. This result is interpreted as evidence of the MHA's cost to developers outweighing its benefits, especially in MHA border neighborhoods. Specifically, the MHA's affordability requirements act as a "tax" on developers, which appears to dominate potential gains from higher-density projects.

However, several caveats must be mentioned. First, the program is in its infancy. These data allow for examining only the first 3 years of MHA, 2 years of which were affected by COVID-19. The pandemic likely negatively affected both the demand for multifamily housing and the speed of the city's housing permitting process. It may also have shifted the demand for housing across Seattle's geography, given changing patterns of working from home—and here in Seattle, perhaps for the 5 to 10 years or even longer. Certainly, policymakers did not account for the pandemic in their initial efforts to pair the amount of MHA's upzoning with the number of its affordability requirements. Second, the MHA border block design has drawbacks. By design, MHA blocks near the border were zoned for smaller increases in density than areas farther away from an MHA boundary. This design necessitates a tradeoff between examining where the reform's treatment is more powerful (the interior, fully MHA neighborhoods) versus where its effects can be more precisely estimated (the border, partial MHA neighborhoods). In choosing the latter, the authors acknowledge that the estimates are potentially downward biased; MHA's effects may be more positive in the interior areas. Regardless, although the results do not speak to how MHA affected the interior, fully MHA and higher-density neighborhoods compared with a counterfactual, it is worth noting that permitting did continue in these areas in an absolute sense. Third, MHA may have large noneconomic or difficult-to-quantify benefits. For example, given the size of the reform and the consensus it took to implement it, MHA has provided Seattle a potential springboard to expand upzoning in magnitude and geography—one that policymakers hope to use. These benefits may be institutional or political in nature. Although such institutional and political benefits are outside the scope of this economic analysis, they may be quite significant.

How similar inclusionary housing programs will function outside Seattle remains ambiguous. The findings are a function not only of the size of the density bonus provided and the affordability mandate Seattle imposed but also the shape of housing demand in Seattle and the city's room for development outside the rezoned areas. Each of these factors will vary across different cities and across time. Even so, the findings point to the potential for unintended consequences when density bonuses are too small, or affordability mandates are too onerous. In the future, policymakers are recommending that pursuing similar inclusionary housing strategies implement stronger upzonings (larger density bonuses) and lighter, more flexible affordability mandates.

Appendix

Data and Econometrics

To examine the effect of the Mandatory Housing Affordability (MHA) reforms on new home permitting and construction, this analysis merges two publicly available maps from Seattle GeoData (part of Open Data Seattle): The map of Residential Building Permits Issued and Final since 1990 and the city's MHA Zones map. The permit data are address-level geocoded and include information on the development site, permitting stage, plans for units created and demolished (by type of unit), and other geographic data. The permitting data also include information on the lot size and the estimated value of the project, from which one can infer the density of the final project (on a units per acre basis) and obtain a proxy of the overall market value. The MHA map contains MHA zone polygons, with their pre and post zoning designation.

The authors then construct a panel dataset at the census block level over time. MHA zones do not always perfectly overlap with census block polygons, so a census block is categorized as an MHA block if at least 50 percent of its area falls within an MHA zone. Only 11 percent (3,960 out of 35,279 census blocks) are within the MHA.[19] MHA zones account for a very small share of census blocks, but many more blocks are geographically proximate to an MHA zone. Whereas slightly more than 1 in 10 census blocks have at least 50 percent of its area in an MHA zone, more than 31 percent of census blocks are within a census tract that overlaps with an MHA zone somewhere within its boundaries. In this way, many blocks are not upzoned, but somewhere in their neighborhood will be.

Regression Equation

Equation 1 in our econometric analysis is estimated, where t is month, i is MHA status of the census block (or block group in column 6 specification across all results tables from exhibits 5 through 7), and γ and δ are, respectively, month and block (or tract) fixed effects.

Equation 1

$$Y_{i,t} = \alpha + \beta_1 \cdot post_t \times MHA_i + \beta_2 \cdot post_t + \beta_3 \cdot MHA_i + \gamma_t + \delta_i + \varepsilon_{i,t} \quad (1)$$

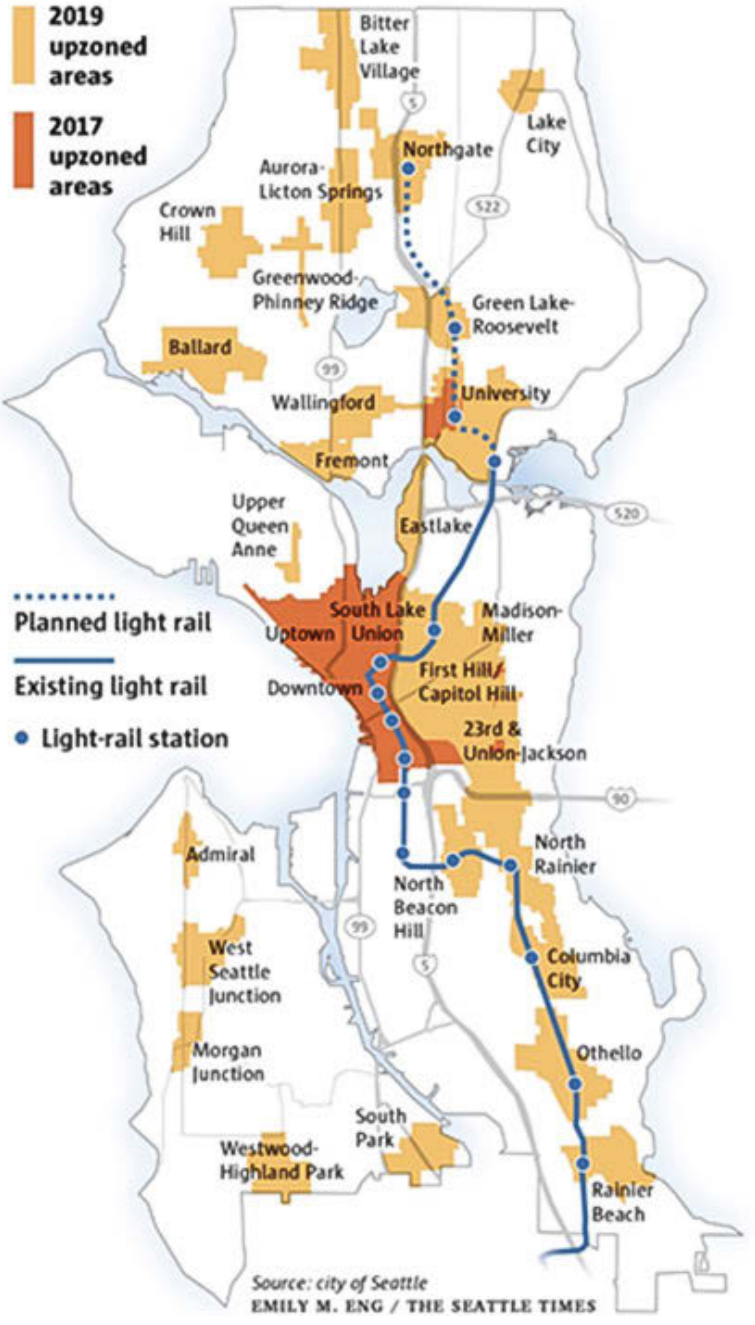
The analysis is limited to 5 years of preperiod (January 2014 to March 2019) and 3.5 years of post-period (April 2019 to April 2022). Using the full preperiod back to January 2010 gives similar results, as appendix exhibit A3 shows. A block is "Treated" if it is in the designated MHA zone, whether entirely or partially. "Post" is a dummy variable that equals to 1 if it is after April 2019. The key coefficient of interest is β_3.

Exhibit A1 shows the map of MHA zones in two waves. Exhibit A2 provides a visual illustration of MHA change for one of the most commonly observed zone changes in a lowrise 3 zone.

[19] For reference, 84 percent of blocks do not overlap with the MHA zones at all, whereas about 4 percent of blocks have between 0 and 50 percent MHA coverage (and are, thus, categorized as non-MHA under this definition). Of the blocks that are categorized as MHA, more than 80 percent are entirely contained within an MHA. This categorization of MHA blocks is conservative so as to limit false positives of permits popping up near, but not within, MHA designated areas.

Exhibit A1

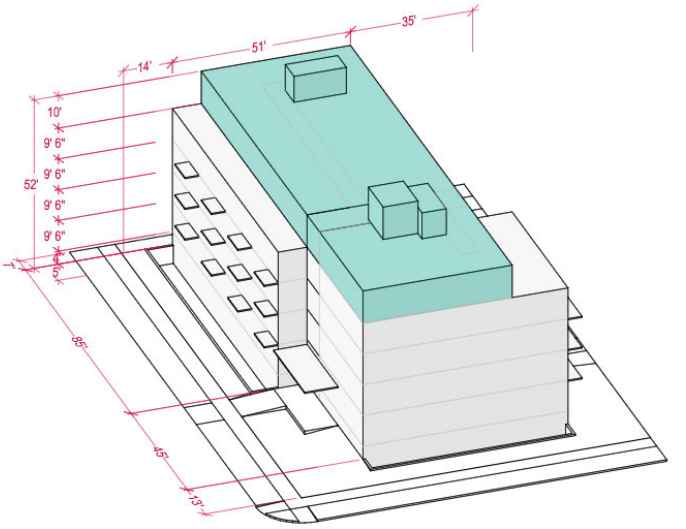
Map of Mandatory Housing Affordability Zones



Source: City of Seattle

Exhibit A2

Illustration of Lowrise 3 Zoning in a Large Site Under Mandatory Housing Affordability

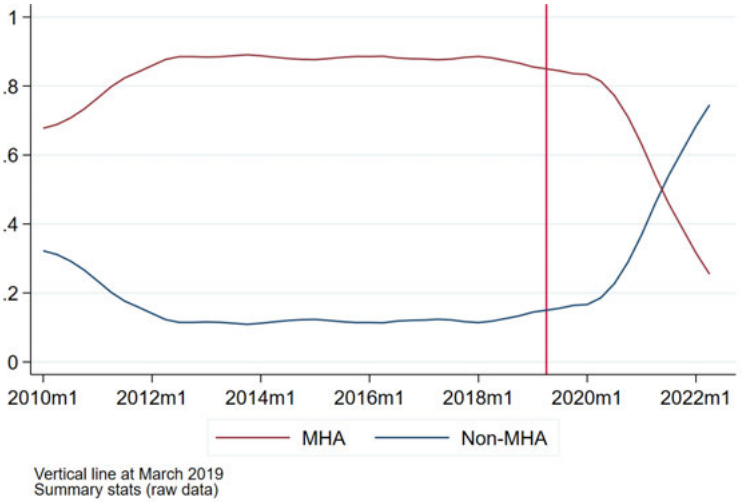


Source: City of Seattle, Office of Planning and Community Development

Exhibit A3 plots the share of net units per month by MHA status. It shows preliminary evidence that construction of new units is slowing down in MHA areas after the mandate went into effect. Exhibits A4 and A5 provide summary statistics on the number of net units and values of permits pre- and post-MHA, in MHA versus non-MHA areas.

Exhibit A3

Share of Net Units per Month, by Block Mandatory Housing Affordability Status



MHA = Mandatory Housing Affordability.
Source: Authors' analysis

Exhibit A4

Number of Net Units, Mean, and Standard Deviation

	Jan 2010–Apr 2019	After Apr 2019
Non-MHA	85.4	104.2
	(82.8)	(98.8)
MHA	670.6	466.6
	(508.0)	(495.9)

MHA = Mandatory Housing Affordability.

Source: Authors' analysis

Exhibit A5

Value (in $1,000), Mean, and Standard Deviation

(In $1,000)	Jan 2010–Apr 2019	After Apr 2019
Non-MHA	22,433	28,895
	(19,401)	(20,300)
MHA	121,538	89,217
	(123,860)	(110,165)

MHA = Mandatory Housing Affordability.

Source: Authors' analysis

Appendix exhibits A6 and A7 show the specific height, density, and floor area ratio limit changes for commonly observed types of rezones.

Exhibit A6

Mandatory Housing Affordability Development Capacity Change in Lowrise Zones

Zone			FAR Limit		Height Limit		Density Limit	
Pre MHA	Post MHA	Housing Type	Pre MHA	Post MHA	Pre MHA	Post MHA	Pre MHA	Post MHA
Lowrise 1	Lowrise 1 (M)	Cottage	1.1	1.1	18	22	1/1,600	No Limit
		Townhouse	1.2	1.1	30	30	1/1,600	1/1,350
		Rowhouse	1.1	1.1	30	30	1/1,600	1/1,350
		Apartment	1.0	1.1	30	30	1/2,000	No Limit
Lowrise 2	Lowrise 2 (M)	Cottage	1.1	1.3	18	22	1/1600	No Limit
		Townhouse	1.3	1.3	30	40	No Limit	No Limit
		Rowhouse	1.2	1.3	30	40	No Limit	No Limit
		Apartment	1.3	1.3	30	40	No Limit	No Limit
Lowrise 3	Lowrise 3 (M)	Cottage	1.1	1.8	18	22	1/1,600	No Limit
		Townhouse	1.4	1.8	30	40	No Limit	No Limit
		Rowhouse	1.3	1.8	30	40	No Limit	No Limit
		Apartment	1.5	1.8	30	40	No Limit	No Limit

FAR = floor area ratio. M = tier indicating zoning code did not change. MHA = Mandatory Housing Affordability.

Source: Policy Proposal Director's Report, City of Seattle

Exhibit A7

Mandatory Housing Affordability Development Capacity Change in Residential Small Lot Zones

Zone			FAR Limit		Height Limit		Density Limit	
Pre MHA	Post MHA	Housing Type	Pre MHA	Post MHA	Pre MHA	Post MHA	Pre MHA	Post MHA
Residential small lot (RSL)	RSL (M)	RSL	None	0.75	25	30	1/2,500	1/2,000
		Tandem RSL	None	0.75	18	30	1/2,500	1/2,000
		Cottage RSL	None	0.75	18	30	1/1,600	1/2,000

FAR = floor area ratio. M = tier indicating zoning code did not change. MHA = Mandatory Housing Affordability.
Source: Policy Proposal Director's Report, City of Seattle

Acknowledgments

The authors thank the New York University Furman Center for Real Estate Research and The Pew Charitable Trusts for research funding. The authors also thank Todd Baker for providing excellent research assistance.

Authors

Jacob Krimmel is an economist at the Federal Reserve Board. Betty Wang is an assistant professor in economics in the Business School at the University of Hong Kong.

References

Assefa, Sam, Kathy Nyland, Steve Walker, and Nathan Torgelson. 2018. "Mandatory Housing Affordability (MHA) Citywide Implementation Director's Report and Recommendation." https://www.seattle.gov/Documents/Departments/HALA/Policy/Directors_Report_MHA_Citywide.pdf.

Glaeser, Edward, and Joseph Gyourko. 2018. "The Economic Implications of Housing Supply," *Journal of Economic Perspectives* 32 (1): 3–30.

Gyourko, Joseph, Jonathan S. Hartley, and Jacob Krimmel. 2021. "The Local Residential Land Use Regulatory Environment Across U.S. Housing Markets: Evidence From a New Wharton Index," *Journal of Urban Economics* 124: 103337.

Additional Reading

Asquith, Brian J., Evan Mast, and Davin Reed. 2021. ""Local Effects of Large New Apartment Buildings in Low-Income Areas," *The Review of Economics and Statistics* 105 (2): 1–46.

Glaeser, Edward L., Joseph Gyourko, and Raven Saks. 2005. "Why is Manhattan So Expensive? Regulation and the Rise in Housing Prices," *The Journal of Law and Economics* 48 (2): 331–369.

Hsieh, Chang-Tai, and Enrico Moretti. 2019. "Housing Constraints and Spatial Misallocation," *American Economic Journal: Macroeconomics* 11 (2): 1–39.

Schleicher, David. 2021. "Exclusionary Zoning's Confused Defenders," *Wisconsin Law Review*: 1315–1372.

Trounstine, Jessica. 2020. "The Geography of Inequality: How Land Use Regulation Produces Segregation," *American Political Science Review* 114 (2): 443–455.

Refereed Papers

Refereed papers that appear in Cityscape *have undergone a thorough and timely double-blind review by highly qualified referees. The managing editor reviews submitted manuscripts or outlines of proposed papers to determine their suitability for inclusion in this section. To submit a manuscript or outline, send an e-mail to* cityscape@hud.gov.

Seeing the Big Picture with Multisector Data: Factors Associated with Exiting from Federal Housing Assistance by Exit Type

Alastair I. Matheson
Danny V. Colombara
Public Health – Seattle & King County
University of Washington

Annie Pennucci
Tyler Shannon
King County Housing Authority

Andy Chan
Seattle Housing Authority

Megan Suter
Amy A. Laurent
Public Health – Seattle & King County

This work was funded by the U.S. Department of Housing and Urban Development under funding opportunity FR-6400-N-58.

Abstract

The U.S. Department of Housing and Urban Development (HUD) has a goal of increasing the proportion of households that exit HUD-supported housing for positive reasons, but little is known about factors associated with different exit types. Learning which tenants are likely to leave for positive or negative reasons can inform policies and programs that aim to encourage positive exits.

The authors linked data from two large public housing authorities (PHAs) to an existing multisector data system that contains behavioral health, homeless services, and Medicaid claims data. The authors used logistic regression to examine factors associated with exiting from housing assistance and used multinomial regression to explore factors associated with exit type, both at the head-of-household level.

Abstract (continued)

The analysis consisted of 8,266 exits: 2,610 negative, 4,538 neutral, and 1,118 positive. Male gender, homelessness within the previous 3 years, and having a behavioral health crisis event were all associated with increased odds of exit. Being older than age 25, increased time in housing (more than 6 years), larger household size, having a single-caregiver household, and having a disability were all associated with decreased odds of exit. Being of working age (25–61) was associated with positive exits but not negative exits. Heads of household in single-caregiver households, who had disabilities, experienced behavioral health crisis events, or had recent emergency department visits were all more likely to have negative exits and less likely to have positive exits compared with neutral exits.

Linked administrative datasets offer PHAs a means of routinely obtaining information about physical or mental health conditions, prior homelessness, or other factors that could influence outcomes for their tenants. This approach can serve as a model to PHAs for cross-sector partnerships with health departments and other groups interested in the health and well-being of housing assistance recipients.

Introduction

Housing affordability continues to be a significant challenge facing many American households. Nearly half of all renters are housing-cost burdened, defined as spending 30 percent or more of their income on housing costs (Martinez, 2022). Federal housing assistance, primarily in the form of housing choice vouchers (HCVs) or public housing (PH), reaches only 20 to 25 percent of eligible low-income households, leaving many people struggling to afford stable housing (Turner and Kingsley, 2008). One possible approach to ensuring as many people as possible get assistance is to create pathways for people in public housing so that they can become economically self-sufficient and no longer require public housing support. To that end, in 2019, HUD set a goal of increasing the proportion of households that exit HUD-supported housing for positive reasons (HUD, 2019).

To support that goal, public housing authorities (PHAs) must be able to identify which households are likely to experience positive or negative exits. However, grouping reasons for exiting housing assistance into positive and negative categories is not without challenges. First, it assumes that positive exits are more likely to yield better outcomes and are more conducive to economic self-sufficiency. However, as noted below, the issue has not been thoroughly tested. Second, there is no standardized process whereby PHAs collect reasons for exit, making comparisons across PHAs difficult. Third, PHAs may lack sufficient information to confidently categorize an exit as positive or negative, inflating the use of a neutral category.

If those difficulties can be overcome, then learning which tenants are likely to leave for positive or negative reasons could inform policies and programs that aim to encourage positive exits. However, it may not be feasible for PHAs to use predictors of exit type in a daily operational sense—for example, identify and target specific individuals or households at risk of negative exits based on a statistical model. Although PHAs routinely collect a relatively limited set of demographic, income,

and address information, they typically have limited access to data on other topics or limited capacity to analyze it in a way that would provide a comprehensive view of the people they serve. When additional contextual information is collected, it often takes the form of one-off surveys, research projects, or programmatic activities that do not cover all residents. In addition, it may be unethical or illegal under the Fair Housing Act and state legislations to target services based on such predictors as race and gender, even if they are found to be associated with exit types.

The challenges are surmountable. Outreach and services that aim to facilitate positive exits and reduce negative exits are practicable on a programmatic level for certain predictors. For example, households entering assistance from referral pathways whose eligibility criteria include homelessness or having a disability could be offered housing navigation and stability support and connected with other resources and care available in the community. If household composition is related to exit type, then services and outreach could be tailored appropriately. Linking administrative data from other sectors such as health care could lead to a better understanding of complex individual needs, provide insight into circumstances prior to exit, offer an opportunity to assess post-housing assistance outcomes, and have the potential to be more sustainable than PHA project-driven data collection. Successful cross-sector data linkages related to housing have previously examined physical health, behavioral health, criminal activity, and income (Actionable Intelligence for Social Policy, 2015; Albertson et al., 2020; Chetty, Hendren, and Katz, 2016; Ellen, Dragan, and Glied, 2020; Laurent et al., 2020). However, most examples are limited in that they linked across only one nonhousing sector or were one-off linkages of administrative data.

This article describes the results of a project that linked PHA data from a large, urban setting to an existing integrated data hub for the purposes of examining exits from HUD-housing assistance. The overall project, called Housing and Urban Development Health, Economic and Residential Stability (HUD HEARS), addressed questions related to both exit events and outcomes following exit. This article focuses on the linkage process, factors associated with exit and exit type, potential implications for policies and programs, and the sustainability of cross-sector data work.

Exits from Housing Assistance: What Is Already Known

Exits Overall

Of the limited literature on exits from housing assistance, researchers have focused primarily on two outcomes: duration of housing assistance and factors associated with exit from housing assistance. Several studies used panel data or HUD data systems such as the Multifamily Tenant Characteristics System and the Tenant Rental Assistance Certification System's databases to explore the topic, typically using survival analysis methods (Ambrose, 2005; Cortes, Lam, and Fein, 2008; Dantzler and Rivera, 2019; Freeman, 2005; Geyer, Dastrup, and Finkel, 2019; Hungerford, 1996; Kang, 2020; Lubell, Shroder, and Steffen, 2003; McClure, 2018; Olsen et al., 2005). Across the studies there was general agreement that increased age, female gender, non-White race, disability, and tighter rental markets were all associated with lower likelihood of exiting from housing. In their study of New York City residents, Bahchieva and Hosier (2001) found somewhat similar findings: that younger and White residents had higher exit rates. And even though that housing

market may not be typical of others in the United States, it has some similarities to this study setting as a high-cost, urban environment.

Larger households were generally found to be more likely to exit, but evidence was mixed on the presence of children. Ambrose (2005) found increased likelihood of exit among larger households but only for project-based vouchers, whereas Cortes, Lam, and Fein (2008) found decreased exits—especially if younger children were present. Geyer, Dastrup, and Finkel (2019) found that the introduction of small-area fair-market rents increased the probability of exit and shortened the median time to exit. Among Veterans Affairs Supportive Housing (VASH) participants, women were more likely to still be housed after 1 year than were men (Kasprow et al., 2000), but having a service-connected disability was associated with exiting (Montgomery et al., 2017).

Dantzler (2021) also used the Panel Study of Income Dynamics to examine factors associated with exit but made a case that the policy setting should not be ignored. Although some demographic findings reinforced earlier studies—with older age and longer time in housing being associated with remaining in housing assistance—the largest effect was exit after welfare reforms were introduced in 1996.

Exit Types

Little in the published literature focuses on positive or negative exits. HUD's and states' Family Self-Sufficiency (FSS) programs might be expected to lead to positive exits, and Anthony (2005) found that younger adults, single participants, those without children, those with high school diplomas, and those who acquired more skills during the training were all more likely to succeed in the FSS program and exit housing assistance. Rohe, Webb, and Frescoln (2016) found a small effect of completion of the program on positive exits. However, the sample sizes in both evaluations were small and the specific nature of the FSS programs in question limits generalizability to the wider population receiving housing assistance.

Studies that concentrated on negative exits examined who was at risk of eviction or lease violation. Among residents of Mercy Housing—a large affordable-housing organization—increased age, Asian race, and living in senior or supported housing versus family housing were all associated with reduced risk of lease violations, whereas female gender, Black or other race versus White, being a larger household, and increased income were all associated with increased risk of lease violations (Brisson and Covert, 2015). Because of the counterintuitive nature of the finding regarding income, Brisson and Covert (2015) conducted further analyses and found that an increase in stable benefits was associated with decreased risk of a lease violation but that increases in work income, variable benefits income, and other income were all related to slightly higher likelihood of experiencing lease violations. Richter et al. (2021) explored who received eviction *orders* compared with only eviction *filings*. Though most of their findings were for all landlords combined, public housing and nonprofit organizations were the landlords in more than a quarter of all filings; and an unknown number of residents with private landlords would have been receiving HCVs. The authors found that male gender, White race versus Black, having more children, and receiving an eviction filing in the past were all associated with eviction *orders* versus receiving only eviction *filings*. Receiving an eviction *filing* by a public housing entity or nonprofit organization carried a lower risk of getting an

eviction *order*—relative to a filing by a private entity. Among VASH participants, male gender, older age, having alcohol and/or drug disorders, and having used acute care were all associated with increased levels of eviction (Montgomery and Cusack, 2017).

Just one study examined differences between those with positive exits and those with negative exits (Smith et al., 2014). There was no difference between positive and negative exits in terms of age, gender, or household size. At the end of the study, those with positive exits were more likely to be married, to have ever been married, and to be Hispanic, and those with negative exits were more likely to be non-Hispanic Black. Those with positive exits were less likely to have ever been homeless, less likely to live in overcrowded housing, and less likely to have a high housing-cost burden.

Methods

Setting and Participants

The authors included households served by the King County Housing Authority (KCHA) and the Seattle Housing Authority (SHA) from 2012 to 2019 in King County, Washington. Reasons for exit were available for SHA from 2012 onward and for KCHA from 2016 onward. The research was approved by the Washington State Institutional Review Board.

SHA and KCHA serve clients situated predominantly in an urban or suburban setting, though King County also encompasses a large rural area. Seattle and the surrounding area experienced huge increases in population, growing at two to three times the national average of 7.4 percent from 2010 to 2020 (Office of Planning and Community Development, 2021). That population boom has been accompanied by a large increase in wealth, with median annual income increasing from $60,000 in 2010 to $102,000 in 2019 in Seattle and from $66,000 to $102,000 in King County as a whole (not adjusted for inflation) (Public Health – Seattle & King County, 2022). Both the population and income changes have put pressure on the housing market, leading to an average rent increase of 43 percent from 2012 to 2017 (Regional Affordable Housing Task Force, 2019). The tight rental market has been accompanied by increases in homelessness—with the Seattle/King County Point-in-Time count growing by 50 percent since 2007—and greater demand for housing assistance, which is available to only one in four eligible households (HUD, 2022b).

Both KCHA and SHA are Moving to Work (MTW) PHAs. MTW is a program that gives PHAs greater flexibility in the ways they use federal funding, with the idea that they generate innovative ideas and programs that can be rolled out nationally (HUD, 2022a). MTW agencies may be better placed to respond to findings generated from cross-sector data analyses.

Data Sources and Variables

PHA demographic data come primarily from HUD Form 50058 Moving to Work, which collects data on households and individuals receiving federal housing assistance. The authors used the following variables from the 50058 data in the exit analyses: (1) head-of-household demographics: gender—male, female, or both male and female reported over time, which the authors termed *multiple*; age—younger than 25, 25–44, 45–61, and 62 or older, with senior-housing eligibility

beginning at age 62; race/ethnicity— American Indian/Alaskan Native, Asian, Black, Latina/o/x, multiple race, Native Hawaiian/Pacific Islander, and White; self-reported disability; and length of time in housing; and (2) household characteristics: household size, single caregiver—one adult and one or more children in the household—and assistance type—project-based vouchers (PBVs), PH, or tenant-based vouchers (TBVs). The authors used three categories of assistance type because the policy and program implications vary across each group; PHAs have a much greater ability to work with tenants in their own properties than they do with those renting in the private market or with partner nonprofits.

Exit reasons are collected on a separate form and stored in a different data system but were linked using the methods described below. Both KCHA and SHA had previously categorized exit reasons as positive, neutral, negative, or part of an additional aging or health category. Study team members with experience in working with housing data harmonized the existing categorizations across both PHAs and made minor adjustments. Positive exits consisted of reasons perceived to be likely associated with self-sufficiency—for example, increased income, homeownership, and moving to nonsubsidized rentals. Negative exits such as eviction, lease violations, criminal activity, or abandonment of a property were those expected to be associated with adverse life events and poorer outcomes. Several exit reasons could not be clearly identified as positive or negative and were classified as neutral. For example, exit for health reasons or moving in with family or friends could be associated with a positive or a negative trajectory depending on the circumstances. A full list of exit reasons and categories can be found in appendix A.

The authors restricted exits (1) to those with an at least 12-month gap between exit date and any subsequent housing (termed *true exits*) and (2) to nondeath exits. If a head of household had multiple exits during the study period, they used the most recent exit. If multiple exit categories were recorded for a single event, they prioritized the reason that belonged to the smallest group: positive, then negative, then neutral.

The HUD HEARS study looking at exits from housing drew from several other administrative datasets: (1) Behavioral Health and Recovery Division (BHRD) service data that includes mental health and substance use claims, (2) Employment Security Department (ESD) wage data, (3) Healthcare for the Homeless Network (HCHN) data, (4) Homeless Management Information System (HMIS), and (5) Medicaid claims data. The authors anticipated incorporating income when looking at factors associated with exit data, but ESD wage data were not available at the time of analysis and instead were used to examine post-exit outcomes. In addition, income data from the 50058 forms were not complete for all years and therefore could not be used.

Based on existing literature and PHA expertise, the authors hypothesized that health status and prior housing instability would influence exits from housing and exit type. In addition to the demographic factors listed above, the authors used BHRD data to identify people who had experienced acute behavioral health crisis events in the 12 months prior to housing exit. Homelessness was defined as one or more of the following in the 3 years prior to exit: appearing in HMIS or HCHN data, having a housing status in BHRD data that indicated housing instability, or having an address listed as “Homeless” in the Medicaid data (Johnson, McHugh, and Reimal, 2021). The authors used Medicaid data to identify those who had experienced emergency

department (ED) visits or hospitalizations for any reason in the 12 months prior to housing exit and those with one or more chronic conditions as defined by the Chronic Condition Warehouse (Centers for Medicare & Medicaid Services, 2022). The authors also created an enhanced definition of behavioral health crisis event that added behavioral-health-related ED visits from Medicaid to the BHRD data. Collectively, the Medicaid-derived all-cause ED-visit, hospitalization, and chronic-condition measures are proxies for a person's health status.

Data Linkage

To link the data sources, the authors used an existing multisector data system. The King County Integrated Data Hub (IDH) combines identities across several datasets, including BHRD, HCHN, HMIS, and Medicaid. The IDH uses a mix of probabilistic and deterministic methods to match individuals across data systems via a proprietary tool (Informatica, Redwood City, CA). PHA data in the form of 50058 and exit data from both KCHA and SHA were probabilistically linked by name, Social Security number, date of birth, and gender using the RecordLinkage package in R v4.2.0 and RStudio v2022.2.3.492 (R Core Team, 2022; RStudio Team, 2022; Sariyar and Borg, 2020). IDH, ESD, and PHA data were then linked using the same RecordLinkage approach. PHA addresses were geocoded using an in-house Esri ArcGIS locator (Redlands, CA).

Statistical Analysis

The primary analyses aimed to answer two questions: What factors are associated with exiting from housing assistance? And what factors are associated with each exit type? For both analyses, the unit of analysis was the head of household. Although some exit reasons may apply to an entire household, other reasons focus on the individual, and other household members may continue to receive housing assistance.

To answer the first question, the authors randomly matched four controls who were heads of household who remained in housing for each exit without replacement and assigned the controls a pseudo-exit date that matched the exit date for the purposes of assessing demographic and other variables noted above. The authors used a 4:1 ratio because greater ratios yield minimal gain in power to detect differences and only a limited number of controls were available for matching (Breslow, 2005). Controls were eligible for matching if they remained in housing for at least 12 months after the case exit date. Because the authors wanted to examine how each variable was associated with exits, they did not match controls on any other characteristics. If the authors had matched on a factor such as age, they would have artificially balanced the distribution of that factor between those who exited and the controls, meaning that no relationship between the factor and exiting would be found.

The authors first examined descriptive statistics to find programmatically meaningful differences in characteristics as defined by subject matter experts who work with the PHA population. Then the authors used a binomial logistic regression to evaluate the relationship between each variable and exiting from housing. To examine factors associated with exit type, the authors used a multinomial logistic regression with neutral exits as the reference category. The authors used the DHARMa R package to conduct model checking (Hartig, 2022).

Secondary Analysis

Healthcare utilization data from ED visits, hospitalizations, and diagnosed chronic conditions were available only for those enrolled in Medicaid prior to exiting. The authors therefore conducted a secondary analysis of the subset of exiting and controls participants who had full, nondual—meaning that they were not also enrolled in Medicare—Medicaid coverage for at least 7 of the 12 months prior to the exit or pseudoexit date. That minimum-coverage requirement ensures that if a person visited an ED, was hospitalized, or was diagnosed with a chronic condition, the event would likely be detected in the claims data (Washington State Health Care Authority, 2022). Because the authors excluded Medicaid members with dual Medicare coverage, they also restricted secondary analyses to those younger than age 62, because most older Medicaid recipients also have Medicare, and Medicaid claims may be incomplete.

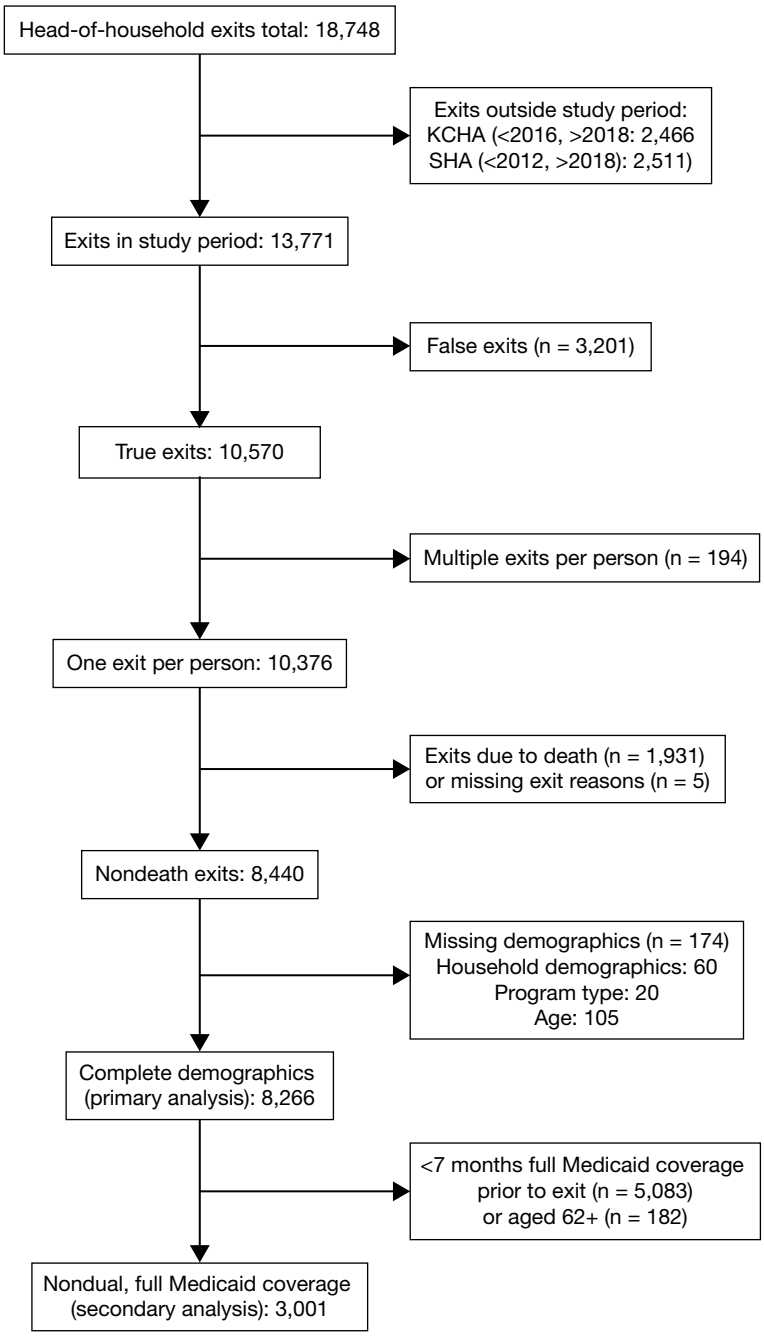
Results

Sample Size

There were 19,411 exit records in the KCHA and SHA data, 19,013 (97.9 percent) of which matched to records in the 50058 data; multiple exit categories were found in 50 (0.3 percent) of the matched exits; and extra categories were removed by prioritizing the smallest group: positive, then negative, then neutral. An additional 260 exit events matched to individuals in the 50058 data who were not recorded as heads of households and so were excluded, for a total of 18,748 heads of household. After restricting to the study period during which exit reasons were consistently recorded, after removing false exits wherein the individual remained receiving housing assistance after a recorded exit, and after removing exits due to deaths, missing exit reasons, or other missing variables, the authors analyzed 8,266 exits in the regression analysis: 2,610 negative, 4,538 neutral, and 1,118 positive (exhibit 1). The secondary analysis of PHA recipients who also had full, non-dual Medicaid coverage prior to exit was limited to 3,001 households.

Exhibit 1

Sample Size for Primary and Secondary Analyses



KCHA = King County Housing Authority. SHA = Seattle Housing Authority.
Source: NO HARMS integrated study dataset

Descriptive Statistics

Heads of households who exited were more likely to have the following attributes than were those who remained in housing (exhibit 2).

- Male (39.9 percent versus 34.5 percent).
- Shorter average tenure receiving housing assistance (median of 3.7 years versus 5.5 years).
- Receiving PBV assistance (43.4 percent versus 18.6 percent).
- Experienced recent homelessness (39.4 percent versus 22.8 percent).
- Have had a recent behavioral health crisis (6.9 percent versus 1.6 percent).

Exhibit 2

Demographics of Heads of Households Who Exited Versus Controls Who Did Not, by Exit Type (1 of 2)

	Remained (N=25,162)	Exited (N=8,266)	Neutral Exit (N=4,538)	Positive Exit (N=1,118)	Negative Exit (N=2,610)
Age					
Mean (years)	52.4	50.7	53.2	48.9	47.2
Median (years)	52	49	52	47	45
Senior (aged 62+)	29.9%	26.9%	33.3%	21.0%	18.3%
Gender					
Female	16,117 (64.1%)	4,869 (58.9%)	2,628 (57.9%)	678 (60.6%)	1,563 (59.9%)
Male	8,692 (34.5%)	3,300 (39.9%)	1,862 (41%)	423 (37.8%)	1,015 (38.9%)
Multiple	353 (1.4%)	97 (1.2%)	48 (1.1%)	17 (1.5%)	32 (1.2%)
Race/Ethnicity					
AI/AN	329 (1.3%)	158 (1.9%)	81 (1.8%)	<20	65 (2.5%)
Asian	2,464 (9.8%)	689 (8.3%)	421 (9.3%)	118 (10.6%)	150 (5.7%)
Black	8,558 (34%)	2,866 (34.7%)	1,413 (31.1%)	437 (39.1%)	1,016 (38.9%)
Latina/o/x	1,684 (6.7%)	561 (6.8%)	299 (6.6%)	72 (6.4%)	190 (7.3%)
Multiple	2,530 (10.1%)	737 (8.9%)	367 (8.1%)	114 (10.2%)	256 (9.8%)
NH/PI	203 (0.8%)	67 (0.8%)	34 (0.7%)	<10	25 (1%)
White	9,394 (37.3%)	3,188 (38.6%)	1,923 (42.4%)	357 (31.9%)	908 (34.8%)
Time in Housing					
Mean time (years)	5.9	5	4.5	6.2	5.6
Median time (years)	5.5	3.7	3	5.6	4.5
Household Characteristics					
Head of household disability	44.3%	42.0%	45.4%	25.2%	43.3%
Mean household size	2.2	2	1.7	2.6	2.1
Median household size	1	1	1	2	1
Single caregiver	19.0%	17.3%	15.0%	14.5%	22.6%
Program Type					
PBV	4,672 (18.6%)	3,586 (43.4%)	2,761 (60.8%)	308 (27.5%)	517 (19.8%)
PH	7,118 (28.3%)	1,840 (22.3%)	912 (20.1%)	331 (29.6%)	597 (22.9%)
TBV	13,372 (53.1%)	2,840 (34.4%)	865 (19.1%)	479 (42.8%)	1,496 (57.3%)

Exhibit 2

Demographics of Heads of Households Who Exited Versus Controls Who Did Not, by Exit Type (2 of 2)

	Remained (N=25,162)	Exited (N=8,266)	Neutral Exit (N=4,538)	Positive Exit (N=1,118)	Negative Exit (N=2,610)
Health and Homelessness Events					
Experienced recent homelessness	5,726 (22.8%)	3,256 (39.4%)	1,972 (43.5%)	226 (20.2%)	1,058 (40.5%)
Experienced 1+ behavioral health crisis events in year prior to exit (excl. Medicaid ED visits)	408 (1.6%)	570 (6.9%)	339 (7.5%)	18 (1.6%)	213 (8.2%)
Experienced 1+ behavioral health crisis events in year prior to exit (inc. ED visits)[1]	313 (0.9%)	240 (2.8%)	122 (8.0%)	<10	82 (7.2%)
Average # ED visits in year prior to exit[1]	0.8	1	2	0.8	2.1
Experienced 1+ ED visits in year prior to exit[1]	13,435 (36.6%)	3,381 (40.0%)	862 (56.6%)	118 (34.7%)	689 (60.5%)
Average # hospitalizations in year prior to exit (per 100 people)[1]	6.1	7.8	17.5	6.8	15.4
Experienced 1+ hospitalizations in year prior to exit[1]	1,657 (4.5%)	440 (5.2%)	175 (11.5%)	19 (5.6%)	107 (9.4%)
Average # of chronic conditions[1]	1	0.9	1.8	1.5	2

AI/AN = American Indian/Alaskan Native. ED = emergency department. NH/PI = Native Hawaiian/Pacific Islander. PBV = project-based voucher. PH = public housing. TBV = tenant-based voucher.

[1] Health event data available for those aged <62 enrolled in Medicaid. Remained N = 9,234. Exited N = 3,001. Negative N = 1,139. Neutral N = 1,522. Positive N = 340.

Source: NO HARMS integrated study dataset

Race, household size, whether there was a single caregiver, or whether the head of household had a disability did not substantially vary between those exiting and those remaining in housing. In the secondary analysis of Medicaid recipients, people exiting had greater healthcare use in the year prior to exit when it came to both ED visits—55.6 percent had more than one versus 46.9 percent of people remaining—and hospitalizations: 10.0 percent versus 8.8 percent.

In a comparison of exits by type, those with neutral exits tended to be older than those with positive or negative exits (median age 52 years compared with 47 and 45 years, respectively), were slightly more likely to be male (41.0 percent versus 37.8 percent and 38.9 percent), were more likely to be White (42.4 percent versus 31.9 percent and 34.8 percent), and had shorter average tenures in housing assistance (median of 3 years versus 5.6 and 4.5 years) (exhibit 2). Those with positive exits had larger average household sizes (mean of 2.6 versus 1.7 and 2.1 for neutral and negative exits, respectively), were more likely to be living in public housing (29.6 percent versus 20.1 percent and 22.9 percent), and were less likely to have experienced recent homelessness (20.2 percent versus 43.5 percent and 40.5 percent) or behavioral crises (1.6 percent versus 7.5 percent and 8.2 percent). Among Medicaid recipients, those with positive exits had lower levels of recent

ED visits (34.7 percent versus 56.6 percent and 60.5 percent), hospitalizations (5.6 percent versus 11.5 percent and 9.4 percent), and chronic conditions (average of 1.5 versus 1.8 and 2.0).

Among both those who remained and those who exited, people with 7 or more months of full Medicaid coverage in the year prior to exit were younger (44/41 years for remained/exited and had Medicaid versus 59/56 years for those without Medicaid), were more likely to be female (70.2 percent/64.6 percent versus 60.0 percent/55.3 percent), were more likely to be Black (43.8 percent/43.5 percent versus 27.6 percent/29.1 percent), were more likely to have larger households (mean 2.8/2.4 versus 1.8/1.7), and were more likely to have a single caregiver (30.1 percent/28.4 percent versus 11.8 percent/10.4 percent) but less likely to have disabilities (35.4 percent/37.0 percent versus 50.1 percent/45.2 percent) (exhibit B-1). Among those with Medicaid coverage, those exiting were more likely to be receiving PBVs than were those who remained (49.4 percent versus 22.2 percent).

Regression Results

Results from the regression analysis show that after adjusting for other factors, male gender, receiving a project-based voucher, homelessness within the previous 3 years, and having behavioral health crisis events were all associated with increased odds of exits of any type (exhibit 3). Being older than age 25, increased time in housing (more than 6 years), larger household size, having a single-caregiver household, and having a disability were all associated with decreased odds of exit. Race/ethnicity was not associated with exiting. For the secondary analysis of housing recipients who also had more than 7 months of full Medicaid coverage in the year prior to exit, experiencing one or more ED visits in the year prior to exit was positively associated with exit (adjusted odds ratio (aOR): 1.27, 95 percent confidence interval (CI): 1.16–1.40, $p<0.001$); experiencing a hospitalization in the same time frame was not associated with exit; and having two or more chronic conditions was negatively associated with exits (0.75, 95 percent CI: 0.68–0.83, $p<0.001$) (exhibit 3 and exhibit B-2).

Exhibit 3

Regression Output for Heads of Households Who Exited Versus Controls Who Did Not (1 of 2)

	Odds Ratio[1]	95% CI
Age		
<25	ref	—
25-44	0.67***	0.58–0.78
45-61	0.48***	0.41–0.55
62+	0.50***	0.43–0.58
Gender		
Female	ref	—
Male	1.08**	1.02–1.15
Multiple	0.96	0.76–1.21
Race/Ethnicity		
White	ref	—
AI/AN	1.25*	1.01–1.53
Asian	0.92	0.83–1.01
Black	1.06	1.00–1.13

Exhibit 3

Regression Output for Heads of Households Who Exited Versus Controls Who Did Not (2 of 2)

	Odds Ratio[1]	95% CI
Race/Ethnicity		
Latino	0.97	0.87–1.09
Multiple	1.00	0.90–1.10
NH/PI	1.10	0.81–1.47
Time in Housing		
<3	ref	—
3-5.99	1.15***	1.07–1.23
6-9.99	0.95	0.89–1.03
10+	1.16***	1.07–1.26
Household Characteristics		
Head of household disability	0.70***	0.66–0.75
Household size	0.90***	0.89–0.92
Single caregiver	0.76***	0.70–0.82
Program Type		
TBV	ref	—
PBV	2.94***	2.75–3.14
PH	1.20***	1.12–1.29
Health and Homelessness Events		
Experienced recent homelessness	1.41***	1.32–1.51
Experienced 1+ behavioral health crisis event in year prior to exit (excl. ED visits)	2.91***	2.53–3.35
Experienced 1+ behavioral health crisis event in year prior to exit (incl. ED visits)[2]	2.12***	1.69–2.66
Experienced 1+ ED visit in year prior to exit[2]	1.27***	1.16–1.40
Experienced 1+ hospitalization in year prior to exit[2]	0.96	0.82–1.12
2+ chronic conditions[2]	0.75***	0.68–0.83

AI/AN = American Indian/Alaskan Native. CI = confidence interval. ED = emergency department. NH/PI = Native Hawaiian/Pacific Islander. PBV = project-based voucher. PH = public housing. TBV = tenant-based voucher.

*[1] * = p<0.05. ** = p<0.01. *** = p<0.001.*

[2] Health event data available only for those aged <62 enrolled in Medicaid (N = 9,234 for controls, 3,001 for exits).

Source: NO HARMS integrated study dataset

Among those who exited, male gender, a longer time in housing, and living in public housing were all associated with both negative exits and positive exits when compared with neutral exits (exhibit 4). Older age was negatively associated with both positive and negative exits, and, although not statistically significant, working-age adults aged 25–61 were more likely to have positive exits. Race was generally not associated with positive versus neutral exits, though people who identified as Black were slightly more likely to have positive exits than were Whites. People in the American Indian/Alaskan Native, Black, and Latina/o/x groups were all more likely to have negative exits than were Whites. Those receiving PBVs were substantially less likely to have negative or positive exits compared with those receiving TBVs, and those in PH were also less likely to have negative exits but were not significantly different with regard to positive exits. Having a single-caregiver household, experiencing recent homelessness, and experiencing more than one crisis event or ED visit were positively associated with negative exits and negatively associated with positive exits.

Exhibit 4

Regression Output for Exit Type

	Negative/Positive Exits Versus Neutral Exits (Neutral N=4,538)			
	Negative Exits (N=2,610)		Positive Exits (N=1,118)	
	Odds Ratio[1]	95% CI	Odds Ratio[1]	95% CI
Age				
<25	ref	—	ref	—
25-44	1.02	0.78–1.33	1.43	0.95–2.16
45-61	0.87	0.66–1.15	1.43	0.94–2.17
62+	0.43***	0.32–0.58	0.59*	0.38–0.91
Gender				
Female	ref	—	ref	—
Male	1.33***	1.18–1.51	1.34***	1.14–1.56
Multiple	1.00	0.61–1.64	1.16	0.64–2.11
Race/Ethnicity				
White	ref	—	ref	—
AI/AN	1.86**	1.26–2.74	0.92	0.49–1.76
Asian	0.80	0.64–1.01	0.99	0.77–1.27
Black	1.25***	1.10–1.43	1.20*	1.01–1.43
Latino	1.30*	1.03–1.63	1.13	0.84–1.52
Multiple	1.10	0.90–1.35	1.14	0.87–1.48
NH/PI	1.27	0.69–2.32	0.85	0.37–1.94
Time in Housing				
<3	ref	—	ref	—
3-5.99	1.18*	1.01–1.37	1.28*	1.05–1.56
6-9.99	1.14	0.97–1.34	1.36**	1.11–1.68
10+	1.20*	1.00–1.43	1.54***	1.24–1.92
Household Characteristics				
Head of household disability	1.03	0.90–1.17	0.53***	0.45–0.63
Household size	0.98	0.94–1.02	1.11***	1.06–1.16
Single caregiver	1.33***	1.12–1.57	0.62***	0.50–0.77
Program Type				
TBV	ref	—	ref	—
PBV	0.07***	0.06–0.09	0.31***	0.26–0.38
PH	0.45***	0.39–0.52	0.86	0.71–1.03
Health and Homelessness Events				
Experienced recent homelessness	1.76***	1.53–2.03	0.63***	0.52–0.76
Experienced 1+ behavioral health crisis event in year prior to exit (excl. ED visits)	1.68***	1.36–2.08	0.43***	0.26–0.71
Experienced 1+ behavioral health crisis event in year prior to exit (incl. ED visits)[2]	1.50*	1.06–2.12	0.70	0.31–1.56
Experienced 1+ ED visit in year prior to exit[2]	1.30**	1.08–1.58	0.62***	0.47–0.82
Experienced 1+ hospitalization in year prior to exit[2]	0.79	0.59–1.06	0.74	0.44–1.26
2+ chronic conditions[2]	0.91	0.75–1.11	0.96	0.72–1.29

AI/AN = American Indian/Alaskan Native. CI = confidence interval. ED = emergency department. NH/PI = Native Hawaiian/Pacific Islander. PBV = project-based voucher. PH = public housing. TBV = tenant-based voucher.

*[1] * = p<0.05. ** = p<0.01. *** = p<0.001.*

[2] Health event data available only for those aged <62 enrolled in Medicaid (N = 1,522/1,139/340 for neutral/negative/positive exits).

Source: NO HARMS integrated study dataset

Conclusion

After adjusting for other factors, the authors found that male gender, receiving PBV or PH assistance versus TBV, homelessness within the previous 3 years, and having a behavioral health crisis event were all associated with increased odds of exit. Conversely, age older than 25, increased time in housing (more than 6 years), larger household size, having a single-caregiver household, and having a disability were all associated with decreased odds of exit. Demographics associated with exit were similar to previous studies with regard to age, gender, disability, and time in housing (Ambrose, 2005; Cortes, Lam, and Fein, 2008; McClure, 2018). Although there was no association for most race/ethnicity groups. The factors with the strongest association with exit were (1) recent behavioral health crisis events (aORs of 2.91 for all heads of household and 2.12 when restricted to Medicaid members but including behavioral health ED visits) and (2) receiving PBV assistance (aOR of 2.94).

Among those who exited, there was some commonality between positive and negative exits, compared with neutral exits. Both male gender and longer time in housing were positively associated with both positive and negative exits, and age older than 62 and receiving PBV assistance were negatively associated with both positive and negative exits. It is unclear why these factors have similar associations for both positive and negative exits, and a deeper analysis of specific exit reasons may yield a better understanding of the finding.

There were also substantial differences in factors associated with positive and negative exits. Those who are American Indian/Alaskan Natives, Black, or Latina/o/x were more likely to have negative exits compared with Whites; and Asians were less likely to have negative exits. The reasons for differences by race/ethnicity are unclear; there may be systemic factors that affect certain race/ethnicity groups differently, or race/ethnicity may be a proxy for additional factors not included in the model. Heads of household in single-caregiver households, who had disabilities, who experienced behavioral health crisis events, or who had recent ED visits were all more likely to have negative exits and less likely to have positive exits compared with neutral exits. These associations suggest that single caregivers or those with health problems face barriers to working and may also experience other obstacles to stable housing. Those with recent homelessness were less likely to have positive exits, but there was no difference between negative and neutral exits.

The findings are similar to those found in a previous examination of factors associated with exit type (Smith et al., 2014), which found no difference between age and gender and a negative association between prior homelessness and positive exits. However, this was the first study to look at factors associated with exit types among all federally supported housing recipients rather than a Moving to Opportunity subset, which included very low-income households with children. The large sample size facilitates a robust analysis and examination of smaller demographic groups. Another major strength was the addition of data from Medicaid, behavioral health, and homeless management systems. Factors derived from those sources had some of the strongest associations with both exits in general and exit type.

Limitations

There were some limitations to the study, which are shared by most of the previous studies on this topic. First, the authors looked only at heads of households, which presents two challenges: (1) other household members' experiences may affect the entire household, but that does not get captured in the factors examined; for example, an incarceration or health event could destabilize the household; and (2) other household members exit housing for varying reasons, none of which are captured in the existing data and some of which may differ from the head of household's reason for exiting. PHAs could consider expanding their data collection processes to include reasons for each individual person's exit.

A second limitation is lack of contextual information behind the recorded exit reason. Previous studies have taken a mixed-methods approach to explore exit experiences in more depth (Smith et al., 2014), and although the authors did not have the resources to incorporate qualitative methods in this study, they strongly encourage that approach in future work—or even as a routine part of data collection at the time of exit. Guidance for PHAs on the collection of exit information could also improve data quality and completeness. KCHA and SHA had different sets of exit reasons that had to be harmonized, and more than 20 percent of exits had nonspecific reasons such as "Client would not disclose" or "Moved out, location unknown." The revised 50058 MTW form will in the future collect information on reasons for end of participation, but limitations in household-level information and lack of context will remain.

The categorization of exit reasons may also be problematic. For example, households that are over income are considered positive exits. However, in the Seattle metropolitan area, an exit for that reason does not guarantee that the household is no longer rent burdened; a household earning just over 80 percent of the area median income would still be paying 38 percent of income for the median rental price (Ellis, 2022; KCHA, 2022).

Finally, the secondary analysis of health-related factors was restricted to those with Medicaid coverage, who were not demographically representative of the entire housing population (exhibit B-1).

Policy and Program Implications

The authors' analysis identified several factors associated with exiting from housing assistance and exit type. How PHAs use that information will depend on policy imperatives, resources, and what is legally permissible. With regard to policy, the framing for the undertaking of the HUD HEARS project was in the context of HUD's desire to increase the number of positive exits from assisted housing, with the expectation that that would increase the number of people able to receive housing assistance. The results show that there is a ways to go to achieving that goal; positive exits made up only 13.5 percent of all nondeath exits in the study.

For PHAs that are working to increase positive exits while minimizing negative exits, the findings present some challenges. First, certain factors such as gender and type of housing assistance had the same associations for both positive and negative exit types, compared with neutral. Second, some factors are generally immutable such as age, gender, and race/ethnicity; and it may be illegal or unethical to dedicate services based solely on those factors. To address such challenges, further

investigation into why those characteristics are associated with exits and exit types could help adapt services accordingly.

When there was a more specific association between factors and exit type, policy and program implications became clearer. Although not statistically significant, the relationship between being of working age and positive exits suggests that emphasis on workforce training and other self-sufficiency programs may be warranted. Longer tenure in housing assistance was associated with increased odds of a positive exit, which suggests that a stabilization period is required before a household can get itself into a position in which positive exits are more possible. PHAs may wish to investigate what it is about the early years of housing assistance that is not conducive to positive exit and then determine what can be done to help households through the transition period.

Knowing that recent homelessness is a risk factor for negative exits suggests that efforts to support people in their transitions from homelessness into housing are crucial. Indeed, the PHAs in this study are already participants in federal initiatives involving specific voucher types such as Emergency Housing Vouchers and Veterans Affairs Supportive Housing vouchers that pair housing with supportive services. The PHAs also (1) fund supportive initiatives through their own programming, (2) contract with community-based organizations and local governments, and (3) maintain referral partnerships with local providers. However, not all PHAs are in a position to do this; KCHA and SHA can undertake these programs through grant funding and because their MTW authority offers flexibility in the ways funds can be used. PHAs without MTW authority are less able to resource these kinds of support.

Associations between both ED visits and crisis events with negative exits emphasize that housing is interconnected with other aspects of a person's life. The policy and programmatic implications for PHAs are complicated by laws such as the Health Insurance Portability and Accountability Act, which places some limits on how health data can be shared. However, such restrictions can be ethically addressed by obtaining appropriate and informed consent from housing assistance recipients, meaning that holistic interventions that encompass health elements and housing elements are possible. Such undertakings will require collaborations between PHAs and healthcare organizations that have mutual interests in avoiding both ED visits and negative exits.

Summary

The data platform described here offers a wealth of opportunities beyond this study. PHAs can obtain information about physical or mental health conditions, prior homelessness, or other factors that could influence outcomes for their tenants. The data platform also provides a means of examining events after exit from housing assistance, and planned future studies will examine health, economic, and residential-stability outcomes. By the very nature of an exit, housing recipients disappear from PHA data systems, and PHAs know little about what happens to households beyond that point of exit. By building on an existing administrative data linkage, this analysis and any other kind of examination of postexit outcomes can become routine data processes that PHAs use for evaluating programs and monitoring progress toward goals rather than being one-off research projects. The authors believe that such an approach can serve as a model

that PHAs can follow for establishing cross-sector partnerships with health departments and other groups that have an interest in the health and well-being of housing assistance recipients.

This study adds important information to the discussion about exits from housing assistance. It also demonstrates the value of using cross-sector data linkages to gain more holistic pictures of the people being served. PHAs can use the knowledge from this study to more completely learn who is most likely to experience a negative exit and then adapt programs and policies accordingly.

Appendix A

Exhibit A-1

Exit Reasons and Categories (1 of 2)

Exit Category	Exit Reason
Negative	180 Days Away From Assisted Unit
Negative	Absence – Extended Leave
Negative	Absence – Incarceration
Negative	Absence – Treatment/Hospital
Negative	Absence – Treatment/Hospital
Negative	Client Location Unknown/Abandoned Unit
Negative	Criminal Activity
Negative	Domestic Violence
Negative	Eviction – Abandonment
Negative	Eviction – Judgment/Physical
Negative	Eviction – Judgment/Physical – Criminal
Negative	Eviction – Judgment/Physical – Other
Negative	Eviction – Nonpayment
Negative	Failure to Provide Information
Negative	Failure to Complete Housing Quality Standards Inspection
Negative	Failure to Complete Reexamination
Negative	Fraud – Household Composition
Negative	Fraud – Household Income
Negative	Fraud – Other
Negative	Housing Quality Standards Breach
Negative	Inspection/Damages
Negative	Landlord Eviction
Negative	Lease Enforcement
Negative	Lease Violation – Criminal
Negative	Lease Violation – Noncriminal
Negative	Location
Negative	More than 60 Days Absent From the Unit
Negative	Moved – Shelter
Negative	Moved – Transitional Housing Program
Negative	Neighborhood Quality
Negative	Nonpayment of Rent
Negative	Nonpayment of Retro Rent
Negative	Noncompliance – Citizenship/Immigration
Negative	Noncompliance – Criminal Activity
Negative	Noncompliance – Housing Quality Standards
Negative	Noncompliance – Paperwork Violation
Negative	Noncompliance – Payment Plan/Debt to SHA
Negative	Noncompliance – Program Partnership
Negative	Other Violation of Participant Obligations
Negative	PB/MR Moved due to Incarceration
Negative	PB/MR Moved to Shelter
Negative	Rent Too High
Negative	Section 8 PB Failed Social Services Program
Negative	Serious/Repeated Lease Violations (Criminal)

Exhibit A-1

Exit Reasons and Categories (2 of 2)

Exit Category	Exit Reason
Negative	Serious/Repeated Lease Violations (Noncriminal)
Negative	Subsidy in Jeopardy Client Choice
Negative	Unit/Property Quality
Negative	Voucher Expired
Neutral	Client Would Not Disclose Reason
Neutral	Deceased
Neutral	Expired – Ported Out
Neutral	Expired – Term-Limit Program
Neutral	Family Unification Program Youth 18-Month Expiration
Neutral	Health
Neutral	Ineligible – Citizenship/Immigration
Neutral	Moved – Changed Subsidy Program Type
Neutral	Moved – Needed Higher Level of Services
Neutral	Moved In With Family or Friends
Neutral	Moved to Non-KCHA-Subsidized Rental
Neutral	Mutual Termination
Neutral	No Longer Used as of 2016-09-14 (other)
Neutral	Other
Neutral	Other Subsidized Housing/Housing Choice Voucher
Neutral	PB/MR Moved Out Location Unknown
Neutral	PB/MR Moved to Hospital or Assisted Living
Neutral	PB/MR Moved to Non-Time-Limited Subsidized Housing
Neutral	PB/MR Moved to Temporary Housing With Family or Friends
Neutral	PB/MR Moved to Transitional Housing Program
Neutral	PM Move to KCHA Section 8 Voucher
Neutral	Port Out Termination
Neutral	Section 8 Absorption
Neutral	Section 8 Cross-Absorption
Neutral	Section 8 Incoming Portability Move Out
Neutral	Section 8 Sponsor-Based Provider-Based Move Out
Neutral	Transitional Housing Graduate to any Section 8 Voucher
Neutral	Transitional Housing Graduate to KCHA Managed Units
Neutral	Transitional Housing Graduate to KCHA PBA
Neutral	Transitional Housing Graduate to Other Subsidized Rental
Neutral	Transitional Housing Nongraduate Early Program Exit
Neutral	Vacated PB/MR Unit
Neutral	Voluntary Self-Termination
Positive	180 Days $50 or Less Housing Assistance Plan
Positive	180 Days Zero Housing Assistance Plan
Positive	Graduated – 180 Days $50 or Less Housing Assistance Plan
Positive	Homeownership
Positive	Moved to Nonsubsidized Rental
Positive	PB/MR moved to Non-Time Limited Market Rate
Positive	Section 8 Over Income
Positive	Transitional Housing Graduate to Nonsubsidized Rental

KCHA = King County Housing Authority. MR = mod rehab. PB = project-based. PBA = project-based assistance. SHA = Seattle Housing Authority.
Source: KCHA and SHA

Appendix B

Exhibit B-1

Demographics of Heads of Households Who Exited Versus Those Who Did Not—by Medicaid Enrollment Status

	Remained, no Medicaid (N=15,214)	Remained, Medicaid (N=9,948)	Exited, no Medicaid (N=5,083)	Exited, Medicaid (N=3,183)
Age				
Mean (years)	58	44	56.5	41.4
Median (years)	59	44	56	41
Senior (aged 62+)	44.8%	7.2%	40.1%	5.7%
Gender				
Female	9,131 (60%)	6,986 (70.2%)	2,813 (55.3%)	2,056 (64.6%)
Male	5,875 (38.6%)	2,817 (28.3%)	2,209 (43.5%)	1,091 (34.3%)
Multiple	208 (1.4%)	145 (1.5%)	61 (1.2%)	36 (1.1%)
Race/Ethnicity				
AI/AN	171 (1.1%)	158 (1.6%)	75 (1.5%)	83 (2.6%)
Asian	1,763 (11.6%)	701 (7%)	522 (10.3%)	167 (5.2%)
Black	4,202 (27.6%)	4,356 (43.8%)	1,481 (29.1%)	1,385 (43.5%)
Latina/o/x	1,011 (6.6%)	673 (6.8%)	339 (6.7%)	222 (7%)
Multiple	1,539 (10.1%)	991 (10%)	468 (9.2%)	269 (8.5%)
NH/PI	119 (0.8%)	84 (0.8%)	45 (0.9%)	22 (0.7%)
White	6,409 (42.1%)	2,985 (30%)	2,153 (42.4%)	1,035 (32.5%)
Time in Housing				
Mean time (years)	6.2	5.5	5.4	4.4
Median time (years)	6.2	4.5	4.3	3
Household Characteristics				
Head of household disability	50.1%	35.4%	45.2%	37.0%
Mean household size	1.8	2.8	1.7	2.4
Median household size	1	2	1	2
Single caregiver	11.8%	30.1%	10.4%	28.4%
Program Type				
PBV	2,462 (16.2%)	2,210 (22.2%)	2,013 (39.6%)	1,573 (49.4%)
PH	4,985 (32.8%)	2,133 (21.4%)	1,330 (26.2%)	510 (16%)
TBV	7,767 (51.1%)	5,605 (56.3%)	1,740 (34.2%)	1,100 (34.6%)
Health and Homelessness Events				
Experienced recent homelessness	2,373 (15.6%)	3,353 (33.7%)	1,448 (28.5%)	1,808 (56.8%)
Experienced 1+ behavioral health crisis events in year prior to exit (excl. Medicaid ED visits)	220 (1.4%)	188 (1.9%)	343 (6.7%)	227 (7.1%)

AI/AN = American Indian/Alaskan Native. CI = confidence interval. ED = emergency department. NH/PI = Native Hawaiian/Pacific Islander. PBV = project-based voucher. PH = public housing. TBV = tenant-based voucher.

Source: NO HARMS integrated study dataset

Exhibit B-2

Regression Output for Heads of Households Who Exited Versus Controls Who Did Not (Medicaid Population)

	Odds Ratio[1]	95% CI
Age		
<25	ref	—
25-44	0.67***	0.56–0.81
45-61	0.50***	0.41–0.61
Gender		
Female	ref	—
Male	1.05	0.94–1.17
Multiple	0.97	0.65–1.43
Race/Ethnicity		
White	ref	—
AI/AN	1.23	0.90–1.67
Asian	0.94	0.77–1.15
Black	1.03	0.93–1.15
Latino	0.92	0.76–1.10
Multiple	0.90	0.76–1.07
NH/PI	0.89	0.52–1.45
Time in Housing		
<3	ref	—
3-5.99	1.18**	1.05–1.32
6-9.99	1.16*	1.01–1.32
10+	1.22**	1.05–1.42
Household Characteristics		
Head of household disability	0.81***	0.72–0.90
Household size	0.93***	0.90–0.96
Single caregiver	0.82***	0.73–0.92
Program Type		
TBV	ref	—
PBV	2.80***	2.52–3.11
PH	1.26***	1.11–1.43
Health and Homelessness Events		
Experienced recent homelessness	1.74***	1.57–1.94
Experienced 1+ behavioral health crisis event in year prior to exit (incl. ED visits)	2.12***	1.69–2.66
Experienced 1+ ED visit in year prior to exit	1.27***	1.16–1.40
Experienced 1+ hospitalization in year prior to exit	0.96	0.82–1.12
2+ chronic conditions	0.75***	0.68–0.83

AI/AN = American Indian/Alaskan Native. CI = confidence interval. ED = emergency department. NH/PI = Native Hawaiian/Pacific Islander. PBV = project-based voucher. PH = public housing. TBV = tenant-based voucher.

*[1] * = p<0.05. ** = p<0.01. *** = p<0.001.*

Note: Health event data available only for those aged <62 enrolled in Medicaid (N = 9,234 for controls, 3,001 for exits).

Source: NO HARMS integrated study dataset

Exhibit B-3

Regression Output for Exit Type (Medicaid Population)

	Negative/Positive Exits Versus Neutral Exits (Neutral N=1,522)			
	Negative Exits (N=1,139)		Positive Exits (N=340)	
	Odds Ratio[1]	95% CI	Odds Ratio[1]	95% CI
Age				
<25	ref	—	ref	—
25-44	0.97	0.70–1.35	0.99	0.58–1.67
45-61	0.86	0.60–1.22	0.92	0.53–1.61
Gender				
Female	ref	—	ref	—
Male	1.08	0.88–1.34	1.21	0.90–1.63
Multiple	0.77	0.33–1.82	2.14	0.85–5.37
Race/Ethnicity				
White	ref	—	ref	—
AI/AN	1.67	0.98–2.85	0.56	0.17–1.92
Asian	0.85	0.54–1.33	1.35	0.82–2.22
Black	1.14	0.93–1.40	1.00	0.74–1.36
Latino	1.24	0.87–1.79	1.26	0.74–2.14
Multiple	0.95	0.68–1.33	0.93	0.57–1.54
NH/PI	2.58	0.90–7.36	1.19	0.23–6.12
Time in Housing				
<3	ref	—	ref	—
3-5.99	1.41**	1.12–1.78	1.36	0.96–1.93
6-9.99	1.55**	1.18–2.02	1.61*	1.10–2.36
10+	1.85***	1.35–2.53	2.49***	1.63–3.82
Household Characteristics				
Head of household disability	0.90	0.72–1.13	0.48***	0.33–0.68
Household size	0.93*	0.88–0.99	1.10*	1.02–1.18
Single caregiver	1.12	0.89–1.40	0.56***	0.40–0.78
Program Type				
TBV	ref	—	ref	—
PBV	0.11***	0.09–0.14	0.59**	0.42–0.82
PH	0.82	0.63–1.07	2.08***	1.45–2.98
Health and Homelessness Events				
Experienced recent homelessness	2.12***	1.69–2.65	0.87	0.63–1.20
Experienced 1+ behavioral health crisis event in year prior to exit (incl. ED visits)	1.50*	1.06–2.12	0.70	0.31–1.56
Experienced 1+ ED visit in year prior to exit	1.30**	1.08–1.58	0.62***	0.47–0.82
Experienced 1+ hospitalization in year prior to exit	0.79	0.59–1.06	0.74	0.44–1.26
2+ chronic conditions	0.91	0.75–1.11	0.96	0.72–1.29

AI/AN = American Indian/Alaskan Native. CI = confidence interval. ED = emergency department. NH/PI = Native Hawaiian/Pacific Islander. PBV = project-based voucher. PH = public housing. TBV = tenant-based voucher.

*[1] * = p<0.05. ** = p<0.01. *** = p<0.001.*

Source: NO HARMS integrated study dataset

Acknowledgments

The authors would like to thank Titus Chembukha, Tyler Corwin, Carolina Johnson, and Karen Spoelman, all at the King County Department of Community and Human Services, for their assistance with the behavioral health definitions.

Authors

Alastair I. Matheson is assistant chief, data and informatics strategy at the Assessment, Policy Development, and Evaluation Unit, Public Health – Seattle & King County and affiliate lecturer at the Department of Epidemiology, University of Washington. Danny V. Colombara is an epidemiologist at the Assessment, Policy Development, and Evaluation Unit, Public Health – Seattle & King County and affiliate assistant professor at the Department of Epidemiology, University of Washington. Annie Pennucci is director of impact and evaluation at the Social Impact Department, King County Housing Authority. Tyler Shannon is a senior management analyst at the Social Impact Office, King County Housing Authority. Andy Chan is a strategic advisor at the Housing Choice Vouchers Department, Seattle Housing Authority. Megan Suter is an applied epidemiology fellow at the Assessment, Policy Development, and Evaluation Unit, Public Health – Seattle & King County. Amy A. Laurent is a senior epidemiologist at the Assessment, Policy Development, and Evaluation Unit, Public Health – Seattle & King County.

References

Actionable Intelligence for Social Policy. 2015. *Project 50: Ending Chronic Homelessness with Permanent Supportive Housing and Integrated Data Systems*. https://aisp.upenn.edu/resource-article/project-50-ending-chronic-homelessness-with-permanent-supportive-housing-and-integrated-data-systems/.

Albertson, E., R. Chen, A. Matheson, M. Ursua, M. Fliss, and S. Farquhar. 2020. "Effect of Public Housing Redevelopment on Reported and Perceived Crime in a Seattle Neighborhood," *Crime Prevention and Community Safety* 22: 1–18. https://doi.org/10.1057/s41300-020-00096-5.

Ambrose, B.W. 2005. "A Hazard Rate Analysis of Leavers and Stayers in Assisted Housing Programs," *Cityscape* 8 (2): 69–93. http://www.jstor.org/stable/20868593.

Anthony, J. 2005. "Family Self-Sufficiency Programs: An Evaluation of Program Benefits and Factors Affecting Participants' Success," *Urban Affairs Review* 41 (1): 65–92. https://journals.sagepub.com/doi/10.1177/1078087405277883.

Bahchieva, R., and A. Hosier. 2001. "Determinants of Tenure Duration in Public Housing: The Case of New York City," *Journal of Housing Research* 12 (2): 307–348.

Breslow, N.E. 2005. "Case-Control Studies BT" In *Handbook of Epidemiology*, edited by W. Ahrens and I. Pigeot. https://doi.org/10.1007/978-3-540-26577-1_7.

Brisson, D., and J. Covert. 2015. "Housing Instability Risk Among Subsidized Housing Recipients: Characteristics Associated With Late or Nonpayment of Rent," *Social Work Research* 39 (2): 119–128. https://doi.org/10.1093/swr/svv009.

Centers for Medicare & Medicaid Services. 2022. "Chronic Conditions Data Warehouse." https://www2.ccwdata.org/web/guest/condition-categories-chronic.

Chetty, R., N. Hendren, and L.F. Katz. 2016. "The Effects of Exposure to Better Neighborhoods on Children: New Evidence From the Moving to Opportunity Experiment," *American Economic Review* 106 (4): 855–902. https://doi.org/10.1257/aer.20150572.

Cortes, A., K. Lam, and D. Fein. 2008. "Household Life Cycle and Length of Stay in Housing Assistance Programs," *Cityscape* 10 (1): 117–156. http://www.jstor.org/stable/20868645.

Dantzler, P. A. 2021. "Household Characteristics or Neighborhood Conditions? Exploring the Determinants of Housing Spells Among U.S. Public Housing Residents," *Cities* 117, 103335. https://doi.org/https://doi.org/10.1016/j.cities.2021.103335.

Dantzler, P.A., and J.D. Rivera. 2019. "Settling In or Moving Out? Exploring the Effect of Mobility Intentions on Public Housing Exits," *Housing Studies* 34 (4): 715–733. https://doi.org/10.1080/02673037.2018.1470229.

Ellen, I.G., K.L. Dragan, and S. Glied. 2020. "Renovating Subsidized Housing: The Impact on Tenants' Health," *Health Affairs* 39 (2): 224–232, 232A–232E. https://doi.org/http://dx.doi.org/10.1377/hlthaff.2019.00767.

Ellis, T. 2022. "Rental Market Tracker: Asking Rents Climb 11% in August, the Smallest Gain in a Year." https://www.redfin.com/news/redfin-rental-report-august-2022/.

Freeman, L. 2005. "Does Housing Assistance Lead to Dependency? Evidence From HUD Administrative Data," *Cityscape* 8 (2): 115–133.

Geyer, J., S. Dastrup, and M. Finkel. 2019. "Impact of Expanded Choice on Attrition in the Housing Voucher Program," *Cityscape* 21 (3): 71–88. https://www.huduser.gov/portal/periodicals/cityscpe/vol21num3/article3.html.

Hartig, F. 2022. *DHARMa: Residual Diagnostics for Hierarchical (Multi-Level / Mixed) Regression Models*. https://cran.r-project.org/package=DHARMa.

Hungerford, T.L. 1996. "The Dynamics of Housing Assistance Spells," *Journal of Urban Economics* 39 (2): 193–208. https://doi.org/10.1006/juec.1996.0010.

Johnson, C., C. McHugh, and E. Reimal. 2021. *Integrating Data to Better Measure Homelessness*. https://kingcounty.gov/~/media/depts/community-human-services/department/documents/KC_DCHS_Cross_Systems_Homelessness_Analysis_Brief_12_16_2021_FINAL.ashx.

Kang, S. 2020. "To Whom Do Housing Policies Provide Stable Housing? Examining Housing Assistance Recipients and Leavers," *Urban Affairs Review* 57 (5): 1252–1285. https://doi.org/10.1177/1078087420906203.

Kasprow, W.J., R.A. Rosenheck, L. Frisman, and D, DiLella. 2000. "Referral and Housing Processes in a Long-Term Supported Housing Program for Homeless Veterans," *Psychiatric Services (Washington, D.C.)* 51 (8): 1017–1023. https://doi.org/10.1176/appi.ps.51.8.1017.

King County Housing Authority (KCHA). 2022. "Subsidized Housing Eligibility." https://www.kcha.org/housing/subsidized/eligibility.

Laurent, A.A., A. Matheson, K. Escudero, and A. Lazaga. 2020. "Linking Health and Housing Data to Create a Sustainable Cross-Sector Partnership," *American Journal of Public Health* 110 (S2): S222–S224. https://doi.org/10.2105/AJPH.2020.305693.

Lubell, J.M., M. Shroder, and B. Steffen. 2003. "Work Participation and Length of Stay in HUD-Assisted Housing," *Cityscape* 6 (2): 207–223.

Martinez, M. 2022. "U.S. Housing Cost Burden Declines Among Homeowners but Remains High for Renters." https://www.prb.org/articles/u-s-housing-cost-burden-declines-among-homeowners-but-remains-high-for-renters/.

McClure, K. 2018. "Length of Stay in Assisted Housing," *Cityscape* 20 (1): 11–38.

Montgomery, A.E., and M. Cusack. 2017. *HUD-VASH Exit Study*. Washington, DC.

Montgomery, A.E., M. Cusack, D. Szymkowiak, J. Fargo, and T. O'Toole. 2017. "Factors Contributing to Eviction From Permanent Supportive Housing: Lessons From HUD-VASH," *Evaluation and Program Planning* 61 55–63. https://doi.org/10.1016/j.evalprogplan.2016.11.014.

Office of Planning and Community Development. 2021. "About Seattle." https://www.seattle.gov/opcd/population-and-demographics/about-seattle.

Olsen, E.O., C.A. Tyler, J.W. King, and P.E. Carrillo. 2005. "The Effects of Different Types of Housing Assistance on Earnings and Employment," *Cityscape* 8 (2): 163–187.

Public Health – Seattle & King County. 2022. "Community Health Indicators: American Community Survey." https://kingcounty.gov/depts/health/data/community-health-indicators/american-community-survey.aspx?shortname=Median household income.

R Core Team. 2022. R: *A Language and Environment for Statistical Computing*. https://www.r-project.org/.

Regional Affordable Housing Task Force. 2019. *Final Report and Recommendations for King County, WA*. King County, WA.

Richter, F.G.-C., C. Coulton, A. Urban, and S. Steh. 2021. "An Integrated Data System Lens Into Evictions and Their Effects," *Housing Policy Debate* 0 (0): 1–23. https://doi.org/10.1080/10511482.2021.1879201.

Rohe, W.M., M.D. Webb, and K.P. Frescoln. 2016. "Work Requirements in Public Housing: Impacts on Tenant Employment and Evictions," *Housing Policy Debate* 26 (6): 909–927. https://doi.org/10.1080/10511482.2015.1137967.

RStudio Team. 2022. *RStudio: Integrated Development Environment for R*. https://posit.co/.

Sariyar, M., and A. Borg. 2020. *RecordLinkage: Record Linkage Functions for Linking and Deduplicating Data Sets*. https://cran.r-project.org/package=RecordLinkage.

Smith, R.E., S. Popkin, T. George, and J. Comey. 2014. *What Happens to Housing Assistance Leavers?* https://www.urban.org/sites/default/files/publication/32666/413163-What-Happens-to-Housing-Assistance-Leavers-.PDF.

Turner, M.A., and G.T. Kingsley. 2008. *Federal Programs for Addressing Low-Income Housing Needs*. Washington, DC.

U.S. Department of Housing and Urban Development (HUD). 2022a. "Moving to Work (MTW) Demonstration Program." https://www.hud.gov/mtw.

———. 2022b. "PIT and HIC Data Since 2007." https://www.hudexchange.info/resource/3031/pit-and-hic-data-since-2007/.

———. 2019. *Strategic Plan 2018-2022*. https://www.hud.gov/sites/dfiles/SPM/documents/HUDSTRATEGICPLAN2018-2022.pdf.

Washington State Health Care Authority. 2022. *Delivery System Reform Incentive Payment (DSRIP) Measurement Guide*. https://www.hca.wa.gov/assets/program/mtp-measurement-guide.pdf.

Factors Affecting Spillover Impacts of Low-Income Housing Tax Credit Developments: An Analysis of Los Angeles

Brian Y. An
Georgia Institute of Technology

Andrew Jakabovics
Enterprise Community Partners

Jing Liu
Econsult Solutions

Anthony W. Orlando
California State Polytechnic University, Pomona

Seva Rodnyansky
Occidental College

Richard Voith
Econsult Solutions

Sean Zielenbach
SZ Consulting

Raphael W. Bostic
Federal Reserve Bank of Atlanta

Andrew Jakabovics is employed by Enterprise Community Partners, whose subsidiary, Enterprise Community Investments (ECI), syndicates low-income housing tax credits. Although ECI may have syndicated tax credits attached to properties analyzed in this study, all the data came from public datasets and independent proprietary sources. No ECI employees or resources participated in the research. JPMorgan Chase & Co. supported this work. The funders were not involved in conducting this research or in the preparation of this article. The views in this paper do not necessarily reflect the views of the Federal Reserve Bank of Atlanta or the Federal Reserve System.

Abstract

The Low-Income Housing Tax Credit (LIHTC) program is one of the largest sources of financing for affordable housing in the United States. Contrary to many residents' fears, research typically shows that LIHTC-financed properties generate positive spillover impacts in their surrounding communities in the form of increased housing prices. Some critics yet suspect that the overall positive effects obscure the properties' negative impacts for a significant subset of neighborhoods. This article examines these concerns by assessing the housing price effects of LIHTC properties in Los Angeles. The authors explore how the effects differ based on various characteristics of the LIHTC property and of the surrounding neighborhood. The authors supplement these statistical analyses with interviews of key affordable housing developers to understand their decisionmaking process regarding the siting and structuring of LIHTC properties. Regardless of the property or neighborhood characteristics, LIHTC developments in the region have positive spillover price effects. These findings can help inform policymakers who strive to maximize the secondary benefits of affordable housing developments.

Introduction

The country continues to suffer from a significant shortage of affordable rental housing, a problem that has worsened since the onset of the COVID-19 pandemic. Households that struggle to pay the rent tend to be more likely to suffer from poor health and chronic illness. They are more likely to experience food insecurity, and their children are more likely to struggle academically. Perhaps not surprisingly, many developers view the creation and rehabilitation of affordable housing not only as an end in and of itself, but also as a central component of a strategy to stabilize and revitalize lower-income communities.

At the same time, many homeowners continue to have a negative perception of affordable rental housing properties. Influenced in part by demagogic politicians and well-publicized concerns about crime, these homeowners fear that the presence of a publicly subsidized rental housing development in their community will have negative effects on local property values and public safety. This "not in my backyard" sentiment has been most evident in middle- to upper-income neighborhoods, and it frequently has racial or ethnic overtones. (Interestingly, the sentiment typically represents itself simply as opposition to a proposed project, not necessarily as a preference for another use of the property.)

A growing body of research offers evidence that rebuts the negative perception of affordable housing properties. The largest public subsidy in the country, the federal Low-Income Housing Tax Credit (LIHTC) program, has facilitated equity investments in properties that collectively have created or rehabilitated, or both, more than 3 million affordable rental units since 1986. Researchers have found that LIHTC-financed developments generally have neutral to positive effects on surrounding property values. Several studies have documented the relatively long-lasting nature of these spillover effects.

The research also has documented considerable variation in the extent and duration of the property value effects—not only across metropolitan areas, but also within individual cities. Neighborhoods are inherently dynamic environments, with multiple internal and external factors that affect local real estate values and quality of life indicators. Some of those factors affect multiple communities; some are idiosyncratic in nature. It is not surprising, therefore, that developments in different neighborhoods could or would have different spillover effects. Unfortunately, not enough is known about the causes of these variations.

A better understanding of the factors that most influence the spillover effects of affordable housing developments is important for several reasons. It can help policymakers better allocate and target comparatively scarce housing and neighborhood development resources. It can help developers focus activity in areas where the local dynamics create a more favorable environment for positive project spillover. A greater understanding of the interplay between affordable housing developments and local dynamics also can help inform—and ideally alleviate—the persisting opposition to subsidized rental housing.

All these outcomes are in addition to the primary focus and benefit of the LIHTC and other affordable housing programs: The creation of quality homes that do not impose cost burdens on their residents. The intent is not to change the LIHTC program into something for which it was not intended. Rather, this research seeks to determine how various actors can create and preserve affordable housing in a way that best contributes to the stabilization, enhancement, or revitalization of the surrounding community.

This study begins to tease out the factors that influence the type and extent of a LIHTC property's effects on its neighborhood. It uses changes in residential home values as a proxy for improvements in the area. If a community becomes more attractive, it should increase the willingness and desire of people to live there. That increased interest should translate into increased demand for local property, which will bid up local real estate values. In the model used here, therefore, the "treatment effect" is the percent change in nearby prices that occurs after a new LIHTC development is completed, relative to the change in comparable non-LIHTC neighborhoods.

This study examines LIHTC price effects while controlling for a range of project-specific and neighborhood-level factors. On the project side, it considers the role that the size of the development (that is, its number of units) plays in changing local values. It assesses whether spillover effects are greater around entirely subsidized LIHTC properties or around those developments with a mix of subsidized and market-rate units. It also assesses whether the corporate structure of the developer has an effect: Do for-profit sponsored projects have a different effect on the surrounding area's property values than those sponsored by nonprofit organizations?

With respect to neighborhood dynamics, this study examines whether LIHTC developments have greater spillover effects in low-income, high-income, or more moderate-income communities. It examines property effects in communities with higher and lower proportions of people of color and in predominantly Black, Latino, and Asian neighborhoods. It also analyzes whether the concentration of LIHTC properties in a community enhances or limits local property value appreciation.

This study focus on Los Angeles, a city with an extreme shortage of affordable housing and very strong competition for relatively scarce LIHTC allocations. It finds that, across each of the different property- and neighborhood-level dimensions, the average LIHTC property contributes to a meaningful increase in surrounding property values. Not surprisingly, some factors lead to more significant property value increases than others. Although the market and political dynamics in Los Angeles may limit the generalizability of some of these findings to other markets, several of the findings are actionable for both developers and policymakers.

Contribution to the Literature

This analysis focuses on the spillover effects of LIHTC-financed properties that involve either new construction or rehabilitation (and potential expansion) of existing properties. Substantial evidence shows that both types of residential projects positively influence local property values. In Cleveland, for instance, new construction in the 1980s and 1990s increased the sale price of nearby homes by about $5,000, whereas significant rehabilitation had a positive $4,000 effect (Ding and Knaap, 2002; Ding, Simons, and Baku, 2000; Simons, Quercia, and Maric, 1998). One, therefore, would expect similar outcomes for LIHTC developments, as they typically involve either new construction on a previously vacant lot or the often-significant enhancement of one or more existing residential, commercial, or mixed-use properties. Because a typical LIHTC development contains 60 to 80 units, it has a large enough physical footprint to have a noticeable impact on its surrounding area.

Indeed, a growing body of research has documented that LIHTC properties have neutral to positive effects on surrounding real estate prices. Exhibit 1 summarizes several of these analyses.

Exhibit 1

Selected Analyses of Low-Income Housing Tax Credit Properties' Effects on Home Prices (1 of 2)

Study	Market	Basic Spillover Findings
Green, Malpezzie, and Seah (2002)	Madison and Milwaukee, WI	No evidence that LIHTC properties depressed surrounding home sale prices; some evidence that properties near LIHTC developments in Madison appreciated more rapidly than those elsewhere in the city.
Johnson and Bednarz (2002)	Cleveland, OH; Portland, OR; Seattle, WA	Property values increased within a few blocks of LIHTC developments after the developments had been placed in service.
Furman Center (2006) Ellen and Voicu (2007) Ellen et al. (2007)	New York City, NY	Property values surrounding LIHTC buildings increased by as much as 9% in the 5 years after the LIHTC property's opening.
Ezzet-Lofstrom and Murdoch (2006)	Dallas, TX	LIHTC developments had a small, positive effect on surrounding single-family house prices.
Baum-Snow and Marion (2009)	National	Home prices increased by an average 14.9% in census block groups within 1 kilometer of a LIHTC property.
Woo, Joh, and Van Zandt (2016)	Cleveland, OH	Home values near LIHTC developments increased 15.4% relative to price trends elsewhere in the city.
Young (2016)	National (20 highest cost markets)	Proximity to LIHTC property had no significant effect on home values.

Exhibit 1

Selected Analyses of Low-Income Housing Tax Credit Properties' Effects on Home Prices (2 of 2)

Study	Market	Basic Spillover Findings
Edmiston (2018)	Kansas City, MO	LIHTC properties had little positive or negative effect on surrounding property conditions.
Bostic et al. (2020)	Cook County, IL	Home values within 1/8 of a mile of a LIHTC development experienced a 10.8 percentage point increase relative to the countywide average.

LIHTC = low-income housing tax credit.

Although the average spillover price effects of LIHTC developments are generally positive, the averages mask considerable variation within and across regions. Such variations are not surprising, given the often-substantial differences in amenities and real estate trends affecting even adjacent neighborhoods within the same city. Several researchers have taken specific local factors into account in their analyses of affordable housing developments' spillover effects. Others have examined some of the factors specific to the affordable housing properties. The following subsections highlight some of their key findings.

Project Size

Intuitively, one would expect larger residential developments to have commensurately larger effects—either positive or negative—on surrounding neighborhood conditions than smaller developments. Larger developments occupy more physical space and are consequently more visible within an area. They also house more people and, therefore, increase the community's population density.

Multiple studies of affordable housing developments found that larger projects tend to have greater spillover effects, as exhibit 2 summarizes.

Exhibit 2

Selected Analyses of the Size Effects of Low-Income Housing Tax Credit Properties

Study	Market	Key Project Size Findings
Ellen (2007)	New York City, NY	Affordable housing properties with more units generally generated more positive spillover price effects, although the marginal benefit decreased with project size.
Deng (2011a)	Santa Clara County, CA	LIHTC properties with 50 or more units boosted surrounding home values 5 to 6%; smaller properties had no significant spillover effect.
Dillman, Horn, and Verilli (2017)	Review of 24 separate studies across multiple markets	Larger, well-managed affordable housing properties tend to generate more significant spillover price effects, and they also contribute to reductions in local violent crimes.

LIHTC = low-income housing tax credit.

At the same time, larger projects can be problematic in certain markets. Several analyses documented the potential for poorly managed developments of scale to exacerbate local crime issues and contribute to neighborhood decline (Dillman, Horn, and Verilli, 2017). Mid- to large-sized multifamily properties placed in service in low-density areas can negatively affect

surrounding home prices, especially in more affluent communities (Ericksen and Yang, 2022). Even in areas with relatively high population densities such as New York City, spreading affordable units across multiple properties instead of concentrating them in one or two developments can result in greater and more positive overall property value effects (Ellen and Voicu, 2007). Density concerns drive much of the "not in my backyard" opposition to affordable housing. Local residents fear that the increased population density associated with a larger development will irrevocably alter the existing community dynamics.

Extent of Project Subsidization

The LIHTC program does not require all units within a tax credit financed property to be affordable to low-income households. In fact, the income mandates can appear comparatively modest. Statutorily, developers must commit to creating properties that meet one of three income thresholds: (1) Households earning 50 percent or less of the area median income (AMI) occupy at least 20 percent of the units; (2) households earning 60 percent or less of AMI occupy at least 40 percent of the units; (3) households earning an average of 60 percent or less of AMI occupy at least 40 percent of the units, and no household in the property makes more than 80 percent of AMI.

The regulations, therefore, give developers flexibility. A developer can opt to create a facility in which a portion of the units rent at market rates. Alternatively, the developer can elect to have all the units be affordable to households making 60 percent or less of AMI—in which case the property becomes eligible for the maximum LIHTC subsidy. LIHTC developers have tended to focus primarily on creating income-restricted units, in part, as a way of increasing their competitiveness in the tax credit allocation process. An analysis of 12,228 LIHTC properties containing more than 760,000 units in 16 different states found that households earning 60 percent or less of the prevailing AMI occupied 93 percent of the units (Furman Center, 2012). Similarly, an examination of LIHTC properties in 18 states found that 81 percent of the properties' tenants made 50 percent or less of AMI (O'Regan and Horn, 2013).

Still, certain areas contain a fair number of LIHTC properties with market-rate units. In Chicago, for instance, 19.3 percent of the non-senior LIHTC properties placed in service between 1987 and 2016 contained at least five market-rate units. In those properties, unsubsidized units accounted for an average 27 percent of all units (Bostic et al., 2020).

Both fully subsidized LIHTC properties and those with a mix of subsidized and market-rate units have generated positive spillover property value effects. Exhibit 3 summarizes the key findings of several studies of "mixed-income" and fully subsidized properties financed in part with LIHTC or federal HOPE VI monies, or both.

Exhibit 3

Selected Analyses of Fully Subsidized Versus Partially Subsidized Affordable Housing Developments' Spillover Property Value Effects

Study	Market	Key Subsidy-Related Findings
Turbov and Piper (2005)	Atlanta, GA; Louisville, KY; Pittsburgh, PA; St. Louis, MO	Home values in the areas surrounding the mixed-income HOPE VI developments increased more quickly than elsewhere in the respective cities.
Castells (2010)	Baltimore, MD	Of three HOPE VI communities analyzed, only the more mixed-income community demonstrated positive and significant spillover property value increases; no spillover effects were observed surrounding the fully subsidized HOPE VI developments.
Funderberg and MacDonald (2010)	Polk County, IA	Property value appreciation near fully subsidized family LIHTC developments was 2 to 4% less than elsewhere in the county; partially subsidized LIHTC properties had no significant effects on price trends.
Zielenbach, Voith, and Mariano (2010)	Boston, MA; Washington, DC	Both partially and fully subsidized HOPE VI developments had positive property value effects, with the greatest values in areas already experiencing development pressures.
Cloud and Roll (2011)	Denver, CO	The ¼-mile area around the downtown mixed-income HOPE VI site had a greater increase in property values and homebuying, a greater reduction in blight, and a greater increase in other investments than other similar areas in city.
Bostic et al. (2020)	Cook County, IL	Spillover price effects for LIHTC properties with at least five market-rate units were higher than the effects of properties consisting entirely of subsidized units; the price effects were positive in both cases.

LIHTC = low-income housing tax credit.

The relatively limited literature exploring differences in property value spillover effects of partially versus fully subsidized affordable housing developments suggests that complexes that include market-rate units have more positive effects on local home prices. It is important not to draw hard conclusions at this stage, however. The most in-depth examination of the issue, by Bostic et al. (2020) in Chicago, found that LIHTC properties with market-rate units had a disproportionately high effect on nearby home prices in higher-income areas. In lower-income communities, home values appreciated more near fully subsidized LIHTC properties than near partially subsidized ones.

For-Profit Versus Nonprofit Developer

The LIHTC statute requires that at least 10 percent of all tax credit allocations go to projects sponsored by nonprofit developers. Several states and localities have allocated higher proportions of credits to these organizations. Overall, nonprofits were responsible for about 22 percent of the LIHTC properties placed in service between 1987 and 2004, although that proportion may have declined since (Bratt, 2007). A 2015 national survey of 100 affordable housing developers found that, among the 52 most active entities, for-profits were responsible for starting 89 percent and completing 86 percent of the affordable units produced during the year (Bratt and Lew, 2016).

Several analyses have documented the differences between nonprofit and for-profit developers. Not surprisingly, the fundamentally disparate goals of the two types of entities help explain much of the variation. The quest for financial returns drives most for-profit activity, as the developers

need to generate profits for their shareholders. In contrast, nonprofit developers tend to focus more on neighborhood improvements and affordable housing provision. Nonprofits, consequently, are more likely to develop properties in poorer areas. Their properties frequently target lower-income households, and they also are more likely to target people with disabilities, the homeless, seniors, and other "special" populations (Johnson, 2012; Silverman and Patterson, 2011). Because they serve more disadvantaged populations, nonprofit properties often charge lower rents. Bratt and Lew (2016), for instance, found that nonprofit-sponsored LIHTC developments had a higher proportion of units with a low rent-fair market rent ratio than for-profit developments.

Overall, the cost of developing a LIHTC project tends to be higher for a nonprofit developer than for its for-profit counterparts. Some of that difference can be attributed to nonprofits being more likely to engage in the rehabilitation of existing properties and offering more services to tenants. Whereas for-profit developers are more likely to engage in new construction, with models that can be replicated across sites, nonprofits often need to develop project-specific designs for existing properties (Silverman and Patterson, 2011). At least in metropolitan Richmond, Virginia, nonprofit developers of LIHTC properties have been more likely to incorporate rehabilitation, certified property management, and standard-use terms in their properties than their for-profit counterparts (Johnson, 2012). These factors can contribute to greater operating costs. Many nonprofit developers also struggle to obtain capital from conventional lenders and, therefore, are forced to piece together different subsidies, particularly if they try to serve very low-income households. This process can take time and ultimately drive up overall project costs.

Development costs notwithstanding, some evidence exists that nonprofit-developed affordable housing complexes have at least similar, and potentially more positive, effects on surrounding home values than properties developed by for-profit firms. Exhibit 4 summarizes the relatively sparse literature on the issue.

Exhibit 4

Selected Analyses of Spillover Price Effects from Nonprofit and For-Profit Affordable Housing Developments

Study	Market	Key Developer-Related Findings
Goetz, Lam, and Heitlinger (1996)	Minneapolis, MN	Subsidized multifamily properties developed by nonprofit CDCs enhanced the value of surrounding market-rate homes by 86 cents per square foot. Publicly subsidized housing owned by private for-profits had a negative 82 cent per square-foot effect on surrounding home prices.
Smith (2003)	Indianapolis, IN	For 13 years, home prices in areas with significant CDC activity increased 7.14% relative to homes in non-CDC neighborhoods.
Ellen and Voicu (2007)	New York City, NY	Nonprofit-developed, smaller affordable housing properties had larger home price spillover effects than similar for-profit developed properties. The price-value effects associated with nonprofit-developed projects were more stable over time.
Deng (2011a)	Santa Clara County, CA	LIHTC projects developed by HPN-member* nonprofits had 4 to 6 percentage points higher effects on surrounding values than properties developed by for-profits or by non-HPN member nonprofits.
Edmiston (2018)	Kansas City, MO	CDC investments in owner-occupied, single-family homes contributed to an 11.8% increase in home prices within 500 feet of the targeted properties.

CDC = Community Development Corporation. HPN = Housing Partnership Network. LIHTC = low-income housing tax credit.

** HPN is a national network of high-capacity nonprofit developers.*

Neighborhood Income Level

Residential developments do not take place in a vacuum. Their ability to attract and retain tenants, generate revenue streams, and improve (or worsen) conditions in the surrounding area depends not only on their size, management, structure, and other characteristics, but also on the dynamics of the neighborhood. A development's capacity to generate spillover effects can be augmented or constrained by, among other factors, the physical geography of its surroundings, the strength or weakness of the local economy, the extent of real estate development activity, local public safety issues, and various local demographic and socioeconomic characteristics. Not surprisingly, studies of LIHTC and other affordable housing developments' spillover found significant differences in the direction and extent of property value effects across communities.

In general, research has documented more positive spillover price effects from LIHTC developments in lower-income areas than in middle- to upper-income communities. Exhibit 5 summarizes the findings of several studies that examined impacts across different communities.

Exhibit 5

Selected Analyses of Low-Income Housing Tax Credit Developments' Spillover Price Effects by Neighborhood Income Level

Study	Market	Key Findings by Income Level
Baum-Snow and Marion (2009)	National	Median home prices increased 14.9% within 1 kilometer of a LIHTC property, but the price increases were noticeably lower in stable (10.6%) and gentrifying (5.6%) communities.
Deng (2011a)	Santa Clara County, CA	LIHTC developments in low-income neighborhoods had positive price effects, but the effects for the county overall were statistically insignificant.
Deng (2011b)	Miami-Dade County, FL	Price effects were most positive around LIHTC developments in high-poverty neighborhoods and most negative around developments in middle-class communities.
Woo, Joh, and Van Zandt (2016)	Charlotte, NC	LIHTC properties had negative effects on surrounding values, but the effects were much more noticeable in moderate- and upper-income areas than in lower-income ones.
Woo, Joh, and Van Zandt (2016)	Cleveland, OH	The home price effects of LIHTC properties were much lower in lower-income areas than in more moderate- and upper-income communities.
Dillman, Horn, and Verilli (2017)	Summary of 24 studies spanning the country	LIHTC and other affordable housing properties generally boosted values in low-income areas but had more mixed effects in moderate- and high-opportunity areas.
Diamond and McQuade (2019)	Multistate	Home prices within 1/10 of a mile of a LIHTC property increased 6.5% during 10 years in low-income neighborhoods but declined nearly 2.5% in higher-income areas.

LIHTC = low-income housing tax credit.

LIHTC properties tend to be developed in relatively distressed areas. Nationally, 32 percent of LIHTC units placed in service prior to 2011 were in census tracts with poverty rates of at least 30 percent in 2010, and another 23 percent of the units were in tracts with poverty rates between 20 and 30 percent. In 12 sampled states, the average LIHTC unit sat in a tract where the poverty rate was 6 percentage points higher than that of a tract housing a typical unsubsidized rental unit in the same metropolitan area (Ellen, Horn, and Kuai, 2018). The concentration of properties in

weaker markets reflects both LIHTC allocation criteria—which frequently give projects greater points for being in more distressed communities—and some developers' desire to use the LIHTC developments to help catalyze other investments in the area.

The relatively greater spillover benefits of LIHTC properties in lower-income communities should not mask the positive effects that these developments often have in more affluent areas, however. For instance, an analysis of Cleveland in the 1990s and early 2000s found positive price effects of LIHTC developments in moderate- and upper-income communities. In fact, the effects were greater in those areas than in the city's more distressed markets (Woo, Joh, and Van Zandt, 2016). An evaluation of Chicago trends encompassing the same period found strong and enduring LIHTC price effects in both lower- and upper-income neighborhoods (Voith et al., 2022).

It is also possible that the observed negative effects of LIHTC properties in some higher-income neighborhoods may result less from the introduction of affordable housing per se and more from the introduction of comparatively dense multifamily properties in lower-density areas with a preponderance of single-family homes. A recent study reran the nonparametric models that Diamond and McQuade used in their 2019 analysis (see exhibit 5), adding unsubsidized multifamily developments and LIHTC properties to the analysis (Eriksen and Yang, 2022). The new study found that all types of multifamily developments depressed surrounding property values in higher-income areas. Once they controlled for population density, the authors found that the negative effects of LIHTC properties dissipated and even became moderately positive.

Neighborhood Racial and Ethnic Composition

Most research on LIHTC spillover price effects has taken the subject neighborhoods' racial and ethnic composition into account as part of the evaluation structure. Because of the strong inverse correlation between neighborhood incomes and the communities' proportions of individuals of color, the observed effects of racial or ethnic composition largely have tracked the observed income-related effects. Spillover price effects tend to be greater in predominantly Black and Latino communities.

Comparatively, little analysis has been done on different effects in higher- versus lower-income communities of color—the Bostic et al. (2020) analysis of mixed-income properties in Chicago being a notable exception. Similarly, little in-depth examination has been done on the spillover effects in different types of majority-minority neighborhoods. It is not clear, for instance, whether LIHTC properties have different price effects in predominantly Black, predominantly Latino, or predominantly Asian-American neighborhoods.

LIHTC Project Concentration

One of the challenges in assessing the spillover impact of LIHTC developments is that the properties tend to be geographically concentrated. Quite often, some overlap is among the distance bands surrounding individual LIHTC properties. A home sale transaction, therefore, may be included in multiple analyses, which can complicate the assessment of any single LIHTC development's true impact. Such an issue affects evaluations of many affordable housing properties, but LIHTC developments especially, as they tend to be much more concentrated than other subsidized housing properties (Oakley, 2008). In New York City, for example, 71 percent of LIHTC properties were

clustered; in Boston, the proportion was 50 percent (Dawkins, 2013). More than 90 percent of the non-senior LIHTC properties placed in service in Cook County, Illinois, between 1987 and 2016 were within one-half a mile of at least one other LIHTC development (Voith et al., 2022).

To date, few analyses have addressed the effects of this concentration directly. Deng's (2011b) analysis of LIHTC-related effects in south Florida found mixed effects of concentrated development in Miami-Dade County. Some areas with multiple LIHTC properties showed improvement, but the presence of multiple LIHTC developments was potentially worsening conditions in certain suburbs. Two reviews of the affordable housing assessment literature raised concerns about the property value implications of geographically concentrated subsidized housing and the low-income households such complexes support (Dillman, Horn, and Verilli, 2017; Nguyen, 2005). Those concerns were not based on LIHTC-specific findings. Moreover, some evidence exists that clustering affordable housing properties can have more beneficial effects on a community than introducing a single property, based on an analysis of a scattered-site public housing program in Denver (Santiago, Galster, and Tatian, 2001).

The one study to date that deliberately addressed the impacts of LIHTC project clustering focused on Chicago. Voith and his colleagues (2022) found that the introduction of a single LIHTC property to a community had positive and sustainable impacts on surrounding home prices. They did not find any evidence that placing subsequent LIHTC developments in the neighborhood detracted from the positive benefits associated with the initial property. In some cases, the subsequent LIHTC properties had positive and additive effects on surrounding values.

Working Hypotheses

As described previously, a range of studies has documented the generally positive (or at least neutral) overall effects of LIHTC developments on surrounding home prices—findings that rebut the perception that such developments have inherently negative effects on communities. At the same time, they have demonstrated the range of project-specific and neighborhood-level factors that can influence such developments' spillover impacts. Most analyses have incorporated only a few of these independent variables, generally ignoring the complexities associated with the tendency of LIHTC properties to be geographically concentrated. This study represents an initial attempt to account for this wider range of factors in a single analysis.

Based on previous findings, it is expected that the introduction of a LIHTC property in a community typically will have a positive and lasting effect on surrounding home prices. That positive effect is likely to be more pronounced in low-income communities than in more affluent areas, and the introduction of one or more subsequent nearby LIHTC properties is likely to augment it.

This study posits that larger LIHTC properties and those nonprofit entities develop are likely to have somewhat greater spillover price effects than smaller properties and those for-profit firms develop or rehabilitate. (These relationships should hold even after controlling for the fact that larger, nonprofit-sponsored properties are more prevalent in lower-income communities.) It is also anticipated that partially subsidized LIHTC properties—those containing a mix of market-rate

and income-restricted units—will have somewhat greater spillover effects on area prices than fully subsidized properties, in part, because the higher-income residents' additional purchasing power will contribute to the attraction and retention of a wider range of local retail and other amenities. It is not expected that this analysis will find any meaningful difference in price effects across neighborhoods that are predominantly Black, Latino, or Asian-American (again controlling for neighborhood income level).

LIHTC Developments in Los Angeles

To understand better the variations in the spillover effects of LIHTC properties, this study examines both property and neighborhood characteristics in Los Angeles County, California. Los Angeles is the country's largest county and contains 833 LIHTC properties. It has a widespread and widely acknowledged need for affordable housing, with several public, private, and philanthropic initiatives working to alleviate the shortage. It has considerable demographic and socioeconomic diversity, and it continues to be one of the country's strongest real estate markets. It also has strong political support for creating and preserving affordable housing. A Los Angeles-based analysis, therefore, can be beneficial for developers and policymakers looking to address affordable housing needs in other large cities with strong real estate markets, diversity of population and income, and a political commitment to helping address residents' housing cost burdens.

Data

This study analyzes the spillover effects of LIHTC developments placed in service in Los Angeles County between 1987 and 2015. Pre-development and post-development prices in the neighborhoods with one or more LIHTC developments are compared to price trends during the period in neighborhoods with no LIHTC properties.

Data was obtained from HUD for each of the 833 LIHTC properties placed in service during that period. The information includes the property's street address, the year it was placed in service, and its total number of units. Data on all Los Angeles residential property sales from 1987 to 2015 (more than 1.8 million arm's length transactions) was obtained from DataQuick Information Systems, Inc. and CoreLogic, Inc., the transactions were geocoded, then the distance between each sold home and nearby LIHTC developments was calculated. During the 28-year period, 145,056 transactions were within one-fourth of a mile of a LIHTC property, and 362,811 transactions were within one-fourth to one-half of a mile.

Exhibit 6 highlights the differences between Los Angeles County census tracts that contain at least one LIHTC development and those without any such properties during the study period. As the exhibit shows, Los Angeles's LIHTC properties tend to be in disproportionately low-income areas.

Exhibit 6

Characteristics of Los Angeles Median Low-Income Housing Tax Credit and Non-Low-Income Housing Tax Credit Census Tracts

	Median LIHTC Tract	Median Non-LIHTC Tracts
Household income	$46,883	$71,750
Population	4,362	4,182
White non-Hispanic residents	9.6%	19.5%
Black non-Hispanic residents	5.6%	3.1%
Asian non-Hispanic residents	7.9%	9.8%
Hispanic residents	58.9%	41.5%
Poverty rate	21.1%	11.0%
Unemployment rate	6.4%	5.5%
Residential vacancy rate	5.3%	4.9%
Median gross rent	$1,259	$1,544
Median home value	$473,250	$545,400

LIHTC = low-income housing tax credit.

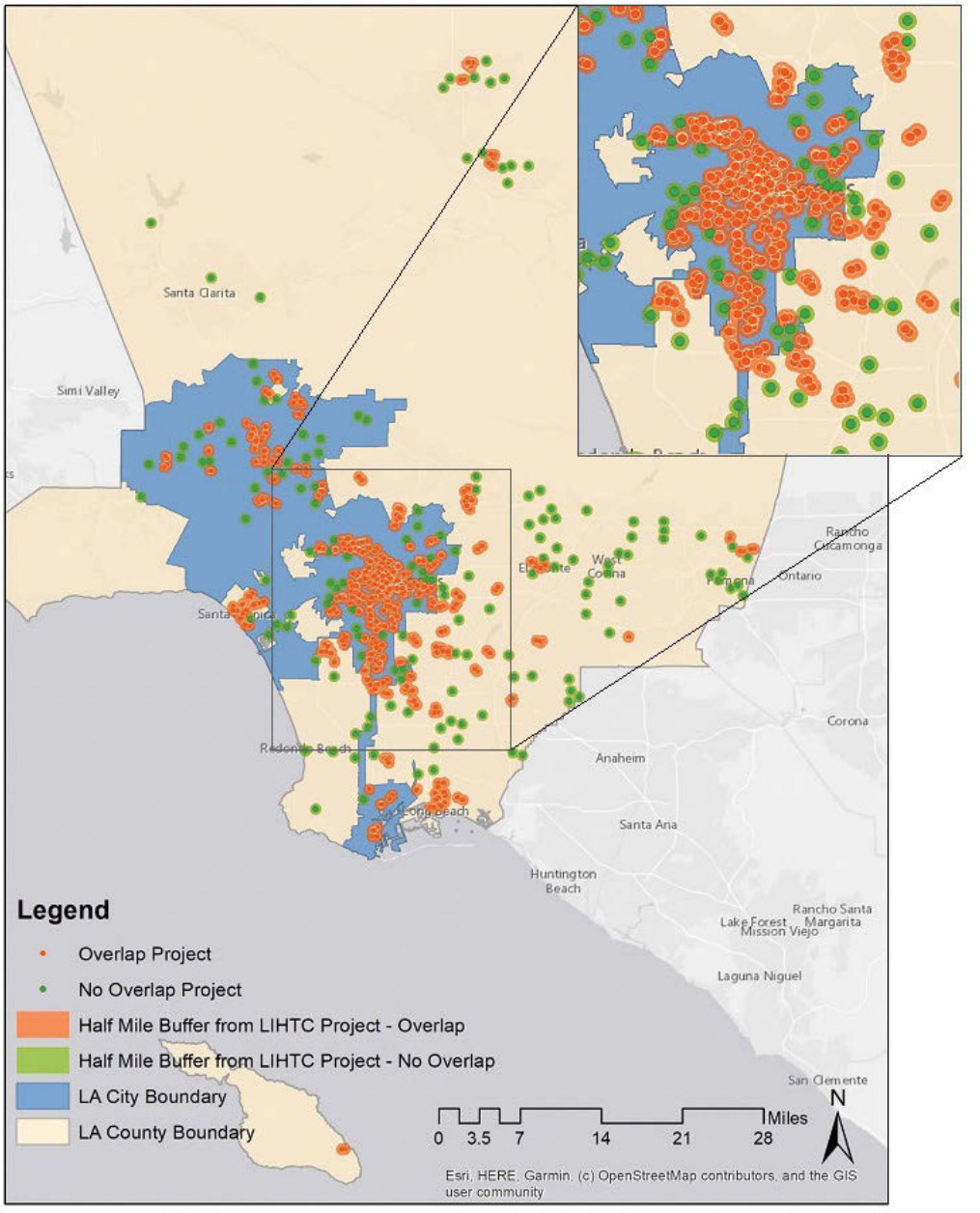
Source: 2016 American Community Survey 5-year estimates

These characteristics are similar to those Basolo, Huarita, and Won (2022) identified in their recent analysis of LIHTC developments in the county. They found that, relative to residential properties generally, LIHTC properties tend to be in neighborhoods that have more economic hardship, higher population density, a higher proportion of renter-occupied units, and more racial and ethnic diversity.

LIHTC properties in Los Angeles also tend to be clustered geographically. Of the county's 833 properties, 679 are within one-half a mile of at least 1 other LIHTC property. The greatest concentration of these developments is in south-central Los Angeles, as exhibit 7 illustrates. The different dots indicate both non-overlapping properties in the city and the overlapping ones.

Exhibit 7

Map of Sampled Low-Income Housing Tax Credit Properties and Surrounding One-Half-Mile Radii



LA = Los Angeles. LIHTC = low-income housing tax credit.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database

Methodology

The aim here is to illuminate the roles that different project- and neighborhood-level characteristics play in influencing the spillover property value effects of LIHTC development. This analysis focuses on six different characteristics: (1) development size (small, medium, and large); (2) proportion of subsidized units (all versus some); (3) developer type (for-profit versus nonprofit); (4) neighborhood income level; (5) neighborhood racial and ethnic composition; and (6) the number of existing LIHTC developments within the neighborhood. These differences are examined both quantitatively and qualitatively to understand how the various factors influence both the developers' decisionmaking and the ultimate spillover impacts.

Quantitative Approach

For the quantitative methods, this study builds on the standard difference-in-differences regression models typically used in program evaluation studies of this kind (for example, Butts, 2022; Chen, Glaeser, and Wessel, 2022; Keeler and Stephens, 2022; Voith et al., 2022). Initially, the typical model used in the literature is created, focusing on the difference in residential prices after constructing a LIHTC project between houses near the completed project and houses farther away. This model considers two distance bands: One within one-fourth a mile of the LIHTC project and the second in the area between one-fourth and one-half a mile from the LIHTC project.[1] This model is illustrated in the following equation 1.

$$(1)\ \ln(P_{itk}) = \sum_{d\in D} \alpha_{0d} Pre_{idt} + \sum_{d\in D} \alpha_{1d} Post_{idt} + \beta X_{it} + \varepsilon_k + \tau_t + \mu_{itk},$$

Where—

$\ln(P_{itk})$	is the natural log of the price of house I at time t in census tract k;
D	is a set of distance bands d, where D = {0–¼ miles, ¼–½ miles}
Pre_{idt}	is a dummy variable equal to 1 if the transaction of house I in distance band d at time t is prior to the construction of a LIHTC project;
$Post_{idt}$	is a dummy variable equal to 1 if the transaction of house i in distance band d at time t is after the construction of a LIHTC project;
X_{it}	is a vector of hedonic characteristics of house i at time t;[2]
ε_k	is a vector of k tract-specific fixed effects;
τ_t	is a vector of t year-specific fixed effects;[3] and
μ_{itk}	is a random error variable.

[1] These distance bands are common in the literature (for example, Diamond and McQuade, 2019; Orlando and Welke, 2022). Other distance bands were tested, yielding very similar results.

[2] These hedonic characteristics include living area square footage, lot size square footage, floor-area ratio, age at sale, number of stories, distance to central business district, seller type, and seasonal dummies (spring, summer, fall).

[3] Time-specific fixed effects control for marketwide inflation, allowing the model to use nominal house prices as the outcome variable.

All transactions are included—those within and outside of the distance bands—to provide a better estimate of the price trends within the overall market and to provide more data on the value of individual housing and neighborhood traits. The "average treatment effect"[4] is the difference between the pre-treatment and post-treatment coefficients ($\alpha_{1d} - \alpha_{0d}$) for a given distance band d.[5] The pre-treatment baseline is included explicitly to show how the LIHTC neighborhoods were different from the control neighborhoods before the introduction of the affordable housing property.

The resulting treatment effect compares the average change in property values of properties within the distance band with the average change in values of homes more than one-half a mile away, controlling for overall marketwide changes in prices. This control group offers a counterfactual for the average pre-post LIHTC change in property values of homes outside the distance bands. This distance distinction is a typical counterfactual for spatial difference-in-differences studies, as these neighborhoods are within the same metropolitan area and experience many of the same supply and demand shocks, especially after controlling for hedonic characteristics, tract-specific fixed effects, and year-specific fixed effects. This approach focuses on the difference in levels before and after development rather than the difference in trends, because previous research (for example, Voith et al., 2022) has demonstrated that level changes are the dominant impact. Assessing changes in levels also allows for a less complicated exposition of each model described in the following.

Having mirrored the standard model, the analysis then expands on it by incorporating different factors associated with the treatment effect. One by one, each of the six subcategorizations are considered, across which one might expect to find different LIHTC effects.

When assessing the importance of neighborhood income and race and ethnicity composition, the sample is subdivided, and separate regressions are run for the different groups of neighborhoods. For income, the analysis looks at trends in low-income communities (those census tracts whose median household incomes fell in the bottom one-third of all Los Angeles tracts per the 2016 American Community Survey's 5-year estimates) and medium- to high-income communities (the remaining tracts). For race and ethnicity, the analysis uses the same census tract tercile approach to analyze communities with high proportions of Black, Latino, Asian, and non-White residents, respectively. In each case, the remaining two-thirds of the tracts serve as our "control group" for the analysis. Equation 1 is then estimated separately for each subsample.

Note that a single LIHTC development can have both high- and low-income neighborhoods within one-half of a mile of the development. The split-sample subgroup approach is a clean way of estimating different LIHTC impacts in communities with different incomes and demographics.

Exhibit 8 shows the differences in sample sizes for each category of analysis. Of the 1.8 million transactions in the whole sample, approximately 26 percent are within one-half a mile of a LIHTC development, as shown in column 2 (487,453). This ratio ranges from 10 percent for the low-income subsample to 45 percent for the high-Hispanic subsample. Even where it is lowest,

[4] In other words, the typical price effect associated with a LIHTC development being placed in service.

[5] As with any difference-in-differences analysis with treatments in multiple periods, the amount of "pre" and "post" years available for each treatment depends on the timing of the treatment (that is, the introduction of the LIHTC property).

however, there are still more than 75,000 transactions, ensuring enough statistical power to detect significant effects.

Exhibit 8

Number of Transactions Near Low-Income Housing Tax Credit by Racial and Ethnic Subsample

Sample	Transactions Within ½ Mile of LIHTC	Transactions More Than ½ Mile Away	Total Transactions
Whole sample	487,453	1,355,272	1,842,725
Low % non-White	282,395	1,059,632	1,342,027
High % non-White	205,058	295,640	500,698
High % Black	252,599	342,078	594,677
Low % Black	234,854	1,013,194	1,248,048
High % Asian	111,384	473,298	584,682
Low % Asian	376,069	881,974	1,258,043
High % Hispanic	200,613	250,017	450,630
Low % Hispanic	286,840	1,105,255	1,392,095
Low income	75,459	663,251	738,710
High income	411,994	692,021	1,104,015

LIHTC = low-income housing tax credit.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database; U.S. Census Bureau

It is not easy to subdivide the sample to analyze the property value effects associated with different property-specific characteristics or for neighborhoods with multiple LIHTC developments. Too many transactions involve properties that fall within distance bands of different properties developed at different times. For these factors, a regression is run with the entire sample, each time focusing on the subcategory under consideration by adding a new, factor-specific variable and two different dummy variables. Exhibit 9 shows that the sample size for each of these interaction variables is large enough to estimate these coefficients. This approach allows for the examination of effects associated with each characteristic while controlling for nearby properties. See the following equation 2.

$$(2)\ \ln P_{itk} = \sum_{d \in D} \alpha_{0d} \mathrm{Pre}_{idt} + \sum_{s \in S} \sum_{d \in D} \alpha_{1ds} Post_{idst} + \beta X_{it} + \varepsilon_k + \tau_t + \mu_{idstk},$$

Where—

Pre_{idt} is a dummy variable equal to 1 if the transaction of house i in distance band d at time t is prior to the construction of a LIHTC project; and

$Post_{idst}$ is a dummy variable equal to 1 if the transaction of house i in distance band d at time t is after the construction of a LIHTC project with either neighborhood or property characteristic s.

S is defined as one of the following sets of neighborhood or property characteristics—

1. S = {1 LIHTC project nearby, 2 LIHTCs projects nearby, 3+ LIHTC projects nearby};

2. S = {small LIHTC project, medium LIHTC project, large LIHTC project};
3. S = {mixed-income LIHTC project, fully subsidized LIHTC project}; or
4. S = {for-profit LIHTC developer; nonprofit LIHTC developer}.

Exhibit 9

Number of Transactions Near Low-Income Housing Tax Credit by Interaction Variable

Interaction Variable	For-Profit Versus Nonprofit	Subsidy	Project Size	Project Concentration
½+ mile away*	1,628,449	1,628,449	1,628,449	1,628,449
For-profit	130,312			
Nonprofit	83,964			
Partially subsidized		56,845		
Fully subsidized		196,431		
Small property			93,601	
Medium property			70,935	
Large property			49,740	
1 LIHTC project				214,276
2 LIHTC projects**				55,791
3+ LIHTC projects**				18,058

LIHTC = low-income housing tax credit.

** Includes transactions of homes more than one-half a mile from a LIHTC property at the time of sale.*

*** Figures represent subsets of transactions within one-half a mile of a single property.*

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database

Potential Endogeneity Issues

These findings could reflect some implicit site selection bias if developers have chosen to locate the LIHTC properties in neighborhoods where values are already trending upward. The model could potentially be revealing existing appreciation trends, not changes associated with the introduction of the LIHTC property.

Two factors lend credence to the selection bias concern. First, developers are inherently more likely to locate properties in areas where they can obtain the greatest tax credit benefit. In their national analysis, Baum-Snow and Marion (2009) found that LIHTC properties in program-designated qualified census tracts (QCTs) had an average of six more units than properties in tracts that fall just below the QCT eligibility threshold. Basolo, Huarita, and Won (2022) found a positive, statistically significant association between LIHTC neighborhoods and QCTs in Los Angeles County. Second, private developers are more likely to select properties in gentrifying—or at least appreciating—neighborhoods than in stable or declining ones (Baum-Snow and Marion, 2009; Ellen and Voicu, 2007).

To the extent that developers seek to maximize profits from rents or property appreciation, an incentive is for them to build or rehabilitate properties in improving neighborhoods. Although they

may earn additional points in the LIHTC allocation process for targeting properties in QCTs or difficult development areas, they could deliberately target properties in distressed areas displaying clear signs of improvement. If property values are already trending upward in these areas, it becomes harder to demonstrate convincingly that the LIHTC development is responsible for the observed appreciation of the local market. Well-crafted statistical models may be able to document a post-development trend in values that is steeper than the pre-development trend, but such findings prove inherently less noteworthy than those that document a distinct change in trends. Without knowledge of the developers' particular location decisions, it is hard to determine the extent to which observed neighborhood effects should be attributed to the initial selection of the site.

Following standard difference-in-differences methodology, a test is run for any observable evidence of such behavior by including a linear "pre-trend" (that is, price trends prior to the LIHTC development) in the model. Within both the ¼- and ½-mile distance bands, the coefficient on this pre-trend is statistically insignificant—and within the ½-mile band, it is even negative. Thus, no empirical evidence exists indicating that price trends in the areas around LIHTC developments were any different from trends elsewhere in the market prior to the LIHTC development completion.

Qualitative Approach

The quantitative analysis described above is supplemented with interviews with LIHTC developers active in the Los Angeles market. Using the authors' collective network of developers, lenders, public officials, and affordable housing advocates, a list of individuals with extensive experience developing LIHTC properties in the region was identified. The authors specifically sought individuals who had experience with both for-profit and nonprofit developers—either by virtue of their work in both types of firms or through their interactions, or both, and joint ventures on particular projects. The authors ultimately were able to schedule interviews with six separate developers. Although it cannot be claimed that these individuals speak for all developers in the market, the authors' conversations with individuals throughout their various networks give them confidence that the interviewees are generally representative of Los Angeles area LIHTC developers.

The quantitative analyses were conducted prior to interviewing the developers. This approach gave the authors the opportunity to obtain context and some interpretation of the findings. Each developer was asked standard questions about the six subcategorizations identified previously, using the questionnaire included in appendix A. As a way of teasing out the extent to which the quantitative findings merely captured preexisting price trends (and, thus, were skewed by endogenous factors), each interviewee was specifically asked about the factors underlying different developers' site selection decisions. The results of those interviews were incorporated into the discussion of the findings.

Findings

This section is divided into subparts, each of which contains our analysis of one of the specific project- or neighborhood-level factors described previously. Within each subsection, the quantitative findings are summarized first, then key insights from the developer interviews are incorporated. Doing so provides a more nuanced understanding of the mechanisms underlying the observations.

LIHTC Spillover Effects in Los Angeles

To create a baseline set of housing price spillover effects, the simplest difference-in-differences model is used as a baseline (that is, equation 1). This model identifies the average effect of all LIHTC developments on surrounding home values. The key results are shown in the "Neighborhoods with Any LIHTC Properties" columns of exhibit 10. (The full regression results—with all hedonic coefficients—are available in appendix B.) Here, the model does not account for the implications of having LIHTC projects geographically concentrated and individual home sales falling within multiple distance bands. Instead, a home sale is designated as a "pre" transaction if it occurs before the first LIHTC project is built in the area and a "post" transaction if it occurs after that initial project is placed in service.

Exhibit 10

Baseline Model for Low-Income Housing Tax Credit Price Effects in Los Angeles County

	Distance from LIHTC Property	Neighborhoods with Any LIHTC Properties	
		Coefficient	T Stat (Coefficients)/ F Stat (Treatment Effects)
Pre	0–¼ mile	– 0.037***	– 5.37
Post		– 0.004	– 0.66
Effect		**0.034*** **	**15.96**
Pre	¼–½ mile	– 0.033***	– 5.68
Post		– 0.003	– 0.51
Effect		**0.030*** **	**11.23**
Observations		1,842,725	
$\bar{R}^2$		0.7242	

LIHTC = low-income housing tax credit.

*** $p < 0.001$.

Notes: Regressions control for census tract fixed effects, year fixed effects, and the following property traits—living area square footage, lot size square footage, floor-area ratio, age at sale, number of stories, distance to central business district, seller type, and seasonal dummies (spring, summer, fall). Full results (with all hedonic coefficients) are available in appendix B. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database

Reading the exhibit from top to bottom, the first set of estimates focuses on the transactions within a ¼ mile of the LIHTC development. The "pre" coefficient, -0.037, indicates that average home sale prices in the LIHTC neighborhoods were 3.7 percent less than comparable transactions in non-LIHTC neighborhoods before the LIHTC development was completed. After a given LIHTC project was built, the "post" coefficient, -0.004, indicates that average sale prices near the LIHTC development were only 0.4 percent less than comparable sale prices in non-LIHTC neighborhoods. Thus, the treatment "effect" is 0.034, the difference between pre and post coefficients, indicating that prices rose 3.4 percent more in LIHTC neighborhoods.

This positive, statistically significant effect is consistent with many of the studies cited previously—and it is similar in magnitude to the most recent estimates, such as Diamond and McQuade (2019) and Voith et al. (2022). If a negative, supply-driven effect exists as Eriksen and Yang (2022) suggest, it is significantly outweighed by the positive spillover effect of the high-quality LIHTC investment. Although it is not possible to disentangle these two competing effects, it is

possible to conclude that these results represent a lower bound on the positive effects of the LIHTC investment, as it may or may not be attenuated by unobservable supply effects.

Moving farther down the table, the second set of estimates focuses on transactions within the ¼–½-mile band, where prices increased by 3.0 percent after the LIHTC development. Again, this result reflects the difference between the post (-0.003) and pre (-0.033) estimates, indicating that LIHTC neighborhoods had 3.3 percent lower prices before development and only 0.3 percent lower prices after development. In other words, once the LIHTC development was in service, the relative price differences nearly disappeared.

In the following discussion, the regression tables have a similar format. They incorporate more post and effect categories to document the estimates of LIHTC effects associated with each category of factors.

Project Size

Regardless of their size, LIHTC properties in Los Angeles County have generated positive effects on surrounding home values. In fact, the effects progressively increased with the size of the LIHTC property, at least within the smallest distance band. Exhibit 11 presents the findings. "Small" developments are those with 50 or fewer units, "medium" developments have between 51 and 100 units, and "large" developments have 101 or more units. Among the 833 Los Angeles properties in the sample, 381 qualify as small, 266 qualify as medium, and 186 qualify as large. Specific post variables are indicated for "small" and "large," because "medium" is the reference category. In other words, the standard "post" coefficient captures the "medium" project size, and the "small post" or "large post" coefficient must be added to "post" to calculate the effect of small or large properties.

Exhibit 11

Property Value Effects of Different Size Low-Income Housing Tax Credit Developments (1 of 2)

	Distance from LIHTC Property	Coefficient	T Stat (Coefficients)/ F Stat (Treatment Effects)
Pre		– 0.037***	– 5.37
Post		0.002	0.19
Small post		– 0.015	– 1.38
Large post	0–¼ mile	0.005	0.42
Small Property Effect		**0.024***	**5.75**
Medium Property Effect		**0.039*****	**13.34**
Large Property Effect		**0.044*****	**13.32**

Exhibit 11

Property Value Effects of Different Size Low-Income Housing Tax Credit Developments (2 of 2)

	Distance from LIHTC Property	Coefficient	T Stat (Coefficients)/ F Stat (Treatment Effects)
Pre		– 0.033***	– 5.67
Post		0.005	0.80
Small post		– 0.018	– 1.56
Large post	¼–½ mile	– 0.003	– 0.22
Small Property Effect		**0.021+**	**3.23**
Medium Property Effect		**0.038*** **	**28.56**
Large Property Effect		**0.036****	**7.34**
Observations		1,842,725	
$\bar{R}^2$		0.7242	

LIHTC = low-income housing tax credit.

*+ p < 0.1. * p < 0.05. ** p < 0.01. *** p < 0.001.*

Notes: The regression controls for census tract fixed effects, year fixed effects, and the following property traits—living area square footage, lot size square footage, floor-area ratio, age at sale, number of stories, distance to central business district, seller type, and seasonal dummies (spring, summer, fall). Full results (with all hedonic coefficients) are available in appendix B. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database

Regression results indicate a greater LIHTC spillover effect from medium and large properties than from small ones. Within one-fourth of a mile of the LIHTC project, the largest properties have the highest spillovers, but in the one-fourth to one-half of a mile distance band, the medium properties' effect surpasses that of large ones. Within both distance bands, the difference in spillover effects between small- and medium-sized LIHTC properties is greater than the difference between medium and large developments. That suggests that, although larger projects generally have a larger effect, the marginal benefit decreases—and potentially even stops or reverses—once the project reaches a certain size. Because the analysis did not include a continuous unit number variable, it is not possible to comment on what that threshold might be.

Importantly, no negative price effects associated with introducing larger LIHTC properties into a neighborhood were found. This finding refutes the perception—identified in a few previous studies—that larger properties could have deleterious neighborhood effects. That said, the "success" of a larger project cannot be taken for granted. Several developers with whom the authors spoke emphasized the importance of addressing community concerns about larger LIHTC developments early in the planning process. The developers frequently encountered resistance to larger planned projects from area residents concerned about the additional traffic and parking difficulties that increased population density could bring. Some residents also had concerns about increased crime and other negative stereotypes associated with "those people," the low-income people of color that tend to occupy many of the region's LIHTC properties.

Alleviating the concerns often required conscious and concerted efforts on the part of the developers to address and ameliorate local residents' reservations. Contending that a "thoughtful LIHTC project only enhances a neighborhood," several interviewees described their emphasis on extensive community programming when designing and carrying out a development. They

engage regularly with local residents to help them understand and (ideally) benefit from the new housing. The developers believe that a project's success depends in large part on the quality of its construction and management, its architectural design, and the supportive services provided to its tenants. Another interviewee noted that "we've only ever had positive impacts" for his firm's projects, attributing the positivity to the considerable time spent during the development process educating nearby residents about "them" (the likely tenants) and the steps the developer takes to help the tenants and the development integrate seamlessly within the community.

Fully Versus Partially Subsidized Developments

Both fully subsidized and partially subsidized LIHTC developments have positive and often significant effects on surrounding property values.[6] Partially subsidized or "mixed" developments are defined as those with six or more market-rate units. In Los Angeles, 6.72 percent of the LIHTC developments placed in service between 1987 and 2016 meet this "mixed" criterion.[7] These mixed developments are treated as the default "post" variable in the analysis and add another dichotomous variable for properties with fewer than six market-rate units (that is, fully subsidized developments). Again, the effect of fully subsidized properties on surrounding property values can be determined by adding the coefficient of this dichotomous variable to the "post" variable. For example, reading the coefficients from top to bottom in exhibit 12, the pre variable indicates that property prices were 3.7 percent lower in LIHTC neighborhoods than non-LIHTC neighborhoods before the LIHTC development was completed, the post variable indicates that they were 1.6 percent higher after a partially subsidized development, and therefore, the partially subsidized property effect was an increase of 5.4 percent. By comparison, property prices were 2.2 percent lower after a fully subsidized development ("fully subsidized post" coefficient), and therefore, the fully subsidized property effect was an increase of 3.2 percent.

Exhibit 12

Property Value Effects of Partially Versus Fully Subsidized Low-Income Housing Tax Credit Developments (1 of 2)

	Distance from LIHTC Property	Coefficient	T Stat (Coefficients)/ F Stat (Treatment Effects)
Pre		– 0.037***	– 5.37
Post		0.016	0.57
Fully subsidized post	0–¼ mile	– 0.022	– 0.74
Partially Subsidized Property Effect		**0.054+**	**3.17**
Fully Subsidized Property Effect		**0.032*** **	**15.36**

[6] One cannot rule out the possibility that the low significance for the partially subsidized properties is a result of the limited number of such properties.

[7] As discussed in more detail to follow, the severe shortage of affordable housing in southern California contributes to the relatively low proportion of partially subsidized properties in the Los Angeles market. Recent changes to the LIHTC allocation process in the state have created additional incentives for developers to maximize the number of affordable units in their properties.

Exhibit 12

Property Value Effects of Partially Versus Fully Subsidized Low-Income Housing Tax Credit Developments (2 of 2)

	Distance from LIHTC Property	Coefficient	T Stat (Coefficients)/ F Stat (Treatment Effects)
Pre		– 0.033***	– 5.70
Post		0.005	0.22
Primarily subsidized post	¼–½ mile	– 0.008	– 0.40
Partially Subsidized Property Effect		**0.038**	**2.24**
Fully Subsidized Property Effect		**0.029*** **	**12.82**
Observations		1,842,725	
$\bar{R}^2$		0.7242	

LIHTC = low-income housing tax credit.

*+ p < 0.1.*** p < 0.001.*

Notes: Regression controls for census tract fixed effects, year fixed effects, and the following property traits—living area square footage, lot size square footage, floor-area ratio, age at sale, number of stories, distance to central business district, seller type, and seasonal dummies (spring, summer, fall). Full results (with all hedonic coefficients) are available in appendix B. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database

Partially subsidized developments have a larger, but not necessarily statistically significant, effect in both distance bands, which suggests that including some market-rate units within a development is likely to generate greater spillover effects within the surrounding neighborhood. In Los Angeles, the competition for tax credits has led developers to move away from such "mixed" properties. Each developer with whom the authors spoke now focuses primarily on fully subsidized properties serving very low-income households. Several nonprofit developers always have focused on providing housing to tenants well down the income ladder. Two of the interviewees' current firms have in their portfolios substantial numbers of supportive housing units affordable to tenants earning 40 percent or less of area median income. One of the region's larger nonprofit developers typically serves households earning less than 50 percent of AMI in developments it has financed with 9-percent LIHTCs, whereas primarily housing tenants with incomes closer to 60 percent of AMI in properties financed with the shallower 4-percent credits.

One of the for-profit interviewees emphasizes that the competitiveness of the LIHTC program drives developers' decisions around unit affordability. His firm prefers to develop properties that primarily serve households earning between 50 and 60 percent of AMI, because the profit margins are much tighter when units are set aside for tenants earning closer to 30 percent of AMI (especially if those tenants do not have vouchers to help subsidize their rents). To receive maximum points on a tax credit application, the firm needs to commit to serving households earning as little as 30 percent of AMI.

The high costs of land and construction in the Los Angeles area make it difficult to finance LIHTC properties containing market-rate units. Non-LIHTC public funds generally cannot be used for market-rate units, so developing mixed property inevitably involves separating the market-rate and affordable units into distinct condominium-like entities. It becomes necessary to attract private, non-LIHTC-related equity to finance the market-rate properties.

The California Housing Finance Authority operates a Mixed Income Program that helps support properties serving renters earning between 30 and 120 percent of AMI. For all practical purposes, the program is useful only for properties with a relatively small proportion of affordable units. Many municipalities in the state now have inclusionary zoning ordinances that require market-rate apartment properties to set aside at least 15 percent of their units for low-income households. According to one interviewee, including much more than the minimum requirement subjects the developer to financing constraints. "There's a real sensitivity among [conventional] lenders and investors once a project has more than 20 percent affordable units," and that sensitivity leads to a reluctance to commit capital.

Another interviewee explains that "the economics don't really support a mixed-income approach." In Los Angeles, the costs of development exceed the rents that are affordable to low- and moderate-income households—even for households making as much as 140 percent of AMI. As a result, all units in a development effectively need to be subsidized to be affordable. Given the limited amounts of public subsidy available, it makes more sense financially to maximize the number of units that can receive LIHTC-related capital. Moreover, property owners generally are exempt from property taxes on units designated as affordable to households making 80 percent or less of AMI; that exemption disappears for units renting to households above the 80-percent threshold. Not surprisingly, LIHTC developers in the region now tend to undertake partially subsidized projects only if they are large, part of a broader development, and present an opportunity for a substantial financial return.

For-Profit Versus Nonprofit Developer

Although both for-profit and nonprofit-sponsored LIHTC developments have positive effects on surrounding home values, the effects of the for-profit projects appear to be greater. Within one-fourth of a mile of a for-profit LIHTC property, the observed increase in home values is nearly twice as large as the effect on homes near a nonprofit development (4.0 versus 2.1 percent).[8] Similarly, for-profit properties have a greater effect on properties between one-fourth and one-half of a mile from the LIHTC site. Exhibit 13 presents the results, with the post coefficient representing nonprofit sponsored developments.

[8] Throughout this article, the coefficients are interpreted as percentages, which is the common protocol in the literature when the outcome variable is a natural logarithm. It is possible to be slightly more precise by converting all coefficients using exponential functions, but readers often find this approach more confusing when they try to compare the exhibit with the text.

Exhibit 13

Property Value Effects of Nonprofit Versus For-Profit Sponsored Low-Income Housing Tax Credit Developments

	Distance from LIHTC Property	Coefficient	T Stat (Coefficients)/F Stat (Treatment Effects)
Pre		– 0.038***	– 5.43
Post		– 0.017	– 1.35
For-profit post	0–¼ mile	0.019	1.42
Nonprofit Treatment		0.021+	2.84
For-Profit Treatment		0.040***	15.51
Pre		– 0.033***	– 5.72
Post		– 0.014	– 1.31
For-profit post	¼–½ mile	0.013	1.36
Nonprofit Treatment		0.019	2.42
For-Profit Treatment		0.032***	11.84
Observations		1,842,725	
$\bar{R}^2$		0.7242	

LIHTC = low-income housing tax credit.

*+ p < 0.1. *** p < 0.001.*

Notes: Regression controls for census tract fixed effects, year fixed effects, and the following property traits—living area square footage, lot size square footage, floor-area ratio, age at sale, number of stories, distance to central business district, seller type, and seasonal dummies (spring, summer, fall). Full results (with all hedonic coefficients) are available in appendix B. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database

What accounts for the observed difference between for-profit and nonprofit-developed properties? One of the interviewees, who has worked for both nonprofit and for-profit development firms, contends that a "decent LIHTC deal is no different from any other multifamily property," at least not architecturally. He believes that a well-designed and well-managed LIHTC property should have the same effect as any other residential development on the surrounding community. Developers have yet different goals when building or rehabilitating a property, and those differing motivations likely influence both the extent and type of their spillover potential.

According to the nonprofit developers with whom the authors spoke, stabilizing or revitalizing the surrounding community often is, at best, a secondary goal for a project. Their overriding interest lies in ensuring that cost-burdened households have an affordable and safe place to live. One organization, for example, focuses primarily on alleviating and preventing homelessness. It looks for sites that can support both affordable housing units and a range of ancillary human services for its targeted very low-income population; its principal (or even sole) concern is its clientele, not the broader neighborhood. Given space needs, its projects frequently are in less residential neighborhoods, areas where less obvious opportunities exist for influencing single-family home prices. Another nonprofit development organization focuses chiefly on properties that can help alleviate the region's affordable housing shortage. Although the organization aspires to help facilitate community development, it realizes that many of its projects are unlikely to have much catalytic spillover effect. "Some developments are just developments—most, in fact—while others have more possibility for catalyzing neighborhood revitalization," explains the firm's president and chief executive officer. Some properties are inherently more self-contained by virtue of their

location or population (those serving senior citizens or people with disabilities, for instance), whereas others are more clearly part of a neighborhood.

In contrast, the economic considerations underlying for-profit developments appear to lead such developers to focus more consistently on the ramifications of their properties on the local market. A typical for-profit firm frequently looks to secure properties—especially vacant sites—whose development can help catalyze investment in the surrounding area. Development team members join local community crime watch groups, erect fencing around the site, hire security, and generally work to ensure a safe environment. Post-construction, the firm imposes very strict rules on who can live in or visit the property, employs national property management companies, and offers extensive programming for tenants' children. These steps help ensure that the development is well received within the community and contributes to its overall improvement. Ideally, that positive experience can help translate into political support for subsequent developments by the firm—either in that community or in others nearby. For-profit LIHTC developers often are engaged in non-LIHTC development, as well, and are routinely seeking sites for their next projects. In the competitive real estate environment that is Los Angeles, strong community support can make the difference in bids for desirable sites.

Neighborhood Income Level

LIHTC developments have had positive price effects across both lower- and higher-income neighborhoods throughout Los Angeles. "Low-income" communities are defined as those census tracts whose median household incomes were in the bottom one-third of all census tracts throughout Los Angeles. "Medium- and high-income" tracts are those in the top two-thirds. The incomes are based on the 2016 American Community Survey 5-year estimates. Exhibit 14 presents the findings for both sets of neighborhoods.

Exhibit 14

Neighborhood Income Models

	Distance from LIHTC Property	All Neighborhoods		Low Income		Medium to High Income	
		Coefficient	T/F Stat	Coefficient	T/F Stat	Coefficient	T/F Stat
Pre		– 0.037***	– 5.37	– 0.099***	– 6.20	– 0.032***	– 4.91
Post	0–¼ mile	– 0.004	– 0.66	– 0.021	– 1.35	0.012*	2.05
Effect		**0.034*** **	**15.96**	**0.078*** **	**18.91**	**0.044*** **	**29.08**
Pre		– 0.033***	– 5.68	– 0.077***	– 5.42	– 0.030***	– 5.61
Post	¼–½ mile	– 0.003	– 0.51	0.004	0.22	0.009+	1.77
Effect		**0.030*** **	**11.23**	**0.080*** **	**21.25**	**0.039*** **	**23.47**
Observations		1,842,725		738,710		1,104,015	
$\bar{R}^2$		0.7242		0.7033		0.6237	

LIHTC = low-income housing tax credit.

*+ p < 0.1. * p < 0.05. *** p < 0.001.*

Notes: Regressions control for census tract fixed effects, year fixed effects, and the following property traits—living area square footage, lot size square footage, floor-area ratio, age at sale, number of stories, distance to central business district, seller type, and seasonal dummies (spring, summer, fall). Full results (with all hedonic coefficients) are available in appendix B. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database; U.S. Census Bureau

The effects are greater in low-income communities, where values have increased between 7.7 and 8.0 percent relative to similar neighborhoods with no LIHTC developments. These effects are roughly twice the size of those in more affluent communities. Even in these medium- and high-income neighborhoods, the presence of a LIHTC development increases surrounding home values by about 4 percent. In Los Angeles, fears that LIHTC properties will depress local home values do not conform to the data.

Neighborhood Race and Ethnicity

The regressions find little difference in the direction or size of LIHTC price effects in predominantly White and predominantly non-White neighborhoods.[9] Drawing on the 2016 American Community Survey data, "high non-White" tracts are defined as those whose proportion of minorities is among the top one-third of all Los Angeles census tracts. Conversely, "low and medium non-White" tracts are those in the bottom two-thirds of the distribution. In both types of neighborhoods, LIHTC properties have positive effects on surrounding house prices, with the effects dissipating slightly as the distance from the LIHTC site increases. Although the model shows slightly higher price effects in communities with higher proportions of White residents, those differences are not statistically significant. Exhibit 15 presents the findings.

Exhibit 15

Neighborhood Race and Ethnicity Models (1)

	Distance from LIHTC Property	All Neighborhoods		High Non-White		Low to Medium Non-White	
		Coefficient	T/F Stat	Coefficient	T/F Stat	Coefficient	T/F Stat
Pre		– 0.037***	– 5.37	– 0.024**	– 3.21	– 0.048***	– 4.86
Post	0–¼ mile	– 0.004	– 0.66	0.008	1.12	– 0.010	– 1.15
Treatment		**0.034*** **	**15.96**	**0.032*** **	**15.56**	**0.038** **	**7.33**
Pre		– 0.033***	– 5.68	– 0.026***	– 4.96	– 0.038***	– 3.85
Post	¼–½ mile	– 0.003	– 0.51	0.004	0.76	– 0.005	– 0.56
Treatment		**0.030*** **	**11.23**	**0.030*** **	**29.68**	**0.033***	**3.91**
Observations		1,842,725		500,698		1,342,027	
$\bar{R}^2$		0.7242		0.6872		0.7273	

LIHTC = low-income housing tax credit.

** p < 0.05. ** p < 0.01. ** p < 0.001.*

Notes: Regressions control for census tract fixed effects, year fixed effects, and the following property traits—living area square footage, lot size square footage, floor-area ratio, age at sale, number of stories, distance to central business district, seller type, and seasonal dummies (spring, summer, fall). Full results (with all hedonic coefficients) are available in appendix B. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database; U.S. Census Bureau

A similar methodological approach is taken to identify any differences in price effects across communities with high proportions of Asian, Black, and Hispanic residents. Again, census data is used to determine the proportion of each population group within a census tract, then the model is run with the top one-third and bottom two-thirds (by proportion) of tracts within the county. Exhibit 16 presents these findings.

[9] *White* is defined as those who identify as White regardless of ethnicity; *non-White* is everyone else.

Exhibit 16

Neighborhood Race and Ethnicity Models (2)

	Distance from LIHTC Property	High Asian		Low to Medium Asian	
		Coefficient	T/F Stat	Coefficient	T/F Stat
Pre		– 0.050***	– 4.07	– 0.035***	– 4.44
Post	0–¼ mile	0.011	1.16	– 0.006	– 0.88
Treatment		**0.061*** **	**20.36**	**0.028****	**9.56**
Pre		– 0.033***	– 4.31	– 0.034***	– 5.00
Post	¼–½ mile	0.006	0.81	– 0.005	– 0.69
Treatment		**0.039*** **	**11.63**	**0.029****	**7.91**
Observations		584,682		1,258,043	
$\bar{R}^2$		0.7249		0.7194	
	Distance from LIHTC Property	**High Black**		**Low to Medium Black**	
		Coefficient	**T/F Stat**	**Coefficient**	**T/F Stat**
Pre		– 0.032**	– 3.16	– 0.049***	– 4.75
Post	0–¼ Mile	0.008	0.98	– 0.002	– 0.27
Treatment		**0.039*** **	**13.10**	**0.047****	**10.43**
Pre		– 0.042***	– 6.32	– 0.032***	– 4.03
Post	¼–½ mile	0.001	0.11	0.005	0.60
Treatment		**0.043*** **	**18.10**	**0.037****	**10.22**
Observations		594,677		1,248,048	
$\bar{R}^2$		0.6476		0.7356	
	Distance from LIHTC Property	**High Hispanic**		**Low to Medium Hispanic**	
		Coefficient	**T/F Stat**	**Coefficient**	**T/F Stat**
Pre		– 0.022*	– 2.43	– 0.055***	– 5.91
Post	0–¼ mile	0.019**	2.94	– 0.007	– 0.80
Treatment		**0.040*** **	**11.74**	**0.047*****	**12.45**
Pre		– 0.023***	– 4.55	– 0.043***	– 4.33
Post	¼–½ mile	0.017*	2.48	– 0.006	– 0.60
Treatment		**0.040*** **	**18.26**	**0.037***	**5.13**
Observations		450,630		1,392,095	
$\bar{R}^2$		0.5930		0.7221	

LIHTC = low-income housing tax credit.

** p < 0.05. ** p < 0.01. *** p < 0.001.*

Notes: Regressions control for census tract fixed effects, year fixed effects, and the following property traits—living area square footage, lot size square footage, floor-area ratio, age at sale, number of stories, distance to central business district, seller type, and seasonal dummies (spring, summer, fall). Full results (with all hedonic coefficients) are available in appendix B. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database; U.S. Census Bureau

The more race- and ethnicity-specific models follow the same pattern as the initial non-White model. Regardless of race or ethnicity to classify census tracts, the model shows that LIHTC projects have a significant positive effect on surrounding house prices within both the 0- to ¼-mile band and the ¼- to ½-mile band. In the narrowest band where LIHTC investment is most likely to affect houses, within one-fourth of a mile of a development, the LIHTC price effect is largest

for neighborhoods with a high proportion of Asian residents (6.1 percent) and second largest for areas with a low to medium proportion of Black and Hispanic residents (4.7 percent in both cases). The latter statistic is particularly important, as it contradicts the common concern that LIHTC investment will be less advantageous to neighborhoods with predominantly White residents.

LIHTC Project Concentration

The introduction of subsequent LIHTC properties in a neighborhood tends to build on the positive price effects associated with the initial LIHTC development. Multiple "post" variables are incorporated for each distance band, with each such variable representing whether one, two, three, or more LIHTC projects are present nearby when a given transaction occurs. The coefficients in the "neighborhoods with one, two, or three LIHTC properties" columns in exhibit 17 reflect the marginal effect of each successive LIHTC project on homes within the overlapping distance band areas. (The "neighborhoods with any LIHTC properties" column presents the original price effect model findings as points of reference.)

Exhibit 17

Baseline Model Versus Neighborhood Low-Income Housing Tax Credit Concentration (Overlap) Model

	Distance from LIHTC Property	Neighborhoods with Any LIHTC Properties		Neighborhoods with 1, 2, or 3 LIHTC Properties	
		Coefficient	T/F Stat	Coefficient	T/F Stat
Pre		– 0.037***	– 5.37	– 0.035***	– 5.16
Post1		– 0.004	– 0.66	– 0.006	– 0.95
Post2				– 0.002	– 0.24
Post3	0–¼ mile			0.074**	2.70
Effect1		**0.034*** **	**15.96**	**0.030*** **	**13.31**
Effect2				**0.027***	**5.30**
Effect3				**0.101*** **	**12.07**
Pre		– 0.033***	– 5.68	– 0.032***	– 5.64
Post1		– 0.003	– 0.51	– 0.006	– 1.12
Post2				0.001	0.07
Post3	¼–½ mile			0.049***	4.70
Effect1		**0.030*** **	**11.23**	**0.026*** **	**11.11**
Effect2				**0.027+**	**3.69**
Effect3				**0.076*** **	**20.86**
Observations		1,842,725		1,842,725	
$\bar{R}^2$		0.7242		0.7242	

LIHTC = low-income housing tax credit.

*+ p < 0.1. * p < 0.05. ** p < 0.01. *** p < 0.001.*

Notes: The regressions control for census tract fixed effects, year fixed effects, and the following property traits—living area square footage, lot size square footage, floor-area ratio, age at sale, number of stories, distance to central business district, seller type, and seasonal dummies (spring, summer, fall). Full results (with all hedonic coefficients) are available in appendix B. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database

The coefficient for the pre variable in the ¼-mile band indicates that home prices are 3.5 percent lower in the LIHTC neighborhoods relative to non-LIHTC neighborhoods, prior to completing any LIHTC projects. After the first LIHTC property is placed in service (post1), average prices in the LIHTC communities are only about 0.6 percent less than those in the non-LIHTC areas. Therefore, the first LIHTC project leads to a 3.0-percent (with rounding) increase in home prices. Adding a second project to the neighborhood does not significantly change the impact observed from the first project. The addition of a third LIHTC development in the area yet significantly increases the overall spillover price effect. It is unclear why the introduction of a third LIHTC property has a greater (and more positive) effect than the introduction of a second such property, but these results are consistent with the recent study of Chicago LIHTC price effects, which took a similar modeling approach (Voith et al., 2022).

The positive price effects from adding subsequent LIHTC properties to a neighborhood apply up to one-half of a mile from the LIHTC sites. Not surprisingly, the price effects within one-fourth of a mile from the LIHTC sites are greater than those between one-fourth and one-half of a mile from the properties.[10]

Project Siting

Positive price effects are consistently associated with LIHTC developments in Los Angeles—regardless of the characteristics of the properties or the surrounding neighborhoods. What remains somewhat unclear are the underlying factors that help to bring about these improvements.

As noted previously, one possible explanation for some of the observed effects is simple endogeneity: Developers are choosing to build or rehabilitate properties in neighborhoods where prices already are trending upward. The model might simply be measuring baked-in effects. Each developer downplayed the role local real estate market factors play in the selection of LIHTC project sites. One interviewee has spent multiple decades in the affordable housing industry as an investor, developer, and advocate. To him, the local market is "irrelevant" when considering sites for prospective LIHTC development, saying "it doesn't help the project in any way." Another agrees that "local price trends don't come into play, because [LIHTC unit] rents are too deeply subsidized."

Because rents in LIHTC-subsidized units are tied to AMIs, the only way a developer can realize additional revenues from those units is through an overall increase in AMI. An increase in local market rents has no effect on the economic returns from subsidized units. Furthermore, the rent restrictions last for at least 15 years, well beyond the point at which current trends can predict future rents and land values. LIHTC developments receiving certain state subsidies are subject to California's 55-year affordability requirements.

In theory, developers could undertake LIHTC projects with the expectation of selling their interest after 15 years and realizing a significant capital gain from the property's appreciated value. Nonprofit developers frequently have no intention of ever selling their LIHTC properties; some

[10] The actual price effects could be greater than those reported. It is possible that prices may begin trending upward once plans for the development are announced, when the developer receives a formal allocation of tax credits, or when ground is broken on the project. Thus, the actual pre-development, pre-announcement home values in the LIHTC neighborhoods may be less than the reported average.

impose ground leases that ensure the properties' affordability for up to 99 years. Many for-profits developers take a similar "long-term hold" approach, meeting their economic return thresholds from developer fees and ongoing rents.

Local market conditions factor into site selection decisions for projects with a mix of subsidized and market-rate units. Such projects tend to involve for-profit developers (either alone or in a joint venture with a nonprofit), and those firms certainly look for properties that can command higher rents for their market-rate units. Because of the intensity of the competition for LIHTC allocations and related public bond financing and the reality that applicants generally receive more points in the allocation process for promising higher proportions of affordable units, new mixed-income affordable housing developments are relatively rare now in Los Angeles. (They were more prevalent 8 to 10 years ago, when competition for allocations was less severe.) In the current environment, such projects tend to occur only when necessary to satisfy local zoning regulations. In effect, a mixed-income property is "really a market-rate deal with a small amount of affordability for political or financing reasons," according to one interviewee.

Nonprofit developers also may deliberately target properties in gentrifying areas, such as the Boyle Heights neighborhood and low-income communities near the University of Southern California. They do so not for the property's appreciation potential, but rather as a way of preserving existing affordable housing and preventing the displacement of lower-income residents. LIHTC financing becomes a tool to help residents afford to continue living in their communities.

If developers are not basing site decisions on local market trends, what are their primary considerations? Four key factors influence the location of LIHTC developments in greater Los Angeles.

1. Site Availability

Although Los Angeles does not have the development density of some other markets, it has relatively few sites available for multifamily rental properties. Some developers undertake projects primarily in response to specific requests for proposals issued by local housing agencies. The agency typically has control of one or more specific parcels of land and searches for the best strategy for developing it as affordable housing. Requests for proposals respondents, therefore, have limited, if any, flexibility in the location of their proposed development.

Other developers proactively seek properties for construction or rehabilitation, often in partnership with a local community organization. The challenge is that many desirable properties either are not for sale or are too costly for an affordable housing development. Few developers have the financial luxury of waiting indefinitely for a favored site to come on line. Some for-profit firms will pay a premium for a desirable property, but the success of that approach still depends on the willingness of the existing landowner to work with the developer. For every property a typical firm acquires, it analyzes between 25 and 50 potential sites.

2. Project's Economic Feasibility

A potential site and the desired development must be both physically and economically feasible. Each of the developers emphasized that "the deal has to pencil out financially" to be considered.

Among the factors developers must account for are the shape and contours of the site, which help determine the potential size of the building or buildings and the difficulty of the construction or rehabilitation process. They also need to weigh the costs of gaining control of the property, carrying out any necessary environmental remediation and (potentially) relocating tenants during the construction period.

Separate from the actual development costs are zoning considerations. Local land use plans must already allow for multifamily development or be flexible enough to incorporate such activities. Moreover, developers need to identify any existing entitlements or other constraints that could affect the proposed project. Not surprisingly, many potential properties are not suitable or feasible for affordable multifamily housing.

3. Extent of Local Political Support

Perhaps the most salient factor when considering sites for LIHTC projects is the extent of local support for the proposed development. Developers noted that they "almost always" encounter some community opposition to a proposed affordable housing project. Developments targeting seniors and working adults generate less concern than those designed for the homeless and families with children, but virtually every proposed project generates some local opposition. For nonprofit organizations developing "special needs housing," achieving 70 percent or greater local support represents the targeted benchmark. They consequently devote considerable time and energy to local outreach during a project's pre-development stage to help assuage resident concerns and alleviate local opposition.

The support—or at least neutrality—of local public officials is critical for a project to move forward in Los Angeles, particularly if the developer is pursuing any public funding for the project. This principle effectively applies to all projects, because a commitment of local funding enhances a project's competitiveness for tax credits. As one interviewee attested, "political support is mandatory" for a LIHTC development to be successful. "You don't want to drive a square peg into a round hole . . . and you're looking for the least amount of resistance to complete a project in a reasonable timeframe."

Local political support is not always forthcoming, however, even in communities with an objective need for more affordable housing. One of the nonprofit developers interviewed contends that Angelenos generally are "very aware of the lack of affordable housing" in the city but have limited knowledge of the steps that need to be taken to address the problem. Educating them about the importance of taking advantage of favorable properties can be "difficult." For an organization that focuses primarily on housing for the homeless, the fate of its developments depends almost entirely on the support of a local city council member. These individuals are not always supportive, and if they are not, their colleagues will not overrule them. Various local dynamics play into council members' decisions. One current council member, for instance, has been supportive of affordable housing development but has imposed an unofficial moratorium on new such developments in his neighborhood, because he feels that it has too much affordable housing right now.

4. Competitiveness for LIHTCs and Other Public Resources

In California, competition for LIHTC allocations, state affordable housing bonds, and various other public subsidies has become hypercompetitive due to the broad acknowledgment of the imperative to address the state's growing homeless population and its expanding deficit of affordable housing. The increased competition has changed the dynamics surrounding project selection and prioritization, with developers increasingly focused on structuring planned developments in ways that can maximize their likelihood of scoring well in the application review. With finite resources available and a limited number of application periods, developers must be ready to make their best presentations during those application windows.

Applicants receive additional points for projects in designated areas such as qualified census tracts and difficult-to-develop areas—communities with high land, construction, and utility costs relative to the median income. Allocators also look more favorably on proposed developments near amenities such as public transit and grocery stores. Developments whose financing limits the use of state bond proceeds to the portion of the property serving the lowest income renters also tend to score higher.

Implications for Policy and Future Research

This analysis demonstrates the widespread, positive spillover price effects associated with LIHTC properties in Los Angeles. It explicitly refutes the pervasive perception among certain politicians and policymakers that such developments somehow worsen neighborhood economic conditions. Even in predominantly White, middle- to upper-income neighborhoods, LIHTC developments have positive effects on local home values. Moreover, residents should not be concerned about introducing a subsequent LIHTC property in the community; the concentration of such properties typically has an additive effect on values. This study finds that larger scale LIHTC projects and fully subsidized developments tend to bring about greater spillover benefits to the surrounding neighborhoods, and such positive effects are not only found in projects sponsored by nonprofit developers, but also by for-profit developers.

From a policy perspective, the key takeaway is that LIHTC developments, in addition to creating and preserving badly needed housing that is affordable to low-income households, consistently have positive effects on surrounding property values. A "bad" place for such properties to be developed does not exist, nor does a "bad" type of LIHTC development exist. Regardless of the development's size or neighborhood in which it is placed into service, a LIHTC property is likely to have a positive spillover effect on its neighborhood.

Are there types of properties or types of neighborhoods that are likely to produce more positive spillover effects than others? Perhaps, and this study identified some differences in spillover price effects associated with some project- and neighborhood-level factors. It is important to note that these differences, although potentially significant statistically, are not meaningfully different economically. At most, they may reflect a percentage point or two difference. Although not insignificant, the variation is hardly enough to spend considerable time and energy searching for the "best" fit of development and neighborhood. After all, the property value effects ultimately are a

secondary benefit of the LIHTC development; the primary benefit remains the affordable housing it supplies for low-income people.

Moreover, trying to identify the ideal project and neighborhood rarely is realistic, given the inherent political and economic constraints developers must negotiate. In a city such as Los Angeles, with relatively little land available for development, finding a suitable property in an area where residents are supportive of affordable housing is its own challenge. Developers often have to take advantage of whatever opportunities are available; they do not have the luxury of waiting for the highest impact scenario, particularly because no guarantee is given that a development will obtain a LIHTC allocation and other subsidies.

Some of these findings and accompanying conclusions could be specific to Los Angeles. The city's well-publicized problem with homelessness and its severe—and widely acknowledged—shortage of affordable housing resulted in the passage of several public ordinances to encourage more LIHTC and other affordable housing development. Los Angeles continues to be one of the country's strongest real estate markets, with many of its neighborhoods experiencing substantial home price appreciation in the past few years. These and other factors create an environment that is conducive to positive LIHTC spillover price effects. It is important to see if these findings can be replicated in weaker and smaller urban markets throughout the country.

This study presented rising property values as inherently beneficial for a community. They certainly benefit local property owners, but they simultaneously can disadvantage local renters. Rising values typically translate into higher rents; like many other cities throughout the country, Los Angeles has experienced double-digit average annual rent increases in the past few years. Ironically, introducing a LIHTC property in a community could conceivably reduce the housing affordability for other renters in the area. To date, little research—in Los Angeles or elsewhere—has been on the spillover rental ramifications of creating affordable housing in a neighborhood.

More generally, it is important to understand the precise mechanisms that contribute to the observed price appreciation around LIHTC properties. If site selection is not contributing significantly to the observed changes—as this quantitative and qualitative research suggests—then researchers need to identify the factors that are driving the change. How much is a result of additional population density in the community—density that can shape investors' perception of the community's appeal? To what extent is the improvement driven by the replacement of a vacant or underutilized, potentially deteriorating, property into a more positive community asset? How much of the effect results from active and capable property management? Answering these questions provides fruitful avenues for future research.

Appendix A. Los Angeles Low-Income Housing Tax Credit Developer Questions

1. **First, how did you choose the particular location for your LIHTC development?**

    a. How did the LIHTC allocation criteria affect your decision?

b. How difficult was it to find available land or properties?

c. What local market dynamics affected your decision? For instance, did you consider local crime rates? Did you focus more on areas with appreciating property values? Did you focus on areas where community organizations were actively encouraging affordable housing development?

d. How supportive was the community of your planned development? Did their support or opposition affect your decision to develop the property—or the characteristics of the development?

2. **What was your targeted mix of tenant incomes in the property?**

   a. What was the financial and mission rationale behind that goal?

   b. Were you successful in achieving the desired mix? Why or why not?

   c. Since the building has been operational, how has the tenant mix changed? What has been the rate of tenant turnover?

   d. Has the turnover rate been about what you expected? What factors have you found to be most important in attracting and keeping tenants?

3. **How (if at all) has the property affected the dynamics of the surrounding neighborhood?**

   a. How has the community's opinion of the project evolved since the property was placed in service?

   b. How has the neighborhood changed since you broke ground? Has it become more or less appealing for investment?

   c. Do you believe that the LIHTC property has had a significant effect on the surrounding community? If so, what kind of effect? Why?

   d. Have you contemplated or undertaken subsequent LIHTC developments in this neighborhood? If so, are you considering other or different factors now than you did prior to the first LIHTC investment in the area?

Appendix B. Full Regression Results

Exhibit B-1

Baseline Model for Low-Income Housing Tax Credit Price Effects in Los Angeles County (1 of 2)

	Distance from LIHTC Property	Neighborhoods with Any LIHTC Properties	
		Coefficient	T Stat (Coefficients)/ F Stat (Treatment Effects)
Pre		– 0.037***	– 5.37
Post	0–¼ mile	– 0.004	– 0.66
Effect		**0.034*** **	**15.96**
Pre		– 0.033***	– 5.68
Post	¼–½ mile	– 0.003	– 0.51
Effect		**0.030*** **	**11.23**
Lot size		0.000***	4.04
Lot size^2		– 0.000***	– 4.40
Living area		0.000***	35.86
Living area^2		– 0.000***	– 24.06
Floor-area ratio		– 0.004	– 1.35
Age		– 0.001	– 0.54
Age^2		0.000	0.60
2 Stories		0.019**	2.84
3 Stories		0.067**	3.17
Spring		0.004	1.63
Summer		0.037***	14.88
Fall		0.045***	19.79
Distance to central business district		– 0.010	– 1.06
Government seller		– 0.176***	– 4.21
Bank seller		– 0.141***	– 9.95
1989		0.168***	21.45
1990		0.193***	28.68
1991		0.202***	17.39
1992		0.208***	7.66
1993		0.124***	8.42
1994		0.103***	5.49
1995		0.039***	4.05
1996		0.041***	4.47
1997		0.078***	7.45
1998		0.174***	19.86
1999		0.270***	28.36
2000		0.347***	37.47
2001		0.446***	46.47
2002		0.585***	59.70
2003		0.764***	72.21
2004		1.009***	88.21
2005		1.198***	100.99
2006		1.267***	96.35
2007		1.012***	84.16
2008		0.801***	38.30
2009		0.801***	19.29

Exhibit B-1

Baseline Model for Low-Income Housing Tax Credit Price Effects in Los Angeles County (2 of 2)

Distance from LIHTC Property	Neighborhoods with Any LIHTC Properties	
	Coefficient	T Stat (Coefficients)/ F Stat (Treatment Effects)
2010	0.846***	26.53
2011	0.811***	24.84
2012	0.850***	26.20
2013	1.017***	35.33
2014	1.135***	40.76
2015	1.217***	40.76
2016	1.291***	45.13
Constant	11.439***	71.77
Observations	1,842,725	
$\bar{R}^2$	0.7242	

LIHTC = low-income housing tax credit.

*** p < 0.01. *** p < 0.001.*

Notes: Regressions also control for census tract fixed effects, which are not listed due to the large number of tracts. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database

Exhibit B-2

Property Value Effects of Different Size Low-Income Housing Tax Credit Developments (1 of 2)

	Distance from LIHTC Property	Coefficient	T Stat (Coefficients)/ F Stat (Treatment Effects)
Pre		– 0.037***	– 5.37
Post		0.002	0.19
Small post		– 0.015	– 1.38
Large post	0–¼ mile	0.005	0.42
Small Property Effect		**0.024***	**5.75**
Medium Property Effect		**0.039*****	**13.34**
Large Property Effect		**0.044*****	**13.32**
Pre		– 0.033***	– 5.67
Post		0.005	0.80
Small post		– 0.018	– 1.56
Large post	¼–½ mile	– 0.003	– 0.22
Small Property Effect		**0.021+**	**3.23**
Medium Property Effect		**0.038*****	**28.56**
Large Property Effect		**0.036****	**7.34**
Lot size		0.000***	4.04
Lot size^2		– 0.000***	– 4.40
Living area		0.000***	35.86
Living area^2		– 0.000***	– 24.06
Floor-area ratio		– 0.004	– 1.35
Age		– 0.001	– 0.54
Age^2		0.000	0.60
2 Stories		0.019**	2.84

Exhibit B-2

Property Value Effects of Different Size Low-Income Housing Tax Credit Developments (2 of 2)

Distance from LIHTC Property	Coefficient	T Stat (Coefficients)/ F Stat (Treatment Effects)
3 Stories	0.067**	3.17
Spring	0.004	1.63
Summer	0.037***	14.88
Fall	0.045***	19.79
Distance to central business district	– 0.010	– 1.06
Government seller	– 0.176***	– 4.21
Bank seller	– 0.141***	– 9.95
1989	0.168***	21.45
1990	0.193***	28.68
1991	0.202***	17.38
1992	0.208***	7.66
1993	0.124***	8.42
1994	0.103***	5.49
1995	0.039***	4.06
1996	0.041***	4.47
1997	0.078***	7.45
1998	0.174***	19.85
1999	0.270***	28.36
2000	0.347***	37.46
2001	0.446***	46.48
2002	0.585***	59.69
2003	0.764***	72.22
2004	1.009***	88.23
2005	1.198***	100.96
2006	1.267***	96.33
2007	1.012***	84.16
2008	0.801***	38.30
2009	0.801***	19.28
2010	0.846***	26.53
2011	0.811***	24.82
2012	0.850***	26.19
2013	1.017***	35.35
2014	1.135***	40.78
2015	1.217***	40.76
2016	1.291***	45.13
Constant	11.439***	71.86
Observations	1,842,725	
$\bar{R}^2$	0.7242	

LIHTC = low-income housing tax credit.

*+ p < 0.1. * p < 0.05. ** p < 0.01. *** p < 0.001.*

Notes: Regressions also control for census tract fixed effects, which are not listed due to the large number of tracts. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database

Exhibit B-3

Property Value Effects of Partially Versus Fully Subsidized Low-Income Housing Tax Credit Developments (1 of 2)

	Distance from LIHTC Property	Coefficient	T Stat (Coefficients)/ F Stat (Treatment Effects)
Pre		– 0.037***	– 5.37
Post		0.016	0.57
Fully subsidized post	0–¼ mile	– 0.022	– 0.74
Partially Subsidized Property Effect		**0.054+**	**3.17**
Fully Subsidized Property Effect		**0.032*** **	**15.36**
Pre		– 0.033***	– 5.70
Post		0.005	0.22
Primarily subsidized post	¼–½ mile	– 0.008	– 0.40
Partially Subsidized Property Effect		**0.038**	**2.24**
Fully Subsidized Property Effect		**0.029*** **	**12.82**
Lot size		0.000***	4.04
Lot size^2		– 0.000***	– 4.40
Living area		0.000***	35.86
Living area^2		– 0.000***	– 24.06
Floor-area ratio		– 0.004	– 1.35
Age		– 0.001	– 0.54
Age^2		0.000	0.60
2 Stories		0.019**	2.85
3 Stories		0.067**	3.17
Spring		0.004	1.63
Summer		0.037***	14.88
Fall		0.045***	19.79
Distance to central business district		– 0.010	– 1.05
Government seller		– 0.176***	– 4.21
Bank seller		– 0.141***	– 9.95
1989		0.168***	21.45
1990		0.193***	28.67
1991		0.202***	17.37
1992		0.208***	7.66
1993		0.124***	8.42
1994		0.103***	5.49
1995		0.039***	4.05
1996		0.041***	4.46
1997		0.078***	7.44
1998		0.174***	19.84
1999		0.270***	28.36
2000		0.347***	37.47
2001		0.446***	46.46
2002		0.585***	59.67
2003		0.764***	72.18
2004		1.009***	88.16
2005		1.198***	100.95
2006		1.267***	96.29

Exhibit B-3

Property Value Effects of Partially Versus Fully Subsidized Low-Income Housing Tax Credit Developments (2 of 2)

	Distance from LIHTC Property	Coefficient	T Stat (Coefficients)/ F Stat (Treatment Effects)
2007		1.012***	84.13
2008		0.801***	38.30
2009		0.801***	19.29
2010		0.846***	26.53
2011		0.811***	24.83
2012		0.850***	26.20
2013		1.017***	35.33
2014		1.135***	40.77
2015		1.217***	40.77
2016		1.291***	45.15
Constant		11.439***	71.74
Observations		1,842,725	
$\bar{R}^2$		0.7242	

LIHTC = low-income housing tax credit.

*+ p < 0.1. ** p < 0.01. *** p < 0.001.*

Notes: Regressions also control for census tract fixed effects, which are not listed due to the large number of tracts. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database

Exhibit B-4

Property Value Effects of Nonprofit Versus For-Profit Sponsored Low-Income Housing Tax Credit Developments (1 of 2)

	Distance from LIHTC Property	Coefficient	T Stat (Coefficients)/ F Stat (Treatment Effects)
Pre		– 0.038***	– 5.43
Post		– 0.017	– 1.35
For-profit post	0–¼ mile	0.019	1.42
Nonprofit Treatment		**0.021+**	**2.84**
For-Profit Treatment		**0.040*** **	**15.51**
Pre		– 0.033***	– 5.72
Post		– 0.014	– 1.31
For-profit post	¼–½ mile	0.013	1.36
Nonprofit Treatment		**0.019**	**2.42**
For-Profit Treatment		**0.032*** **	**11.84**
Lot size		0.000***	4.04
Lot size^2		– 0.000***	– 4.40
Living area		0.000***	35.85
Living area^2		– 0.000***	– 24.06
Floor-area ratio		– 0.004	– 1.35
Age		– 0.001	– 0.55
Age^2		0.000	0.61
2 Stories		0.019**	2.84
3 Stories		0.067**	3.17

Exhibit B-4

Property Value Effects of Nonprofit Versus For-Profit Sponsored Low-Income Housing Tax Credit Developments (2 of 2)

Distance from LIHTC Property	Coefficient	T Stat (Coefficients)/ F Stat (Treatment Effects)
Spring	0.004	1.63
Summer	0.037***	14.91
Fall	0.045***	19.80
Distance to central business district	– 0.010	– 1.06
Government seller	– 0.176***	– 4.21
Bank seller	– 0.141***	– 9.95
1989	0.168***	21.46
1990	0.193***	28.71
1991	0.202***	17.40
1992	0.208***	7.67
1993	0.124***	8.42
1994	0.103***	5.49
1995	0.039***	4.06
1996	0.041***	4.48
1997	0.078***	7.45
1998	0.174***	19.82
1999	0.270***	28.31
2000	0.347***	37.33
2001	0.446***	46.36
2002	0.585***	59.54
2003	0.764***	72.12
2004	1.009***	88.16
2005	1.198***	100.93
2006	1.267***	96.25
2007	1.012***	84.11
2008	0.801***	38.31
2009	0.801***	19.29
2010	0.846***	26.54
2011	0.811***	24.83
2012	0.850***	26.20
2013	1.017***	35.33
2014	1.135***	40.79
2015	1.217***	40.81
2016	1.291***	45.19
Constant	11.439***	71.69
Observations	1,842,725	
$\bar{R}^2$	0.7242	

LIHTC = low-income housing tax credit.

*+ p < 0.1. ** p < 0.01. *** p < 0.001.*

Notes: Regressions also control for census tract fixed effects, which are not listed due to the large number of tracts. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database

Exhibit B-5

Neighborhood Income Models (1 of 2)

	Distance from LIHTC Property	All Neighborhoods		Low Income		Medium to High Income	
		Coefficient	T/F Stat	Coefficient	T/F Stat	Coefficient	T/F Stat
Pre		– 0.037***	– 5.37	– 0.099***	– 6.20	– 0.032***	– 4.91
Post	0–¼ mile	– 0.004	– 0.66	– 0.021	– 1.35	0.012*	2.05
Effect		**0.034*** **	15.96	**0.078*** **	**18.91**	**0.044*** **	**29.08**
Pre		– 0.033***	– 5.68	– 0.077***	– 5.42	– 0.030***	– 5.61
Post	¼–½ mile	– 0.003	– 0.51	0.004	0.22	0.009+	1.77
Effect		**0.030*** **	**11.23**	**0.080*** **	**21.25**	**0.039*** **	**23.47**
Lot size		0.000***	4.04	0.000***	4.82	– 0.000	– 0.36
Lot size^2		– 0.000***	– 4.40	– 0.000***	– 4.63	0.000	0.09
Living area		0.000***	35.86	0.000***	26.27	0.000***	28.95
Living area^2		– 0.000***	– 24.06	– 0.000***	– 19.10	– 0.000***	– 17.65
Floor-area ratio		– 0.004	– 1.35	– 0.002	– 1.27	– 0.356***	– 10.35
Age		– 0.001	– 0.54	0.002	1.51	– 0.004	– 1.40
Age^2		0.000	0.60	– 0.000	– 0.66	0.000	1.16
2 Stories		0.019**	2.84	0.004	0.56	0.029***	3.56
3 Stories		0.067**	3.17	0.052*	2.30	0.102+	1.86
Spring		0.004	1.63	0.015***	4.35	– 0.002	– 0.62
Summer		0.037***	14.88	0.047***	13.01	0.029***	10.00
Fall		0.045***	19.79	0.051***	15.07	0.041***	10.80
Distance to central business district		– 0.010	– 1.06	– 0.006	– 0.51	– 0.013	– 1.04
Government seller		– 0.176***	– 4.21	– 0.317**	– 2.93	– 0.128**	– 2.94
Bank seller		– 0.141***	– 9.95	– 0.123**	– 3.07	– 0.126***	– 18.49
1989		0.168***	21.45	0.179***	18.20	0.160***	22.52
1990		0.193***	28.68	0.176***	17.87	0.202***	29.48
1991		0.202***	17.39	0.178***	11.86	0.220***	15.49
1992		0.208***	7.66	0.146***	9.82	0.251***	7.22
1993		0.124***	8.42	0.072***	5.08	0.165***	8.50
1994		0.103***	5.49	0.054***	3.84	0.144***	5.15
1995		0.039***	4.05	0.008	0.79	0.064***	5.05
1996		0.041***	4.47	0.022*	1.99	0.059***	4.82
1997		0.078***	7.45	0.087***	6.81	0.073***	5.03
1998		0.174***	19.86	0.201***	16.68	0.151***	13.90
1999		0.270***	28.36	0.298***	21.01	0.249***	23.95
2000		0.347***	37.47	0.381***	25.65	0.324***	32.82
2001		0.446***	46.47	0.464***	31.37	0.435***	37.03
2002		0.585***	59.70	0.586***	40.22	0.585***	49.01
2003		0.764***	72.21	0.749***	51.41	0.774***	57.59
2004		1.009***	88.21	0.965***	62.05	1.036***	73.62
2005		1.198***	100.99	1.135***	69.04	1.242***	91.63

Exhibit B-5

Neighborhood Income Models (2 of 2)

	Distance from LIHTC Property	All Neighborhoods		Low Income		Medium to High Income	
		Coefficient	T/F Stat	Coefficient	T/F Stat	Coefficient	T/F Stat
2006		1.267***	96.35	1.205***	72.48	1.320***	79.23
2007		1.012***	84.16	1.204***	71.51	1.338***	60.39
2008		0.801***	38.30	1.056***	51.46	0.985***	27.57
2009		0.801***	19.29	0.942***	48.34	0.736***	14.08
2010		0.846***	26.53	0.944***	48.29	0.795***	19.25
2011		0.811***	24.84	0.902***	39.93	0.761***	18.01
2012		0.850***	26.20	0.936***	38.18	0.800***	18.68
2013		1.017***	35.33	1.078***	44.68	0.975***	25.51
2014		1.135***	40.76	1.186***	45.80	1.100***	30.16
2015		1.217***	40.76	1.258***	44.97	1.187***	30.19
2016		1.291***	45.13	1.316***	47.34	1.273***	33.79
Constant		11.439***	71.77	11.425***	62.24	11.649***	54.78
Observations		1,842,725		738,710		1,104,015	
$\bar{R}^2$		0.7242		0.7033		0.6237	

LIHTC = low-income housing tax credit.

*+ p < 0.1. * p < 0.05. ** p < 0.01. *** p < 0.001.*

Notes: Regressions also control for census tract fixed effects, which are not listed due to the large number of tracts. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems and CoreLogic; LIHTC HUD User database; U.S. Census Bureau

Exhibit B-6

Neighborhood Race and Ethnicity Models (1) (1 of 2)

	Distance from LIHTC Property	All Neighborhoods		High Non-White		Low to Medium Non-White	
		Coefficient	T/F Stat	Coefficient	T/F Stat	Coefficient	T/F Stat
Pre		– 0.037***	– 5.37	– 0.024**	– 3.21	– 0.048***	– 4.86
Post	0–¼ mile	– 0.004	– 0.66	0.008	1.12	– 0.010	– 1.15
Treatment		**0.034*** **	**15.96**	**0.032*** **	**15.56**	**0.038** **	**7.33**
Pre		– 0.033***	– 5.68	– 0.026***	– 4.96	– 0.038***	– 3.85
Post	¼–½ mile	– 0.003	– 0.51	0.004	0.76	– 0.005	– 0.56
Treatment		**0.030*** **	**11.23**	**0.030*** **	**29.68**	**0.033***	**3.91**
Lot size		0.000***	4.04	0.000***	3.04	0.000***	3.44
Lot size^2		– 0.000***	– 4.40	– 0.000*	– 2.38	– 0.000***	– 3.80
Living area		0.000***	35.86	0.000***	31.61	0.000***	29.85
Living area^2		– 0.000***	– 24.06	– 0.000***	– 18.00	– 0.000***	– 20.85
Floor-area ratio		– 0.004	– 1.35	– 0.206**	– 3.19	– 0.003	– 1.33
Age		– 0.001	– 0.54	– 0.001	– 0.48	– 0.001	– 0.53
Age^2		0.000	0.60	0.000	0.36	0.000	0.65
2 Stories		0.019**	2.84	0.049***	6.43	0.010	1.16
3 Stories		0.067**	3.17	0.048	0.87	0.062**	2.78
Spring		0.004	1.63	– 0.009	– 1.31	0.010***	3.98

Exhibit B-6

Neighborhood Race and Ethnicity Models (1) (2 of 2)

Distance from LIHTC Property	All Neighborhoods		High Non-White		Low to Medium Non-White	
	Coefficient	T/F Stat	Coefficient	T/F Stat	Coefficient	T/F Stat
Summer	0.037***	14.88	0.025***	3.70	0.041***	16.37
Fall	0.045***	19.79	0.036***	4.20	0.049***	23.84
Distance to central business district	– 0.010	– 1.06	0.021	1.25	– 0.014	– 1.39
Government seller	– 0.176***	– 4.21	– 0.054	– 0.58	– 0.234***	– 4.88
Bank seller	– 0.141***	– 9.95	– 0.141***	– 9.27	– 0.141***	– 7.88
1989	0.168***	21.45	0.173***	8.86	0.166***	24.13
1990	0.193***	28.68	0.188***	20.93	0.195***	23.56
1991	0.202***	17.39	0.206***	17.94	0.201***	12.88
1992	0.208***	7.66	0.198***	13.92	0.212***	5.95
1993	0.124***	8.42	0.149***	9.91	0.115***	6.16
1994	0.103***	5.49	0.138***	5.16	0.091***	5.10
1995	0.039***	4.05	0.067***	5.18	0.029**	2.63
1996	0.041***	4.47	0.063***	4.24	0.034***	3.44
1997	0.078***	7.45	0.087***	4.16	0.075***	7.36
1998	0.174***	19.86	0.164***	13.37	0.178***	17.76
1999	0.270***	28.36	0.240***	15.43	0.281***	25.76
2000	0.347***	37.47	0.326***	27.68	0.355***	32.96
2001	0.446***	46.47	0.430***	31.06	0.453***	43.15
2002	0.585***	59.70	0.569***	44.58	0.592***	53.60
2003	0.764***	72.21	0.751***	54.70	0.770***	65.36
2004	1.009***	88.21	1.016***	67.68	1.007***	76.51
2005	1.198***	100.99	1.226***	67.86	1.188***	86.60
2006	1.267***	96.35	1.299***	56.02	1.257***	90.50
2007	1.012***	84.16	1.324***	50.12	1.268***	80.84
2008	0.801***	38.30	1.013***	25.62	1.013***	39.27
2009	0.801***	19.29	0.778***	12.15	0.812***	19.36
2010	0.846***	26.53	0.831***	17.42	0.854***	26.62
2011	0.811***	24.84	0.810***	16.57	0.812***	24.66
2012	0.850***	26.20	0.853***	17.37	0.851***	26.21
2013	1.017***	35.33	1.021***	23.45	1.017***	35.59
2014	1.135***	40.76	1.145***	27.03	1.133***	40.29
2015	1.217***	40.76	1.237***	28.09	1.211***	40.29
2016	1.291***	45.13	1.317***	31.51	1.283***	44.69
Constant	11.439***	71.77	11.428***	25.64	11.496***	65.75
Observations	1,842,725		500,698		1,342,027	
$\bar{R}^2$	0.7242		0.6872		0.7273	

LIHTC = low-income housing tax credit.

** p < 0.05. ** p < 0.01. *** p < 0.001.*

Notes: Regressions also control for census tract fixed effects, which are not listed due to the large number of tracts. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database; U.S. Census Bureau

Exhibit B-7

Neighborhood Race and Ethnicity Models (2) (1 of 4)

	Distance from LIHTC Property	High Asian		Low to Medium Asian	
		Coefficient	T/F Stat	Coefficient	T/F Stat
Pre		– 0.050***	– 4.07	– 0.035***	– 4.44
Post	0–¼ mile	0.011	1.16	– 0.006	– 0.88
Treatment		**0.061*** **	**20.36**	**0.028****	**9.56**
Pre		– 0.033***	– 4.31	– 0.034***	– 5.00
Post	¼–½ mile	0.006	0.81	– 0.005	– 0.69
Treatment		**0.039*** **	**11.63**	**0.029****	**7.91**
Lot size		0.000***	7.67	0.000*	2.49
Lot size^2		– 0.000***	– 7.00	– 0.000**	– 2.86
Living area		0.000***	27.40	0.000***	30.76
Living area^2		– 0.000***	– 17.92	– 0.000***	– 19.76
Floor-area ratio		– 0.001	– 0.81	– 0.006	– 0.97
Age		0.000	0.14	– 0.002	– 0.60
Age^2		– 0.000	– 0.84	0.000	0.705
2 Stories		0.031***	4.53	0.014	1.59
3 Stories		0.048	1.44	0.071*	2.54
Spring		0.010***	3.84	0.002	0.65
Summer		0.042***	16.13	0.034***	10.49
Fall		0.050***	22.11	0.043***	13.72
Distance to CBD		0.022*	2.54	– 0.017	– 1.61
Government seller		– 0.147	– 1.32	– 0.175***	– 3.83
Bank seller		– 0.106***	– 15.11	– 0.144***	– 9.56
1989		0.178***	18.87	0.164***	18.17
1990		0.189***	18.70	0.197***	24.75
1991		0.170***	17.58	0.219***	14.17
1992		0.133***	10.45	0.245***	6.78
1993		0.068***	5.34	0.153***	7.98
1994		0.055***	3.54	0.127***	5.11
1995		0.001	0.07	0.057***	4.58
1996		0.012	0.94	0.057***	4.68
1997		0.051***	3.50	0.092***	6.67
1998		0.150***	14.44	0.186***	15.42
1999		0.231***	19.48	0.290***	22.98
2000		0.316***	29.34	0.363***	27.72
2001		0.418***	37.97	0.461***	33.39
2002		0.555***	49.28	0.600***	43.29
2003		0.735***	61.72	0.779***	52.84
2004		0.969***	70.78	1.027***	68.71
2005		1.145***	73.37	1.222***	81.35
2006		1.203***	77.87	1.298***	74.19
2007		1.214***	78.68	1.313***	58.69
2008		1.017***	79.89	1.011***	26.17
2009		0.903***	65.34	0.763***	14.10
2010		0.919***	68.98	0.819***	18.93
2011		0.871***	60.49	0.789***	17.55

Exhibit B-7

Neighborhood Race and Ethnicity Models (2) (2 of 4)

	Distance from LIHTC Property	High Asian		Low to Medium Asian	
		Coefficient	T/F Stat	Coefficient	T/F Stat
2012		0.905***	57.87	0.829***	18.37
2013		1.055***	64.63	1.001***	24.76
2014		1.165***	64.53	1.123***	28.77
2015		1.234***	66.48	1.211***	28.85
2016		1.293***	70.44	1.292***	31.82
Constant		10.952***	82.04	11.548***	60.85
Observations		584,682		1,258,043	
$\bar{R}^2$		0.7249		0.7194	
	Distance from LIHTC Property	**High Black**		**Low to Medium Black**	
		Coefficient	**T/F Stat**	**Coefficient**	**T/F Stat**
Pre		– 0.032**	– 3.16	– 0.049***	– 4.75
Post	0–¼ mile	0.008	0.98	– 0.002	– 0.27
Treatment		**0.039*** **	**13.10**	**0.047****	**10.43**
Pre		– 0.042***	– 6.32	– 0.032***	– 4.03
Post	¼–½ mile	0.001	0.11	0.005	0.60
Treatment		**0.043*** **	**18.10**	**0.037****	**10.22**
Lot size		– 0.000	– 1.19	0.000***	6.54
Lot size^2		0.000	1.17	– 0.000***	6.64
Living area		0.000***	22.66	0.000***	36.78
Living area^2		– 0.000***	– 12.30	– 0.000***	– 24.06
Floor-area ratio		– 0.314***	– 4.88	– 0.002	– 1.29
Age		– 0.007+	– 1.69	0.002*	2.21
Age^2		0.000+	1.69	– 0.000*	– 2.31
2 Stories		0.018	1.36	0.018***	3.41
3 Stories		0.197**	2.67	0.057**	2.68
Spring		– 0.006	– 0.88	0.010***	4.62
Summer		0.026***	4.48	0.042***	18.25
Fall		0.039***	5.78	0.048***	22.77
Distance to CBD		– 0.023+	– 1.69	– 0.003	– 0.28
Government seller		– 0.104*	– 2.19	– 0.208**	– 2.90
Bank seller		– 0.143***	– 17.75	– 0.113***	– 5.84
1989		0.154***	13.88	0.172***	30.50
1990		0.184***	21.93	0.196***	26.67
1991		0.233***	9.46	0.188***	19.04
1992		0.300***	5.23	0.164***	16.07
1993		0.193***	5.83	0.093***	9.42
1994		0.162***	3.34	0.077***	6.96
1995		0.053**	2.75	0.031***	3.30
1996		0.047*	2.41	0.039***	4.26
1997		0.077**	3.24	0.078***	7.97
1998		0.166***	9.57	0.176***	19.55
1999		0.261***	17.48	0.273***	25.47
2000		0.338***	20.09	0.351***	34.61

Exhibit B-7

Neighborhood Race and Ethnicity Models (2) (3 of 4)

	Distance from LIHTC Property	High Black		Low to Medium Black	
		Coefficient	T/F Stat	Coefficient	T/F Stat
2001		0.438***	20.37	0.448***	46.00
2002		0.585***	28.26	0.583***	58.18
2003		0.770***	33.15	0.759***	75.53
2004		1.025***	43.69	0.996***	89.97
2005		1.233***	50.46	1.175***	96.74
2006		1.308***	44.63	1.243***	95.68
2007		1.322***	33.05	1.256***	92.46
2008		0.949***	15.39	1.041***	74.19
2009		0.654***	8.62	0.890***	61.10
2010		0.731***	11.38	0.910***	63.92
2011		0.705***	9.98	0.866***	55.86
2012		0.741***	10.46	0.905***	53.48
2013		0.923***	15.02	1.061***	62.01
2014		1.048***	18.19	1.177***	64.78
2015		1.141***	18.30	1.253***	64.98
2016		1.234***	20.83	1.318***	67.33
Constant		11.812***	36.64	11.271***	72.44
Observations		594,677		1,248,048	
$\bar{R}^2$		0.6476		0.7356	
	Distance from LIHTC Property	**High Hispanic**		**Low to Medium Hispanic**	
		Coefficient	**T/F Stat**	**Coefficient**	**T/F Stat**
Pre		– 0.022*	– 2.43	– 0.055***	– 5.91
Post	0–¼ mile	0.019**	2.94	– 0.007	– 0.80
Treatment		**0.040*** **	**11.74**	**0.047*** **	**12.45**
Pre		– 0.023***	– 4.55	– 0.043***	– 4.33
Post	¼–½ mile	0.017*	2.48	– 0.006	– 0.60
Treatment		**0.040*** **	**18.26**	**0.037***	**5.13**
Lot size		0.000*	2.19	0.000***	3.69
Lot size^2		– 0.000*	– 2.00	– 0.000***	– 4.03
Living area		0.000***	31.05	0.000***	28.99
Living area^2		– 0.000***	– 18.11	– 0.000	– 21.06
Floor-area ratio		– 0.282***	– 9.31	– 0.003	– 1.33
Age		– 0.001	– 0.25	– 0.001	– 0.78
Age^2		0.000	0.15	0.000	0.94
2 Stories		0.043***	5.28	0.012	1.34
3 Stories		0.113	0.91	0.061**	2.80
Spring		– 0.015*	– 2.30	0.011***	4.67
Summer		0.018*	2.52	0.043***	17.99
Fall		0.032***	5.16	0.050***	27.21
Distance to CBD		– 0.010	– 0.50	– 0.009	– 0.94
Government seller		– 0.106	– 1.45	– 0.228***	– 4.90
Bank seller		– 0.119***	– 11.37	– 0.143***	– 7.39

Exhibit B-7

Neighborhood Race and Ethnicity Models (2) (4 of 4)

Distance from LIHTC Property	High Hispanic		Low to Medium Hispanic	
	Coefficient	T/F Stat	Coefficient	T/F Stat
1989	0.168***	9.88	0.168***	22.38
1990	0.219***	25.21	0.183***	23.43
1991	0.238***	23.32	0.190***	12.79
1992	0.269***	8.67	0.188***	6.27
1993	0.180***	15.95	0.107***	5.70
1994	0.182***	8.49	0.080***	4.33
1995	0.114***	6.07	0.016+	1.70
1996	0.098***	5.26	0.025**	2.72
1997	0.103***	4.87	0.071***	6.88
1998	0.170***	12.78	0.174***	18.46
1999	0.253***	13.61	0.274***	24.33
2000	0.327***	24.72	0.352***	34.52
2001	0.435***	25.76	0.449***	44.72
2002	0.581***	32.76	0.585***	56.80
2003	0.767***	39.74	0.763***	70.08
2004	1.044***	51.96	0.995***	79.87
2005	1.277***	69.63	1.172***	86.28
2006	1.376***	51.35	1.236***	91.58
2007	1.397***	37.55	1.246***	87.65
2008	0.991***	19.42	1.017***	43.60
2009	0.713***	10.54	0.838***	19.87
2010	0.780***	14.31	0.873***	28.11
2011	0.760***	13.42	0.830***	26.12
2012	0.800***	13.54	0.867***	28.39
2013	0.963***	17.78	1.031***	38.73
2014	1.101***	20.80	1.143***	43.51
2015	1.197***	21.11	1.219***	43.55
2016	1.287***	23.34	1.289***	48.65
Constant	11.474***	32.36	11.434***	65.86
Observations	450,630		1,392,095	
$\bar{R}^2$	0.5930		0.7221	

CBD = central business district. LIHTC = low-income housing tax credit.

*+ p < 0.1. * p < 0.05. ** p < 0.01. *** p < 0.001.*

Notes: Regressions also control for census tract fixed effects, which are not listed due to the large number of tracts. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database; U.S. Census Bureau

Exhibit B-8

Baseline Model Versus Neighborhood Low-Income Housing Tax Credit Concentration (Overlap) Model (1 of 2)

	Distance from LIHTC Property	Neighborhoods with Any LIHTC Properties		Neighborhoods with 1, 2, or 3 LIHTC Properties	
		Coefficient	T/F Stat	Coefficient	T/F Stat
Pre		– 0.037***	– 5.37	– 0.035***	– 5.16
Post1		– 0.004	– 0.66	– 0.006	– 0.95
Post2				– 0.002	– 0.24
Post3	0–¼ mile			0.074**	2.70
Effect1		**0.034*** **	15.96	**0.030*** **	**13.31**
Effect2				**0.027***	**5.30**
Effect3				**0.101*** **	**12.07**
Pre		– 0.033***	– 5.68	– 0.032***	– 5.64
Post1		– 0.003	– 0.51	– 0.006	– 1.12
Post2				0.001	0.07
Post3	¼–½ mile			0.049***	4.70
Effect1		**0.030*** **	**11.23**	**0.026*** **	**11.11**
Effect2				**0.027+**	**3.69**
Effect3				**0.076*** **	**20.86**
Lot size		0.000***	4.04	0.000***	4.04
Lot size^2		– 0.000***	– 4.40	– 0.000***	– 4.40
Living area		0.000***	35.86	0.000***	35.87
Living area^2		– 0.000***	– 24.06	– 0.000***	– 24.06
Floor-area ratio		– 0.004	– 1.35	– 0.004	– 1.35
Age		– 0.001	– 0.54	– 0.001	– 0.53
Age^2		0.000	0.60	0.000	0.58
2 Stories		0.019**	2.84	0.019**	2.85
3 Stories		0.067**	3.17	0.067**	3.16
Spring		0.004	1.63	0.004	1.63
Summer		0.037***	14.88	0.037***	14.88
Fall		0.045***	19.79	0.045***	19.79
Distance to central business district		– 0.010	– 1.06	– 0.009	– 1.05
Government seller		– 0.176***	– 4.21	– 0.177***	– 4.21
Bank seller		– 0.141***	– 9.95	– 0.141***	– 9.95
1989		0.168***	21.45	0.168***	21.45
1990		0.193***	28.68	0.193***	28.69
1991		0.202***	17.39	0.202***	17.39
1992		0.208***	7.66	0.208***	7.66
1993		0.124***	8.42	0.124***	8.42
1994		0.103***	5.49	0.103***	5.49
1995		0.039***	4.05	0.039***	4.06
1996		0.041***	4.47	0.041***	4.48
1997		0.078***	7.45	0.078***	7.48
1998		0.174***	19.86	0.174***	19.90
1999		0.270***	28.36	0.270***	28.39
2000		0.347***	37.47	0.347***	37.51
2001		0.446***	46.47	0.446***	46.51

Exhibit B-8

Baseline Model Versus Neighborhood Low-Income Housing Tax Credit Concentration (Overlap) Model (2 of 2)

Distance from LIHTC Property	Neighborhoods with Any LIHTC Properties		Neighborhoods with 1, 2, or 3 LIHTC Properties	
	Coefficient	T/F Stat	Coefficient	T/F Stat
2002	0.585***	59.70	0.585***	59.71
2003	0.764***	72.21	0.764***	72.22
2004	1.009***	88.21	1.009***	88.19
2005	1.198***	100.99	1.198***	100.90
2006	1.267***	96.35	1.267***	96.24
2007	1.012***	84.16	1.282***	84.09
2008	0.801***	38.30	1.012***	38.30
2009	0.801***	19.29	0.801***	19.29
2010	0.846***	26.53	0.846***	26.52
2011	0.811***	24.84	0.810***	24.81
2012	0.850***	26.20	0.850***	26.17
2013	1.017***	35.33	1.017***	35.29
2014	1.135***	40.76	1.135***	40.74
2015	1.217***	40.76	1.216***	40.74
2016	1.291***	45.13	1.290***	45.10
Constant	11.439***	71.77	11.437***	71.70
Observations	1,842,725		1,842,725	
$\bar{R}^2$	0.7242		0.7242	

LIHTC = low-income housing tax credit.

*+ p < 0.1. * p < 0.05. ** p < 0.01. *** p < 0.001.*

Notes: Regressions also control for census tract fixed effects, which are not listed due to the large number of tracts. Treatment effect is calculated manually from the differences in the regression coefficients, as the Methodology section describes. T-statistics are used for regression coefficients, and F-statistics are used for treatment effects.

Sources: DataQuick Information Systems, Inc. and CoreLogic, Inc.; LIHTC HUD User database

Authors

Brian Y. An is an assistant professor of public policy and finance at the Georgia Institute of Technology. Andrew Jakabovics is vice president for policy development at Enterprise Community Investments. Jing Liu is an associate director at Econsult Solutions. Anthony W. Orlando is an associate professor of finance, real estate, and law at California State Polytechnic University, Pomona. Seva Rodnyansky is an assistant professor of urban and environmental policy at Occidental College. Richard Voith is president and founding principal at Econsult Solutions. Sean Zielenbach is president at SZ Consulting. Raphael W. Bostic is president and CEO at the Federal Reserve Bank of Atlanta.

References

Basolo, Victoria, Edith Huarita, and Jongho Won. 2022. "A Neighborhood-Level Analysis of Low-Income Housing Tax Credit Developments in the State of California and Los Angeles County," *Urban Science* 6 (2): 39 https://doi.org/10.3390/urbansci6020039.

Baum-Snow, Nathaniel, and Justin Marion. 2009. "The Effects of Low-Income Housing Tax Credit Developments on Neighborhoods," *Journal of Public Economics* 93 (5–6): 654–666.

Bostic, Raphael, Andrew Jakabovics, Richard Voith, and Sean Zielenbach. 2020. "Mixed-Income LIHTC Developments in Chicago: A First Look at Their Income Characteristics and Spillover Effects." In *What Works to Promote Inclusive, Equitable Mixed-Income Communities*, edited by Mark L. Joseph and Amy T. Khare. San Francisco, CA: Federal Reserve Bank.

Bratt, Rachel G. 2007. Should We Foster the Nonprofit Housing Sector as Developers and Owners of Subsidized Rental Housing? Discussion paper RR07-12. Cambridge, MA: Harvard Joint Center for Housing Studies.

Bratt, Rachel G., and Irene Lew. 2016. "Affordable Rental Housing Development in the For-Profit Sector: A Review of the Literature," *Cityscape* 18 (3): 229–262.

Butts, Kyle. 2022. "Difference-in-Differences with Geocoded Microdata," *Journal of Urban Economics* 103493.

Castells, Nina. 2010. "HOPE VI Neighborhood Spillover Effects in Baltimore," *Cityscape* 12 (1): 65–98.

Chen, Jiafeng, Edward Glaeser, and David Wessel. 2022. "The (Non-)Effect of Opportunity Zones on Housing Prices," *Journal of Urban Economics* 103451.

Cloud, William, and Susan Roll. 2011. "Denver Housing Authority's Park Avenue HOPE VI Revitalization Project: Community Impact Results," *Housing Policy Debate* 21 (2): 191–214.

Dawkins, Casey J. 2013. "Exploring the Spatial Distribution of Low-Income Housing Tax Credit Properties," *Journal of the American Planning Association* 73 (3): 222–234.

Deng, Lan. 2011a. "The External Neighborhood Effects of Low-Income Housing Tax Credit Projects Built by Three Sectors," *Journal of Urban Affairs* 33 (2): 143–165.

———. 2011b. "Low-Income Housing Tax Credit Developments and Neighborhood Change: A Case Study of Miami-Dade County," *Housing Studies* 26 (6): 867–895.

Diamond, Rebecca, and Timothy McQuade. 2019. "Who Wants Affordable Housing in Their Backyard? An Equilibrium Analysis of Low-Income Property Development," *Journal of Political Economy* 127 (3): 1063–1117.

Dillman, Keri-Nicole, Keren Mertens Horn, and Ann Verilli. 2017. "The What, Where, and When of Housing Policy's Neighborhood Effects," *Housing Policy Debate* 27 (2): 282–305.

Ding, Chengri, and Gerrit-Jan Knaap. 2002. "Property Values in Inner-City Neighborhoods: The Effects of Homeownership, Housing Investment, and Economic Development," *Housing Policy Debate* 13 (4): 701–727.

Ding, Chengri, Robert Simons, and Esmail Baku. 2000. "The Effect of Residential Investment on Nearby Property Values: Evidence from Cleveland, Ohio," *Journal of Real Estate Research* 19 (1): 23–48.

Edmiston, Kelly D. 2018. Low-Income Housing Tax Credit Developments and Neighborhood Property Conditions. Working paper 11-10. Federal Reserve Bank of Kansas City.

Ellen, Ingrid Gould. 2007. Spillovers and Subsidized Housing: The Impact of Subsidized Rental Housing on Neighborhoods. Working paper RR07-3. Cambridge, MA: Harvard Joint Center for Housing Studies.

Ellen, Ingrid Gould, Keren Mertens Horn, and Yiwen Kuai. 2018. "Gateway to Opportunity? Disparities in Neighborhood Conditions Among Low-Income Housing Tax Credit Residents," *Housing Policy Debate* 28 (4): 572–591.

Ellen, Ingrid Gould, Amy Ellen Schwartz, Ioan Voicu, and Michael H. Schill. 2007. "Does Federally Subsidized Rental Housing Depress Neighborhood Property Values?" *Journal of Policy Analysis and Management* 26 (2): 257–280.

Ellen, Ingrid Gould, and Ioan Voicu. 2007. The Impact of Low Income Tax Credit Housing on Surrounding Neighborhoods: Evidence from New York City. Working paper 07-02. NYU Furman Center for Real Estate and Urban Policy.

Eriksen, Michael D., and Guoyong Yang. 2022. "Does Affordability Status Matter in Who Wants Multifamily Housing in Their Backyards?" Presentation at the Urban Economics Association meeting in Washington, DC.

Ezzet-Lofstrom, Roxanne, and James Murdoch. 2006. "The Effect of Low Income Housing Tax Credit Units on Residential Property Values in Dallas County," *Williams Review* 1 (1): 107–124.

Funderberg, Richard, and Heather MacDonald. 2010. "Neighbourhood Valuation Effects from New Construction of Low-Income Housing Tax Credit Projects in Iowa: A Natural Experiment," *Urban Studies* 47 (8): 1745–1771.

Furman Center for Real Estate and Urban Policy (Furman Center). 2012. "What Can We Learn About the Low-Income Housing Tax Credit Program by Looking at the Tenants?" New York: Moelis Institute for Affordable Housing Policy Brief. https://furmancenter.org/files/publications/LIHTC_Final_Policy_Brief_v2.pdf.

———. 2006. The Impact of Subsidized Housing Investment on New York City's Neighborhoods. Working paper 06-02 (July 2006). https://furmancenter.org/files/publications/Impactofsubsidizedhousingcombined0602_001.pdf.

Goetz, Edward G., Hin Kin Lam, and Anne Heitlinger. 1996. *There Goes the Neighborhood? Subsidized Housing in Urban Neighborhoods*. Minneapolis: University of Minnesota Center for Urban and Regional Affairs.

Green, Richard K., Stephen Malpezzi, and Kiat-Ying Seah. 2002. *Low-Income Housing Tax Credit Housing Developments and Property Values*. Madison: University of Wisconsin Center for Urban Land Economics Research. https://medinamn.us/wp-content/uploads/2014/04/Low-Income-Housing-Tax-Credit-Housing-Developments-and-Property-Values-UW-Study.pdf.

Johnson, Jennifer, and Beata Bednarz. 2002. *Neighborhood Effects of the Low-Income Housing Tax Credit Program: Final Report*. Washington, DC: U.S. Department of Housing and Urban Development.

Johnson, Monique S. 2012. "The Neighborhood Divide: Poverty, Place, and Low-Income Housing in Metropolitan Richmond, Virginia (USA)." In *Living on the Boundaries: Urban Marginality in National and International Contexts*, Vol. 8, edited by Carol Camp Yeakey. St. Louis, MO: Emerald Group Publishing.

Keeler, Zachary T., and Heather M. Stephens. 2022. "The Capitalization of Metro Rail Access in Urban Housing Markets," *Real Estate Economics*.

Nguyen, Mai Thi. 2005. "Does Affordable Housing Detrimentally Affect Property Values? A Review of the Literature," *Journal of Planning Literature* 20 (1): 15–26.

Oakley, Deidre. 2008. "Locational Patterns of Low-Income Housing Tax Credit Developments: A Sociospatial Analysis of Four Metropolitan Areas," *Urban Affairs Review* 43 (5): 599–628.

O'Regan, Katherine M., and Keren M. Horn. 2013. "What Can We Learn About the Low-Income Housing Tax Credit Program by Looking at the Tenants?" *Housing Policy Debate* 23 (3): 597–613.

Orlando, Anthony W., and Gerd Welke. 2022. Borrowing on the Wrong Side of the Tracks: Evidence from Mortgage Loan Discontinuities. Working paper.

Santiago, Anna M., George C. Galster, and Peter Tatian. 2001. "Assessing the Property Value Impacts of the Dispersed Housing Subsidy Program in Denver," *Journal of Policy Analysis and Management* 20 (1): 65–88.

Silverman, Robert Mark, and Kelly L. Patterson. 2011. "A Case for Expanding Nonprofit Activities in Affordable Housing: An Analysis of Low Income Housing Tax Credit Outcomes 1987-2006," *Journal of Public Management and Social Policy:* 33–48.

Simons, Robert A., Roberto G. Quercia, and Ivan Maric. 1998. "The Value Impact of New Residential Construction and Neighborhood Disinvestment on Residential Sales Price," *Journal of Real Estate Research* 15 (2): 147–161.

Smith, Brent C. 2003. "The Impact of Community Development Corporations on Neighborhood Housing Markets," *Urban Affairs Review* 39 (2): 181–204.

Turbov, Mindy, and Valerie Piper. 2005. *HOPE VI and Mixed-Finance Redevelopments: A Catalyst for Neighborhood Renewal*. Washington, DC: The Brookings Institution Metropolitan Policy Program.

Voith, Richard, Jing Liu, Sean Zielenbach, Andrew Jakabovics, Brian An, Seva Rodnyansky, Anthony W. Orlando, and Raphael W. Bostic. 2022 "Effects of Concentrated LIHTC Development on Surrounding House Prices," *Journal of Housing Economics* 56: 101838.

Woo, Ayoung, Kenneth Joh, and Shannon Van Zandt. 2016. "Unpacking the Impacts of the Low-Income Housing Tax Credit Program on Nearby Property Values," *Urban Studies* 53 (12): 2488–2510.

Young, Cheryl. 2016. "There Doesn't Go the Neighborhood: Low-Income Housing Has No Impact on Nearby Home Values." https://www.trulia.com/research/low-income-housing/.

Zielenbach, Sean, Richard Voith, and Michael Mariano. 2010. "Estimating the Local Economic Impacts of HOPE VI," *Housing Policy Debate* 20 (3): 485–522.

Departments

In this issue—

- *Data Shop*
- *Graphic Detail*
- *Industrial Revolution*
- *Policy Briefs*

Data Shop

Data Shop, a department of Cityscape*, presents short articles or notes on the uses of data in housing and urban research. Through this department, the Office of Policy Development and Research introduces readers to new and overlooked data sources and to improved techniques in using well-known data. The emphasis is on sources and methods that analysts can use in their own work. Researchers often run into knotty data problems involving data interpretation or manipulation that must be solved before a project can proceed, but they seldom get to focus in detail on the solutions to such problems. If you have an idea for an applied, data-centric note of no more than 3,000 words, please send a one-paragraph abstract to chalita.d.brandly@hud.gov for consideration.*

A Statistical Machine Learning Approach to Identify Rental Properties From Public Data Sources

Daniel Kuhlmann
University of Arizona

Jane Rongerude
Iowa State University

Lily Wang
George Mason University

GuanNan Wang
College of William and Mary

Introduction

For academic researchers and practitioners alike, identifying individual rental properties can be incredibly useful but is often difficult due to insufficient and incomplete data. Although some cities have ordinances that require residential rental property owners (RRPOs) to register their properties, the availability and completeness of these registries vary dramatically from place to place. In places without rental registries, tax assessor data can provide some information but often not enough to clearly distinguish residential rentals from owner-occupied units and other commercial properties. As part of a larger project surveying RRPOs, the project team developed and tested statistical

(machine) learning methods and predictive models to identify potential rental properties from existing data sources. This article describes the process for creating the models, suggests potential applications for the methods, and discusses how researchers and practitioners can use these models and methods in their work.

Background

Many policy and research contexts exist in which the ability to identify individual rental properties and the owners of those properties are useful. For example, for this project, the team needed to generate a sample of rental property owners across multiple jurisdictions for a survey-based study investigating RRPO characteristics and behaviors. Similarly, identifying who owns rental properties can help researchers track investment behavior, understand market dynamics, and study other owner-related housing questions. Identifying locations and addresses of rental properties is useful for researchers when tracking displacement and tenant mobility or contacting tenants for surveys and interviews. Likewise, differentiating rentals from owner-occupied properties can be useful for those studying property and tenant outcomes, such as property neglect and evictions.

In addition, being able to identify rental properties may be useful for practitioners and local government officials. For example, local housing officials might want to identify likely rental properties in their jurisdictions to track whether RRPOs comply with rental licensing and inspection laws. Similarly, in places without rental licensing requirements that need full disclosure of owner data, practitioners might use these methods to distribute program information and other resources to tenants or RRPOs. Local jurisdictions can benefit from knowledge about the individuals or entities investing in their rental housing markets, the location of those entities, and whether their holdings are expanding or consolidating in particular neighborhoods. The COVID-19 pandemic and the subsequent housing policy responses, such as the eviction moratoria and Emergency Rental Assistance program, demonstrated that having basic contact information for RRPOs is necessary during a catastrophe or disaster. To distribute pandemic-related rental assistance efficiently, local governments needed inventories of rental properties within their jurisdictions and contact information for RRPOs. However, in most jurisdictions in the United States, this information is not readily available.

This article describes the project team's method for identifying potential rental properties from existing data sources. Exhibit 1 summarizes different methods and data sources considered for the study. It is important to note that each project described here has unique goals, which understandably influence the methodological choice. This article does not aim to provide an exhaustive accounting of the various methods researchers have used to identify individual rental properties; instead, the project team presents a new methodology developed for its specific research needs.

Exhibit 1

Methods for Identifying Rental Property (1 of 2)

Primary Data Source	Method Description	Strengths	Weaknesses	Example
Rental license records	Use rental licensing data to identify rental properties.	In places with well-enforced rental licensing programs, rental registries are likely the best and most complete source of information on individual rental properties.	Not all jurisdictions have ordinances requiring rental licenses. Further, the types of properties and property owners who must obtain licenses vary from place to place. Even in jurisdictions that require regulations, there is variation in how well jurisdictions enforce rental licensing.	Kuhlmann et. al. (2022) used rental registry data to contact property owners in Minneapolis, MN, for an online survey.
Property assessor administrative files	Identify patterns in property assessment records, such as mismatched tax and situs addresses, use of homestead exemptions, and property use data to flag likely rental properties.	Most uniform source of data available across the country for information on property ownership. Relatively easy to identify certain types of rental properties, such as large multifamily rental buildings.	In places without rental licensing laws, assessment records rarely identify rental properties explicitly. Assessment data vary from county to county, making cross-jurisdiction analyses difficult. Likely misses some rental properties and mis-identifies certain types of ownership forms as rentals.	Travis (2019) compared identified rental properties based on mis-matched tax and situs addresses, non-individual owner names (LLCs, etc.), and properties with multiple units to identify likely rental properties in his project examine the association between LLC ownership and property upkeep.
Public program participation	Identify rental properties based on whether either the landlord or tenant participated in a public program.	Efficient method to identify a targeted subset of the rental housing stock. For example, using program participation is a direct method to identify low-cost rentals, properties with physical deficiencies, and cost-burdened tenants.	These data are not always publicly available. Only captures tenants and owners who submitted applications to public programs. As a result, they are unlikely to be representative of the rental housing stock in a particular place.	De la Campa, Reina, and Herbert (2021) used applications for the Emergency Rental Assistance program to identify landlords in Los Angeles, CA for a survey.

Exhibit 1

Methods for Identifying Rental Property (2 of 2)

Primary Data Source	Method Description	Strengths	Weaknesses	Example
Online listings	Use web-scrapping techniques to pull detailed rental listing data from websites such as Craigslist.	One of the few methods that provides real-time data on asking rents, utilities, vacancy, and other property information not generally captured in administrative data.	Requires technical expertise to set up web scrapping programs and can be computationally taxing. Not all properties are listed on online platforms and increasingly sites block web scrapping programs. Only useful for generating point-in-time data on rental listings; less useful to capture information on the full housing stock.	Boeing and Waddell (2017) and Boeing et al. (2021) created web-scrapping programs to pull rental listing data from Craigslist.
Proprietary date sources	Use data from proprietary sources to identify rental properties and property owners. Possible sources are from third-party data companies, online listing websites, and private research firms.	Efficient method to identify generally representative samples of rental properties and owners.	Access to these data is limited and expensive when available. These data sources tend to be focused on certain geographies and segments of the rental housing market, and are thus less useful for studies interested in either all the rental properties or those that attempt to draw a representative sample of rental units or owners.	Decker (2021) used contact investor contact information from the residential investment property listing platform Roofstock to draw a national sample of residential landlords. Raymond et. al. (2021) and others have relied on the real estate data company CoreLogic, which provides standardized assessment records and has internal (although unvetted) methods to identify likely investor properties.
SEC fillings	Use public filings with the SEC to identify various corporate entities associated with a particular corporation. Then match these corporate names with assessment and other public data to identify rental holdings of large, corporate owners and REITS.	Possible to identify rental portfolios nationally.	Only applicable for entities subject to SEC reporting requirements. Useful for describing the portfolios of specific corporate owners but misses the majority of rental properties owned by non-corporate entities.	Colburn, Walter, and Pfeiffer (2021) examined SEC filings study ownership and investment patterns of large, publicly traded investors in single-family rental properties.

LLC = limited liability company. REITS = real estate investment trusts. SEC = U.S. Securities and Exchange Commission.

From a review of the previous research on rental property ownership, the team identified the following questions as those important to consider when selecting a method for identifying rental properties or rental property owners, or both.

- Is the project's goal to identify all rental properties in each jurisdiction or a sample of rentals?
- How sensitive is the project to possible misidentification? Relatedly, is the project particularly sensitive to either false positives (identifying nonrentals as rentals) or false negatives (failing to identify rentals)?
- Does the project have funding to purchase third-party data or access to proprietary data sources?
- Is the project focused on a single jurisdiction, or should the method be applicable to multiple jurisdictions and data sources?

Case Study

In the spring of 2020, the team launched a new project to examine the question, "What is influencing the decisionmaking of RRPOs during the COVID-19 pandemic?" The decisions that RRPOs make during a disaster affect not only their tenants' short-term housing stability but also the composition and stability of the rental housing stock. At the time, little information existed on how the ongoing pandemic and subsequent policy responses affected the businesses of RRPOs. To study this question, the team collected data about the characteristics and behaviors of RRPOs to better understand who they were and how their decisions contributed to rental housing stability. Time, cost, and safety considerations required gathering data through an e-mail survey; however, the team quickly ran into difficulty trying to identify the RRPOs and obtain their contact information. To address this obstacle, in the first year of the study, the team limited the scope to four cities: Cleveland, Des Moines, Minneapolis, and Tampa. Each of these cities had a rental registry the team could use to identify a sample of rental properties, even when a corporatized ownership structure, such as a limited liability company (LLC), obscured the name of an individual owner.

Even after limiting the study scope to cities with available registries, the team found that the completeness and accessibility of these registries varied from city to city. For example, the Minneapolis rental registry is easily accessible online and includes inspection ratings and contact information for property owners. Compared with census records, it includes around 95 percent of the city's rental units. In contrast, the Des Moines registry was not publicly available and required a formal request to access from the city's inspections department. Further, the team found that the Des Moines registry had incomplete or missing contact information for many property owners and included less than two-thirds of the city's rental units. The team's data dashboard has more information about each city's rental registry (Rongerude et al., 2021).

In 2022, the project team expanded this study to examine how a broader range of natural disasters affect the businesses of RRPOs, adding five disaster-prone cities: Austin, Dallas, Houston, Miami, and New Orleans. In the expanded study, the team also shifted from an e-mail to a primarily physical mail survey with an online option. Because only some, not all, of these new cities had rental registries, the team was concerned about potential bias from surveying only owners who

comply with registration requirements and, thus, developed a method to identify likely rental properties across a diverse set of cities. After switching to a mail-based survey, the team was particularly interested in developing a method that minimized misidentification, because unlike the team's previous study, now a marginal cost was associated with sending survey invitations. To maximize the probability that the survey reached actual RRPOs, prior to distribution, the team considered a methodological concern: how to identify rental properties from data sources available across multiple jurisdictions while minimizing the number of owner-occupied properties misidentified as rentals.

In response, the interdisciplinary team, including planners, statisticians, and data scientists, undertook the modeling exercise this article describes. The team first reviewed methods that other researchers have used to identify rental properties, then created a new modeling technique to address its specific research needs. The rest of this article describes the data the team's modeling efforts used, details the modeling process and how the accuracy of each model was assessed, and ends with a brief discussion of the limitations of the models and other potential applications.

Data

To build the predictive models, the project team first searched for variables that correlate with housing tenure and were available and uniform across the nine jurisdictions in this study. For example, some counties report whether properties in their assessment rolls claim a homestead exemption. Although claiming an exemption is likely a good indication that the property is owner-occupied, not all counties in the study report this field. Using this variable to build a model in Minneapolis, for example, likely would improve its predictive power, but doing so would prevent the model from applying to the cities lacking such indicators.

The data in this study come from two primary sources: Regrid.com, a data services company that collects and standardizes parcel, transaction, and assessment administrative data, and 5-year American Community Survey (ACS) estimates. The project team elected to purchase standardized assessment data rather than collect the data for two reasons. The first is one of expediency. Collecting and combining assessment records is a time-consuming task and one that is made particularly difficult by the scope of this analysis. Because this study includes nine large U.S. cities, several of which contain multiple counties (for example, five separate counties fall within the municipal boundary of Dallas, Texas), building this dataset would require contacting 19 different assessor offices, collecting their respective records, and formatting each county's data to create consistency across the sample. The second reason to purchase the standardized assessments is that Regrid.com, in addition to standardizing the assessment records, also combines parcel-level data with several other data sources that could be useful predictors of property tenure, such as occupancy indicators from the U.S. Postal Service (USPS).

Exhibit 2 lists all the variables included in the modeling process. In addition to standard assessment fields, the process used several variables from secondary data sources, such as a vacancy indicator and an indicator from the USPS of whether mail is deposited at the street level or in a highrise building. The project team also used several proprietary measures Regrid.com, including a count of all primary and secondary addresses at the parcel (a more consistent measure of unit count across

the cities in this study) and Regrid.com's calculation of parcel sizes, building footprints, and a count of structures on the parcel. In addition to these pre-formatted fields included in the Regrid.com files, the project team also created several new variables. When reviewing the literature, the team identified two measures that serve as strong indicators of property tenure. The first is a measure of whether a corporate entity owns the property, such as a corporation, limited partnership, or LLC.[1] To create this variable, the team wrote code that searches for regular expressions matching common nonindividual ownership forms. This process was iterative, because none of the counties in the study standardized their ownership fields, resulting in small variations in ownership names.[2]

Exhibit 2

Model Variables

Variable	Type	Level	Source
Total Parcel Value	Numerical integer; dollars	Parcel	County Assessor's office; Regrid.com
Do the property situs and taxpayer billing address match?	Binary; 1 = same address	Parcel	County Assessor's office; Regrid.com; author's calculations
Does the owner name contain a corporate indicator? (e.g., LLC, LP, INC)	Binary; 1 = corporate indicator found	Parcel	County Assessor's office; Regrid.com; author's calculations
Postal delivery type (street versus highrise)	Binary; 1 = corporate indicator found	Parcel	USPS; Regrid.com
Is the property a residential address?	Binary; 1 = residential	Parcel	USPS; Regrid.com
Is the property vacant?	Binary; 1 = vacant	Parcel	USPS; Regrid.com
How many primary and secondary addresses are at the parcel?	Count	Parcel	USPS; Regrid.com
Building footprint	Numerical integer; square feet	Parcel	Regrid.com
Number of structures on parcel	Count	Parcel	Regrid.com
Share of housing units owner occupied	Percent	Census Tract	2015–2019 5-year ACS estimates
Median household income	Numerical integer; dollars	Census Tract	2015–2019 5-year ACS estimates

ACS = American Community Survey. INC = incorporated. LLC = limited liability company. LP = limited partnership. USPS = U.S. Postal Service.

The second measure is a field indicating whether the taxpayer's billing address differs from the property situs address. To create this field, the project team first parsed the billing and situs addresses, pulling each of the address components (house number, unit, street prefix direction, and so on) into separate fields using the R package "PostmastR," which parses address formats and also standardizing common spelling variants in addresses (for example, "South," "So," and "S"). The team then looked for matches in the house numbers and street names (excluding directionals and suffixes) of billing and situs addresses. The team experimented with more strict match conditions (for example, requiring that all address components match) but noticed enough instances of slight variations in ultimately matching addresses to justify a more lenient matching criterion.

[1] The project team considered including but ultimately excluded "trust" and related terms from the corporate entity search. This term often picked up living trusts, which can be used for ownership of rental investments, but are also for owner-occupiers during the estate planning process.

[2] For example, the code checks for multiple variants of "limited liability corporation," including abbreviations with and without punctuation and variations in spelling.

Finally, the team used several census tract-level variables from the 2018 ACS; using census tracts (geographies containing between 1,200 and 8,000 people) rather than the more granular census boundaries ensured consistency across the sample. The U.S. Census Bureau suppresses data for smaller geographies, particularly when the reported tabulations could potentially be used to identify individual households. The team included two estimates from the ACS in its models: the share of renter-occupied housing units and the median household income.

Method

The goal is to create a predictive model to accurately identify potential RRPOs and use the model to guide the selection of survey participants. Correctly identifying the potential rental properties required an accurate binary classifier (that is, a model that estimates a yes or no outcome), and the team considered five popular classification methods. Exhibit 3 briefly describes each method, along with their relative advantages and disadvantages.

Exhibit 3

Modeling Techniques

	Logistic	Decision Tree	Naive Bayes	kNN	(partially linear) GAM
Sensitivity	0.6701	0.7444	0.6378	0.7304	0.6983
Specificity	0.9487	0.942	0.9273	0.9481	0.9463

GAM = generalized additive model. kNN = k-nearest neighbors.
Source: Author's Calculations.

To build these classification models, the project team used the variables in the combined dataset to predict if the Minneapolis rental registry database lists a property. Essentially, the team built a binary classifier using the nearly complete list of rental properties in Minneapolis, then used this model to predict likely rental properties in the sample cities that lacked complete rental registries. The outcome variable is a binary measure of whether the Minneapolis rental registry lists the property as a licensed, long-term rental property. To predict this outcome, the team included property-level variables measuring the parcel's total assessed value, counts of the number of structures and addresses on the parcel, and a measure of the total square footage of the structures on the parcel. In addition, the team included binary measures of whether the parcel's tax and situs addresses match, whether a nonindividual owns the property, whether the property is residential and vacant, and whether the postal delivery is at street level or in a highrise building. Finally, the team included two census tract-level measures from the ACS: the share of the tract's housing units that are renter-occupied and the median household income.

Model Assessment

To contrast the classifier model's prediction accuracy, the project team used the Minneapolis data to compare how often the model correctly identified properties in the city's rental registry. The team followed a fivefold cross-validation process, randomly and evenly splitting the Minneapolis data into five portions called folds. The team then chose four folds for training and one fold for testing, repeated this procedure five times, then compared the predicted value (that is, whether the model

predicted that the property was a rental) with the truth (whether the observation had an active rental license). Because using the actual registry results is necessary as a basis for comparison, the team could only perform this exercise in Minneapolis.

A confusion matrix captured comparisons that include the four mutually exclusive measurements: (1) True positives—the property is a rental, and the model correctly identified it as a rental; (2) true negatives—the property is not a rental, and the model correctly identified it; (3) false positive—the property is not a rental, but the model predicted it as a rental; and (4) false negative—the property is a rental, but the model failed to predict it. From this confusion matrix, the team calculated two additional evaluation measures: specificity and sensitivity. *Specificity* is the ratio of rental properties the model correctly predicted to the total number of rental properties in the Minneapolis registry. *Sensitivity* is the ratio of properties the model correctly identified as nonrentals to the actual number of nonrentals, plus the number of properties the model identified as rentals when they were not in the rental registry. A specificity of 100 percent indicates that the model perfectly predicted all the actual rental properties, and a sensitivity of 100 percent suggests that the model did not misidentify any nonrentals as rentals. Exhibit 4 reports these metrics. In general, the prediction accuracy is similar for all the methods, with specificities ranging from 92.7 to 94.8 percent and sensitivities ranging from 63.7 to 74.4 percent.

Exhibit 4

Confusion Matrix

Method	Main Technique	Advantages	Disadvantages	Citation
Logistic Regression	Maximum likelihood estimation	Easy to implement No assumptions on distributions of classes in feature space Easy to interpret	Assumption of linearity between the response and the explanatory variables	Hosmer, Lemeshow, and Sturdivant (2013)
kNN	Euclidean distance	Easy to implement Training is fast	Testing is slow Sensitive to noise	James et al. (2013)
Decision Tree	Splitting, stopping, and pruning	No requirements of domain knowledge Easy to interpret	Unstable	Breiman (2017)
Naive Bayes	Bayes rule	Easy to implement Does not require many data	Strong assumption on the shape of data distribution	James et al. (2013)
GAM	Smoothing	Ability to model highly complex nonlinear relationships	High computational complexity	Hastie et al. (2009)

GAM = generalized additive model. kNN = k-nearest neighbors.

To predict potential rental properties in cities without rental registries, the project team focused on the binary classifier based on the logistic regression model, which provides the highest specificity. The team was particularly interested in finding models with high specificities due to the limited survey sampling budget and the need to minimize the number of negative examples (non-RRPOs) that are incorrectly classified. The team trained the classifier using the data from Minneapolis, then applied this classifier to other cities in the study to generate a sample of likely RRPOs.

As a result of this process, the model created a probability measure for each property in the database corresponding to the predicted likelihood that it is a rental property. The team then used these probabilities to create a sample in a way that minimized the risk of sending a survey invitation to a nonrental property. To generate the survey sample, the team created a list with unique owner names, keeping only one property per owner, then created the survey sample based on two factors. First, the team oversampled owners who hold properties in corporatized entities (such as LLCs), because these owners might be less likely to respond to survey requests. The team split the sample, sending two-thirds of the 2,000 invitations to corporatized owners and one-third to those who held properties as individuals. With this split in mind, the team ordered the properties by their predicated rental likelihood for each city, then created a cutoff yielding the minimum two- or one-third split between ownership types. Second, the team randomly selected owners within this group, preserving the preferred split. This process created a sample for each city that both oversampled nonindividual owners and minimized the likelihood that survey invitations reached owners of properties that were not, in fact, residential rentals.

Conclusion

Rental housing occupies a significant portion of the housing stock in U.S. metropolitan areas, yet researchers know very little about the specific characteristics of the institutional and noninstitutional entities that hold titles to those properties and determine housing supply, rents, and the conditions of both buildings and units. This gap in knowledge related to RRPOs persists partly due to a problem of insufficient and incomplete data. No comprehensive national or statewide public database exists that contains information about who owns rental properties, how to contact them, and what types of units they own. Some cities have municipal rental registry databases connected to rental unit certification and inspection programs; however, these programs are not universal, and because the databases are resource intensive to create and maintain, they are often incomplete. As a result, RRPOs can be difficult to identify and contact, a difficulty shared by researchers, housing advocates, and local governments.

In this article, the project team describes a novel method to identify potential rental properties from existing data sources. The modeling procedure is flexible, and users can tune the parameters within each model depending on the research objectives to achieve the desired specificity or sensitivity. The case study describes how these models identify owners of likely rental properties in eight cities, with either incomplete or nonexistent rental registries. Because the objective was to create a representative sample of RRPOs, the team focused on the likelihood that any given residential property was a rental unit, then created a model that allowed the team to identify a sample of property owners based on the registered owners of those units.

Although the method described here allows researchers to identify likely rental properties in cities without complete rental registries, its effectiveness ultimately depends on the accuracy and completeness of the rental registry in Minneapolis. Although this registry is one of the most complete in the country, how representative the registry is of all property types is unknown. For example, RRPOs with lower-cost and -quality properties may be more likely to evade the registration requirements and, thus, be underrepresented in the Minneapolis data. If this scenario is the case, using the Minneapolis registry to train the predictive model may systematically misidentify these properties when applied to the other sample cities.

Relatedly, whether the associations in Minneapolis used to train the model are consistent across the sample is unknown. For example, in Minneapolis, having a mismatched tax and situs address may be a strong predictor of a rental property, but the association may be weaker and less accurate in predicting rentals in cities with warmer climates and more second homes. In future iterations of this project, the team plans to partner with other cities that have relatively complete registries to expand the training dataset outside of Minneapolis. The team also plans to use the results of initial survey responses—specifically whether respondents completed the survey or responded that their property is not a rental—to build smaller training datasets in subject cities to improve the prediction accuracy of the models.

These limitations notwithstanding, this article can be useful for researchers and practitioners interested in identifying individual rental properties. Many questions regarding RRPOs and changing trends in the nation's rental markets still need to be answered. Furthermore, as the COVID-19 pandemic put in stark relief, having the ability to identify and reach out to both RRPOs and their tenants during a disaster can be hugely useful to housing officials in developing effective policy responses and distributing aid.

Acknowledgments

The research in this article is part of a larger, longitudinal project investigating the effects of residential rental property owner decisionmaking on post-disaster housing stability. This study received funding from the Polk County Housing Trust Fund and the National Science Foundation (NSF RAPID #2050264 and NSF #2139816). The authors acknowledge the following people who have contributed to the ongoing work of the project, either as co-principal investigators, senior personnel, or graduate student researchers: Elizabeth Mueller, Jake Wegmann, Taylor Cook, Biswa Das, Wanying Zhu, and Lin Quan.

Authors

Daniel Kuhlmann, Ph.D. is an assistant professor at the University of Arizona (dok@arizona.edu). Jane Rongerude, Ph.D. is an associate professor at Iowa State University (jrong@iastate.edu). Lily Wang, Ph.D. is a professor at George Mason University (lwang41@gmu.edu). GuanNan Wang, Ph.D. is an associate professor at the College of William and Mary (gwang01@wm.edu).

References

Boeing, Geoff, Max Besbris, Ariela Schachter, and John Seungmin Kuk. 2021. "Housing Search in the Age of Big Data: Smarter Cities or the Same Old Blind Spots?" *Housing Policy Debate* 31 (1): 112–126.

Boeing, Geoff, and Paul Waddell. 2017. "New Insights into Rental Housing Markets Across the United States: Web Scraping and Analyzing Craigslist Rental Listings," *Journal of Planning Education and Research* 37 (4): 457–476.

Breiman, Leo. 2017. *Classification and Regression Trees*. New York: Routledge.

Colburn, Gregg, Rebecca J. Walter, and Deirdre Pfeiffer. 2021. "Capitalizing on Collapse: An Analysis of Institutional Single-Family Rental Investors," *Urban Affairs Review* 57 (6): 1590–1625.

De la Campa, Elijah, Vincent J. Reina, and Christopher Herbert. 2021. *How are Landlords Faring During the COVID-19 Pandemic? Evidence from a National Cross-Site Survey*. Report prepared for the Joint Center for Housing Studies, Harvard University. Cambridge, MA: Harvard University.

Decker, Nathaniel. 2021. *The Uneven Impact of the Pandemic on the Tenants and Owners of Small Rental Properties*. Report prepared for the Terner Center for Housing Innovation. Berkeley: University of California.

Hastie, Trevor, Robert Tibshirani, and Jerome Friedman. 2009. *The Elements of Statistical Learning: Data Mining, Inference, and Prediction*. New York: Springer.

Hosmer, Jr., David W., Stanley Lemeshow, and Rodney X. Sturdivant. 2013. *Applied Logistic Regression*. New York: Wiley.

James, Gareth, Daniela Witten, Trevor Hastie, and Robert Tibshirani. 2013. *An Introduction to Statistical Learning with Applications in R*. New York: Springer.

Kuhlmann, Daniel, Jane Rongerude, Biswa Das, and Lily Wang. 2022. *Rental Property Owner Stress During the COVID-19 Pandemic: Results from a Minneapolis, MN Survey*.

Raymond, E.L., B. Miller, M. McKinney, and J. Braun. 2021. "Gentrifying Atlanta: Investor Purchases of Rental Housing, Evictions, and the Displacement of Black Residents," *Housing Policy Debate* 31 (3-5): 818–834.

Rongerude, Jane, Lily Wang, Biswa Das, and Daniel Kuhlmann. 2021. "RAPID: Keeping Shelters in Place: Understanding Landlord Decision-Making During the COVID-19 Pandemic." https://covidrental.design.iastate.edu.

Travis, Adam. 2019. "The Organization of Neglect: Limited Liability Companies and Housing Disinvestment," *American Sociological Review* 84 (1): 142–170.

Additional Reading

Awad, Mariette, and Rahul Khana. 2015. *Efficient Learning Machines: Theories, Concepts, and Applications for Engineers and System Designers*. New York: APress.

Furukawa, Norrie, and Motoharu Onuki. 2022. "The Design and Effects of Short-Term Rental Regulation," *Current Issues in Tourism* 25 (20): 3245–3260.

Hastie, Trevor, and Robert Tibshirani. 1990. *Generalized Additive Models*. New York: Chapman and Hall.

Veteran and Nonveteran Homelessness Rates: New Estimates

Brent D. Mast
U.S. Department of Housing and Urban Development

Introduction

When analyzing indicators of social problems, researchers usually measure the problems in terms of rates. Examples include poverty, unemployment, crime, and cancer rates. Researchers analyzing homelessness have also measured homelessness in terms of homelessness rates. For example, Mast (2020) analyzed homelessness rates for total homeless populations, and Nisar et al. (2020) analyzed homelessness rates for the unsheltered homeless.

The U.S. Department of Housing and Urban Development (HUD) has long collected data on counts of homeless veterans at the state and continuum of care levels; these data are published in HUD's Point-in-Time (PIT) datasets. PIT data are collected for sheltered and unsheltered homeless populations during a single night in January.[1]

However, until recently, researchers analyzing veteran homelessness have been unable to calculate veteran homelessness rates because of a lack of veteran population data. The lack of veteran homelessness rates made it impossible to compare the relative severity of homelessness among veteran and nonveteran populations.

In 2022, HUD acquired veteran population estimates from the U.S. Department of Veterans Affairs (VA) for all 50 states and Washington, D.C., covering the years 2020, 2014, and 2008.[2] These data, when combined with HUD's PIT homelessness estimates and state population estimates from the U.S. Census Bureau, allow for the calculation of state-specific homelessness rates, defined as the number of homeless persons per 10,000 residents, for veterans and nonveterans for the first time.

This study uses these newly acquired data to calculate state homelessness rates for the years 2020, 2014, and 2008. Findings indicate that, in each year, the mean homelessness rate for veterans is higher than that of nonveterans. In addition, a linked micromap (exhibit 3) displays the state homelessness rates for veterans and nonveterans in 2020, along with the percentage difference between the two. The map illustrates that, in most states, veterans have a higher rate of homelessness.

[1] For more information on the PIT data collection process, see HUD (2023) and Mast (2020).

[2] The VA population estimates can be obtained from HUD by contacting Brent Mast at Brent.D.Mast@hud.gov.

Furthermore, the study examines the relationship between differences in state homelessness rates in 2020 between veterans and nonveterans, with rental vacancy rates and median incomes. When data are analyzed across states, results indicate that rental vacancy rates have a statistically significant positive effect on the differences in homelessness rates, whereas median incomes do not have a statistically significant relationship. When within-state differences are analyzed, neither rental vacancy rates nor median incomes have statistically significant effects.

The availability of these new data from the VA allow for a deeper understanding of the homelessness rates among veterans and nonveterans at the state level. The findings of this study contribute to the ongoing efforts to address and reduce homelessness among veterans.

Data

Nonveteran homeless population estimates by state are calculated by subtracting the VA state veteran homeless population estimates for Census Bureau state population estimates from their Population Estimates Program. Homelessness rates per 10,000 population are calculated by dividing the HUD PIT homeless count for each group by the population estimate, then multiplying this ratio by 10,000.

For example, the 2020 Decennial Census population estimate for Alabama is 5,039,877. The VA veteran population estimate for Alabama in 2020 is 363,000. Therefore, the nonveteran population calculation is 5,039,877 - 363,000 = 4,676,877. The HUD PIT 2020 nonveteran homeless population estimate for Alabama equals 3,022, and the veteran homeless population estimate equals 329. As such, the veteran homelessness rate for Alabama in 2020 equals (329/363,000) x 10,000 = 9.063. The nonveteran homelessness rate for Alabama in 2020 equals (3,022/4,676,877) x 10,000 = 6.462.

Exhibit 1 presents means, standard deviations, minimums, medians, and maximums for each year. The mean veteran homelessness rate exceeds the mean nonveteran homelessness rate in each year; the same is true for the median rates. The mean rates for both groups decline slightly each year. The median rate for veterans increases between 2008 and 2014, then has a large decrease between 2014 and 2020. The median rate for nonveterans decreases each year.

Exhibit 1

Summary Statistics

Year	Variable	Mean	Standard Deviation	Minimum	Median	Maximum
2008	Veteran homelessness rate	22.262	27.649	3.725	13.821	185.278
	Nonveteran homelessness rate	19.157	15.317	5.536	14.546	98.799
2014	Veteran homelessness rate	21.985	16.946	8.158	17.104	116.000
	Nonveteran homelessness rate	17.585	16.661	7.007	12.060	117.036
2020	Veteran homelessness rate	17.417	16.895	3.676	12.052	104.138
	Nonveteran homelessness rate	15.495	14.936	3.758	10.200	94.813

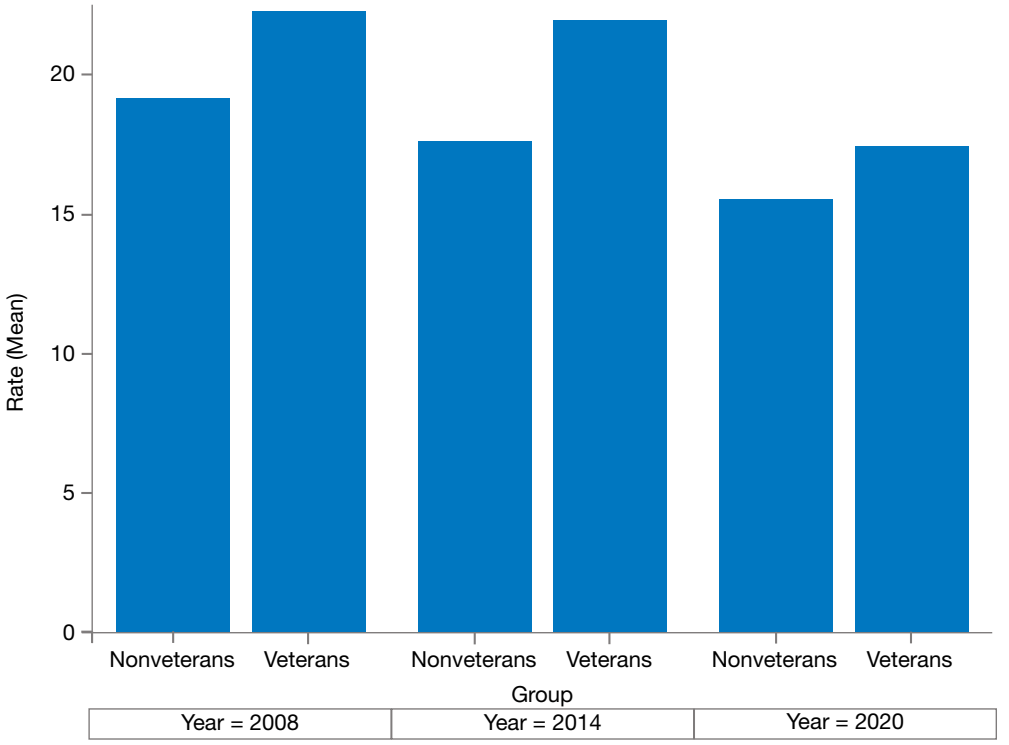
N = 51 in each year.

Sources: U.S. Census Bureau Population Estimates Program; U.S. Department of Veterans Affairs; HUD Point-in-Time data

Exhibit 2 displays a bar chart with mean rates by group and year.

Exhibit 2

Mean Homelessness Rates by Group and Year

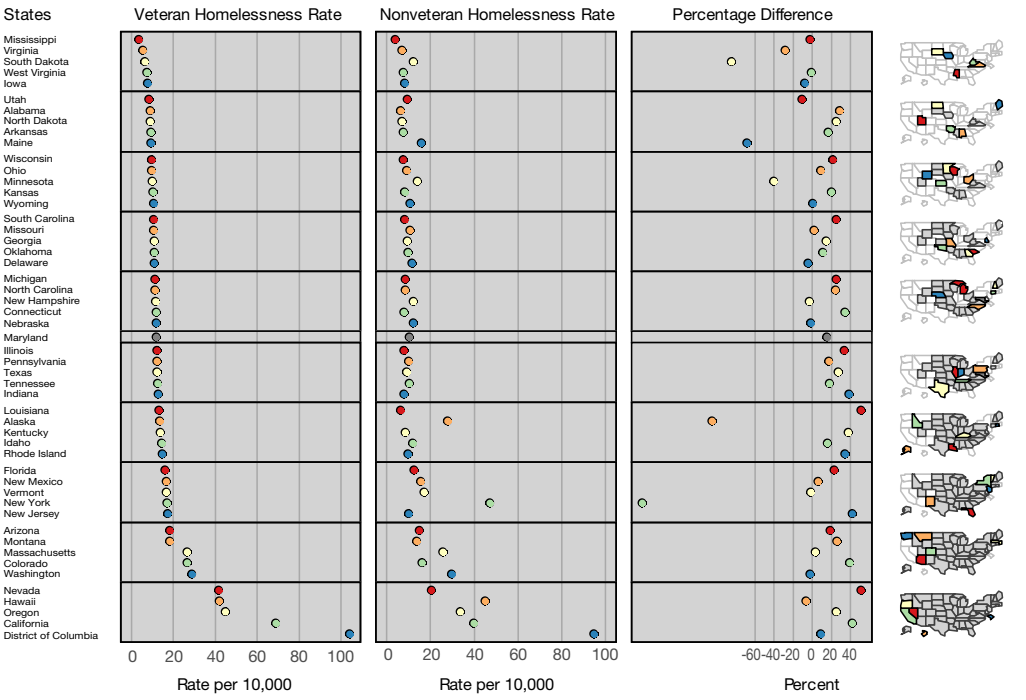


Sources: U.S. Census Bureau Population Estimates Program; U.S. Department of Veterans Affairs; HUD Point-in-Time data

Exhibit 3 displays a linked micromap that visualizes the 2020 state data and reports veteran homelessness rates, nonveteran homelessness rates, and percentage differences. The data are sorted in ascending order of the veteran homelessness rate.

Exhibit 3

Linked Micromap With 2020 State Homelessness Rates and Percentage Differences



Sources: U.S. Census Bureau Population Estimates Program; U.S. Department of Veterans Affairs; HUD Point-in-Time data

The percentage difference in rates equals 100 multiplied by the difference between the veteran homelessness rate and nonveteran homelessness rate divided by the nonveteran homelessness rate. For example, in 2020 in Nevada, the veteran homeless rate equaled 41.622 and the nonveteran homeless rate equaled 20.452. The percentage difference equaled 100 x (41.622 - 20.452)/41.622, which equals 50.863 percent.

The veteran homelessness rates range from 3.676 in Mississippi to 104.138 in Washington, D.C., with a median of 12.052 in Maryland. The nonveteran homelessness rates vary from 3.758 in Mississippi to 94.813 in Washington, D.C., with a median of 10.200 in Maryland. The percentage differences range from -178.069 percent in New York to 50.888 percent in Louisiana, with a median of 16.221 percent in Idaho. In 35 out of 51 observations, the veteran homelessness rate exceeds the nonveteran homelessness rate.

Data Analysis

This section presents data analysis examples by exploring the relationship between the percentage differences in veteran and nonveteran homelessness rates, with median household incomes and rental vacancy rates taken from the American Community Survey (ACS). ACS data from 2005 through 2009 are used for year 2008; 2012–2016 ACS data are used for year 2014; and 2016–2020 ACS data are used for year 2020. Least squares regressions explore the relationships.

The first regression estimates the effects across states using data for 2020. Exhibit 4 reports descriptive statistics for the across-state regression variables, and exhibit 5 reports least squares regression estimates for the first regression.

Exhibit 4

Regression 1 Variable Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Median	Maximum
Percentage difference between veteran and nonveteran homelessness rates	5.565	40.349	– 178.069	16.221	50.888
Median household income	65,045.176	11,051.568	46,511	63,015	90,842
Rental vacancy rate	16.526	5.782	4.235	16.636	39.022

N = 51.

Sources: American Community Survey 2020; U.S. Census Bureau Population Estimates Program; U.S. Department of Veterans Affairs; HUD Point-in-Time data

Exhibit 5

Regression 1 Estimates

Variable	Degrees of Freedom	Coefficient Estimate	Standard Error	t-Value	p-Value
Intercept	1	24.755	33.731	0.734	0.467
Median household income	1	– 0.001	0.001	– 1.610	0.114
Rental vacancy rate	1	2.102	0.985	2.135	0.038

N = 51. R squared = 0.107. Adjusted R squared = 0.070.

Note: Dependent variable equals percentage difference between veteran and nonveteran homelessness rates.

Sources: American Community Survey 2020; U.S. Census Bureau Population Estimates Program; U.S. Department of Veterans Affairs; HUD Point-in-Time data

As exhibit 4 shows, percentage differences between veteran and nonveteran homelessness rates in 2020 ranged from -178.069 to 50.888 percent, with a median of 16.221 percent and a mean of 5.565 percent.[3] Mean median household incomes in 2020 ranged from $46,511 to $90,842, with a median of $63,015 and a mean of $65,045.176. Rental vacancy rates in 2020 varied from 4.235 to 39.022 percent, with a median of 16.636 percent and a mean of 16.526 percent.

The median income regression coefficient in exhibit 5 is negative but is not statistically significant at the 0.10 level; the rental vacancy rate coefficient is positive and statistically significant at the 0.05 level.

The second regression uses data for all years to estimate the effects within states. To control for differences across states, the model includes state fixed effects (that is, state dummy variables). To control for national trends, the model also includes dummy variables for years 2014 and 2020. To control for inflation, median household incomes are adjusted with consumer price index data for 2008, 2014, and 2020.

[3] See the map in exhibit 3.

Exhibit 6 reports descriptive statistics for the second regression variables (excluding the state dummy variables), and exhibit 7 reports least squares regression estimates for the second regression. Exhibit 7 does not report coefficient estimates for the state dummy variables.

Exhibit 6

Regression 2 Variable Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Median	Maximum
Percentage difference between veteran and nonveteran homelessness rates	1.941	57.128	– 296.903	16.737	60.234
Median household income (inflation adjusted)	62,580.688	10,547.053	44,231.662	59,896.000	90,842.000
Rental vacancy rate	17.874	5.733	4.235	17.497	39.022
Year 2014 dummy variable	0.333	0.473	0	0	1
Year 2020 dummy variable	0.333	0.473	0	0	1

N = 153.

Sources: American Community Survey 2020, 2016, 2009; consumer price index 2020, 2014, 2008; U.S. Census Bureau Population Estimates Program; U.S. Department of Veterans Affairs; HUD Point-in-Time data

Exhibit 7

Regression 2 Estimates

Variable	Coefficient Estimate	Standard Error	t-Value	p-Value
Intercept	28.376	114.619	0.248	0.805
Median household income (inflation adjusted)	– 0.001	0.002	– 0.260	0.796
Rental vacancy rate	0.872	2.503	0.349	0.728
Year 2014 dummy variable	40.685	12.267	3.317	0.001
Year 2020 dummy variable	29.919	17.851	1.676	0.097

N = 153. R squared = 0.491. adjusted R squared = 0.211.

Sources: American Community Survey 2020, 2016, 2009; consumer price index 2020, 2014, 2008; U.S. Census Bureau Population Estimates Program; U.S. Department of Veterans Affairs; HUD Point-in-Time data

As exhibit 6 shows, during all 3 years, percentage differences between veteran and nonveteran homelessness rates varied from -296.903 to 60.234 percent, with a median of 16.737 percent and a mean of 1.941 percent. Inflation-adjusted median household incomes varied from $44,231.662 to $90,842, with a median of $59,896 and a mean of $62,580.688. Rental vacancy rates ranged from 4.235 to 39.022 percent, with a median of 17.497 percent and a mean of 17.874 percent.

Regression coefficient estimates reported in exhibit 7 indicate that neither inflation-adjusted median household incomes nor rental vacancy rates had statistically significant effects on percentage differences between veteran and nonveteran homelessness rates. The dummy variables for both years are positive and statistically significant at the 0.10 level, revealing an increase in percentage differences between 2008 and 2014 and a decrease between 2014 and 2020.

Conclusion

In 2022, the VA provided HUD with state veteran population estimates for 2020, 2014, and 2008. These estimates allowed HUD to calculate state homeless rates for veterans and nonveterans for the first time when combined with HUD Point-in-Time homeless count data and Census Bureau state population estimates.

This article demonstrates how to calculate state homelessness rates for veterans and nonveterans using the new VA data. The veteran homeless rates are higher on average each year compared with the rates for nonveterans, and the mean rates decrease each year for both groups.

For data analysis examples, this study explores the relationship between percentage differences in veteran and nonveteran homelessness rates and median household incomes and rental vacancy rates with least squares regressions. Across-state regression estimates using data for 2020 indicate that rental vacancy rates are positively related to percentage differences between homelessness rates for veterans and nonveterans; estimates indicate that median incomes have no statistically significant relationship. Within-state regression estimates using data for all years find no statistically significant effect of either median household incomes or rental vacancy rates on percentage differences between veteran and nonveteran homelessness rates.

Acknowledgments

The author thanks Dylan Hayden for helpful comments.

Author

Brent D. Mast is a social science analyst at the U.S. Department of Housing and Urban Development, Office of Policy Development and Research.

References

Mast, Brent D. 2020. "Measuring Homelessness and Resources to Combat Homelessness With PIT and HIC Data," *Cityscape* 22 (1): 215–225. https://www.huduser.gov/portal/periodicals/cityscpe/vol22num1/article7.html.

Nisar, Hiren, Natalie Morrissey, Cory Carr, Charles Horseman, and Dennis Okyere. 2020. *Implementing Approaches to Address Unsheltered Homelessness*. https://www.huduser.gov/portal/publications/Implementing-Aprroaches-to-Address-Unsheltered-Homlessness-2020.html.

U.S. Department of Housing and Urban Development (HUD). 2023. "Point-in-Time Count and Housing Inventory Count." https://www.hudexchange.info/programs/hdx/pit-hic/.

Graphic Detail

Geographic Information Systems (GIS) organize and clarify the patterns of human activities on the Earth's surface and their interaction with each other. GIS data, in the form of maps, can quickly and powerfully convey relationships to policymakers and the public. This department of Cityscape *includes maps that convey important housing or community development policy issues or solutions. If you have made such a map and are willing to share it in a future issue of* Cityscape*, please contact alexander.m.din@hud.gov.*

Exploring the Relationship Between Child Opportunity and Violent Crime Rates in West Virginia Counties

Brent D. Mast
U.S. Department of Housing and Urban Development

Tricia Ruiz
U.S. Department of Housing and Urban Development

Introduction

The relationship between childhood development and neighborhood quality has important implications in terms of physical and behavioral well-being and long-term socioeconomic outcomes (Acevedo-Garcia et al., 2020; Chetty et al., 2018). One aspect of neighborhood quality can be measured with crime rates. Exposure to violent crime has been associated with child health across multiple dimensions, such as chronic physical conditions, developmental disorders, and mental health (American Public Health Association, 2018; Jackson, Posick, and Vaughn, 2019). Violent crime is known to have geographically concentrated patterns, and exposure to violent crime affects the health of victims, their families, and their communities (Sackett, 2016).

This report analyzes the relationship between child opportunity and violent crime using a geographic case study of counties in West Virginia. It is the authors' understanding that this is the first study to conduct an analysis using these two measures: correlation analysis and mapping. This combination contributes to broader discussions about the effects of local crime on children and also illustrates how the less-common analytical tool of bivariate mapping may be useful in future research.

Data

For this study, child opportunity was measured with Child Opportunity Index (COI) 2.0 data. Specifically, this study uses the COI 2.0 national Z-score for 2015. The COI 2.0 is a composite measure that includes resources and conditions related to children's health development and is tabulated at the Census tract level.[1]

The COI 2.0 includes 29 indicators, including access and quality of early childhood education, school poverty rates, health insurance coverage, access to green space and healthy food, exposure to toxins, and socioeconomic measures including poverty rate, household income, homeownership rates, and high-skill employment rates (Noelke et al., 2020).[2]

Because the COI does not include measures of crime, the study used violent crime rate (VCR) data from the Federal Bureau of Investigation Uniform Crime Reports (UCR) for 2014, which were taken from the National Neighborhood Data Archive (2020). The crime rates represent the number of incidents per 10,000 population in 51 counties in West Virginia for which data were available.

In the next section, the authors describe the data and present summary statistics and Pearson correlation coefficients. The data visualization, using bivariate choropleth maps, is presented in the following section. Concluding remarks are presented in the final section.

Summary Statistics and Correlation Analysis

Summary statistics are reported in exhibit 1. The COI 2.0 national Z-scores range from -.057 to .017, indicating a fairly wide range across West Virginia counties. Because the index is a Z-score, the mean and median are both very close to zero. Violent crime rates also have a wide range, varying from around 2 to 388, with a mean of about 40 and a median approximately equal to 23.

Exhibit 1

Descriptive Statistics

Variable	N	Mean	StdDev	Min	Median	Max
COI 2.0 national Z-score	55	– 0.015	0.015	-0.057	– 0.013	0.017
Violent crime rate	51	39.907	56.787	2.358	22.686	388.350

COI = Child Opportunity Index. Max= maximum. Min =minimum. StdDev = standard deviation.
Sources: COI 2.0, 2015; Federal Bureau of Investigation Uniform Crime Reports, 2014

Pearson correlation coefficients and p-values are reported in exhibit 2. The correlation coefficient between the COI 2.0 national Z-score and the VCR is -.196, but it is not statistically significant at the .10 level. This statistic indicates little relationship between the COI 2.0 index and the violent crime rate.

[1] The authors aggregated the COI 2.0 index to the county level by taking a weighted mean, where the weight was child population.

[2] The data for COI 2.0 were developed by researchers at Brandeis University, Waltham, Massachusetts, and are available at data.diversitydatakids.org/.

Exhibit 2

Pearson Correlation Coefficients

Variable	N	Pearson Correlation Coefficient	P-value
		COI 2.0 national Z-score	Violent crime rate
COI 2.0 national Z-score	55	1	
Violent crime rate	51	– 0.196	0.168

COI = Child Opportunity Index.

Sources: COI 2.0, 2015; Federal Bureau of Investigation Uniform Crime Reports, 2014

Data Visualization

Choropleth maps typically display one variable using colors or shades to illustrate geographical patterns and differences between spatial units, such as counties or neighborhoods. However, comparing more than one variable at a time can be difficult. The authors overcame this limitation by displaying the COI 2.0 index and the VCR as a bivariate choropleth map to allow the map reader to analyze two variables in the same map. This method allows the map reader to visualize the spatial patterns of one variable compared with the other.

The child opportunity index and violent crime rate were mapped using tertiles to categorize each measure. Each category contained one-third of all counties, ranked as low, moderate, and high. These findings are detailed in the tables for exhibits 3 and 4. These categories were used to create the maps for exhibit 5 (in color) and exhibit 6 (in black and white). Exhibit 6 provides the same visualization as exhibit 5 but is in black and white, with three shades of gray for the child opportunity index and different patterns of dots, hatch-marks, and cross-hatch marks for levels of violent crime.

Exhibit 3

Categories for Child Opportunity Index in West Virginia (Total Number of Counties: 55)

Category	Number of Counties	Minimum	Maximum
Low	18	– 0.0573	– 0.0205
Moderate	18	– 0.0199	– 0.0074
High	19	– 0.0073	0.0172
No Data Available	0	NA	NA

Sources: Authors' calculations of data from Child Opportunity Index 2.0, 2015; Federal Bureau of Investigation Uniform Crime Reports, 2014

Exhibit 4

Categories for Violent Crime Data in West Virginia (Total Number of Counties: 55)

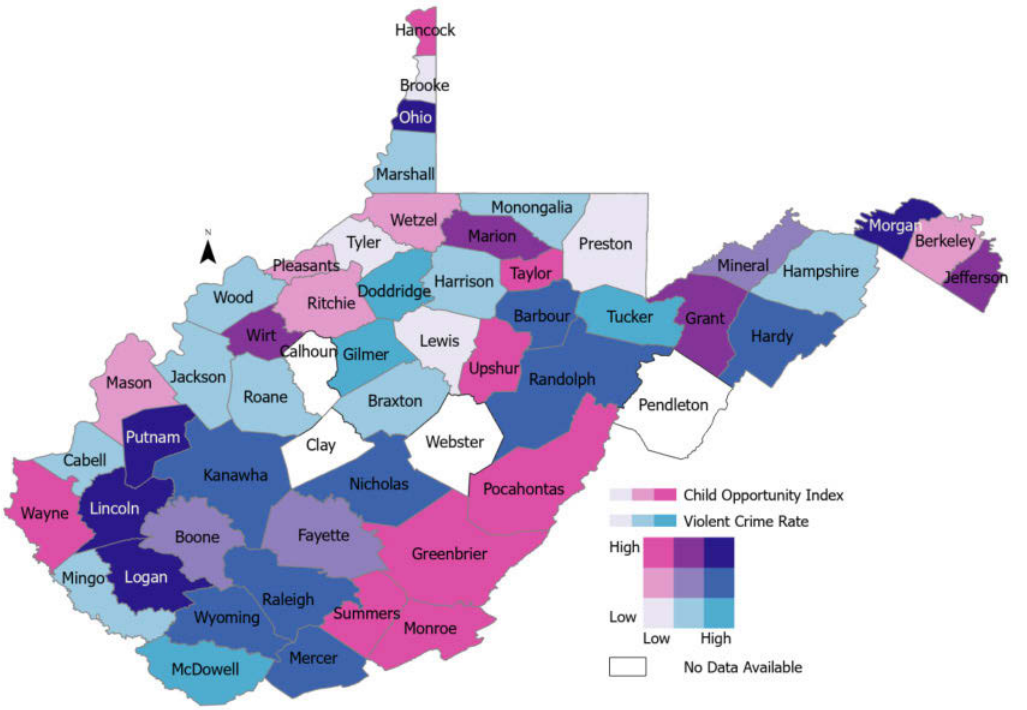
Category	Number of Counties	Minimum	Maximum
Low	17	2.3584	18.5992
Moderate	17	18.9415	31.5259
High	17	38.9964	388.3495
No Data Available	4	NA	NA

Sources: Authors' calculations of data from Child Opportunity Index 2.0, 2015; Federal Bureau of Investigation Uniform Crime Reports, 2014

In the map legend in exhibit 5, the rankings for COI are displayed vertically, with low at the bottom and high at the top of the legend. For VCR, the rankings can be read from left to right, with low levels on the left-hand side and highest on the right side. Both measures converge to create nine different categories: low COI-low VCR, low COI-moderate VCR, low COI-high VCR, moderate COI-low VCR, moderate COI-moderate VCR, moderate COI-high VCR, high COI-low VCR, high COI-moderate VCR, and high COI-high VCR.

Exhibit 5

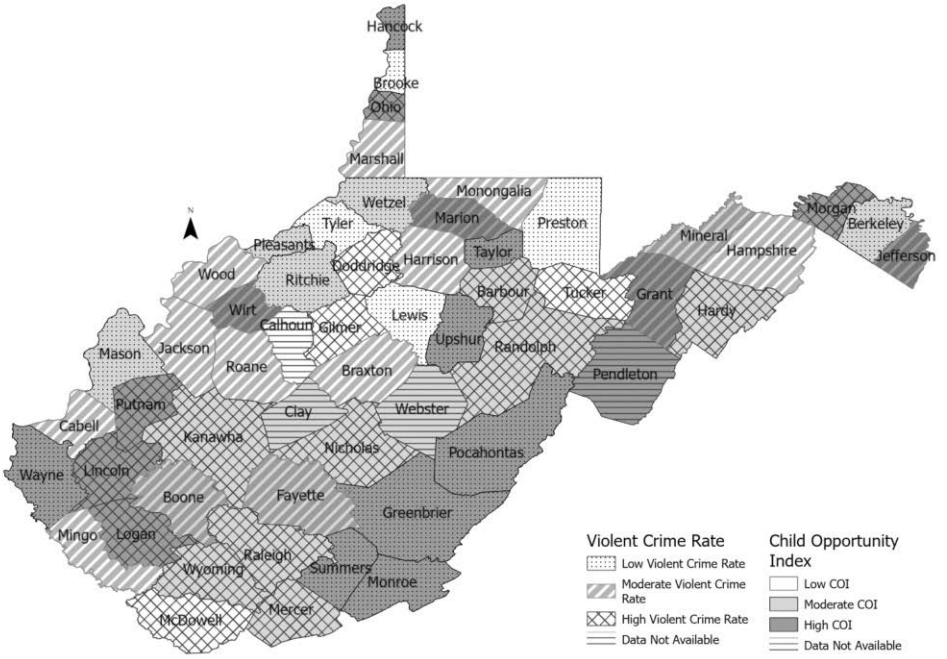
Bivariate Choropleth Map (in color) of Child Opportunity Index (COI) and Violent Crime Rate in West Virginia



Sources: Authors' calculations of data from COI 2.0, 2015; Federal Bureau of Investigation Uniform Crime Reports, 2014

Exhibit 6

Bivariate Choropleth Map (in black and white) of Child Opportunity Index (COI) and Violent Crime Rate in West Virginia



Sources: Authors' calculations of data from COI 2.0, 2015; Federal Bureau of Investigation Uniform Crime Reports, 2014

Exhibits 5 and 6 illustrate that five counties had a combination of high COI and high VCR. These counties include the three contiguous counties of Putnam, Lincoln, and Logan, in addition to Ohio and Morgan counties. In contrast, Tyler, Preston, and Lewis counties had low COI and low VCR.

Because of the wide variation across these counties, these maps support what was learned from the correlation analysis—there does not appear to be a distinct association between the child opportunity index and violent crime rate in West Virginia at the county level.

Discussion

Violent crime is one component of neighborhood characteristics that affect childhood development. Although the COI is a useful composite measure that includes a broad array of resources and conditions related to child development, it does not include a measure for crime. This analysis looked at the COI combined with county-level measures of violent crime; however, it did not find a strong correlation between the two.

For example, based on the known harmful effects of violent crime on childhood development, it could be expected that there would be an inverse relationship. Areas with high rates of violent crime would also be areas with low childhood opportunity. However, there was not an

overwhelming number of these low COI-high VCR counties. In these maps, only McDowell, Gilmer, Doddridge, and Tucker counties (4 out of the 55 counties) fall into this category.

This finding does not suggest that there is no connection between violent crime and childhood opportunity, which is a complex, multilevel relationship that includes measures beyond the scope of this analysis. However, the findings do indicate a relatively weak relationship between the COI 2.0 index and violent crime rates at the county level in West Virginia. Therefore, because the COI 2.0 index does not include a measure of exposure to violent crime,[3] it would be worth continuing to explore additional measures that include this important aspect of child opportunity, including evaluating other geographies and/or spatial units.

Authors

Brent D. Mast is a social science analyst at HUD's office of Policy Development and Research. Tricia Ruiz is a geographer at HUD's office of Fair Housing and Equal Opportunity.

References

Acevedo-Garcia, Dolores, Clemens Noelke, Nancy McArdle, Nomi Sofer, Nick Huntington, Erin Hardy, Rebecca Huber, Mikyung Baek, and Jason Reece. 2020. "The Geography of Child Opportunity: Why Neighborhoods Matter for Equity, First Findings from the Child Opportunity Index 2.0." https://www.diversitydatakids.org/research-library/research-report/geography-child-opportunity-why-neighborhoods-matter-equity.

American Public Health Association. 2018. "Violence is a Public Health Issue: Public Health is Essential to Understanding and Treating Violence in the U.S." https://apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2019/01/28/violence-is-a-public-health-issue.

Chetty, Raj, John N. Friedman, Nathaniel Hendren, Maggie R. Jones, and Sonya R. Porter. 2018. The Opportunity Atlas: Mapping the Childhood Roots of Social Mobility. Working paper 18–42. Center for Economic Studies: U.S. Census Bureau. https://opportunityinsights.org/wp-content/uploads/2018/10/atlas_paper.pdf.

Diversitydatakids.org. n.d."COI 2.0 Index Data—Child Opportunity Levels, Scores and Averaged z-Scores for the Overall Index and Three Domains" https://data.diversitydatakids.org/dataset/coi20-child-opportunity-index-2-0-database/resource/080cfe52-90aa-4925-beaa-90efb04ab7fb.

Jackson, Dylan, Chad Posick, and Michael G. Vaughn. 2019. "New Evidence Of The Nexus Between Neighborhood Violence, Perceptions Of Danger, And Child Health," *Health Affairs* 38 (5): 746–754.

[3] The researchers have noted that this issue is a limitation in their methodology and that it is important to include measures of violent crime, but they could not acquire neighborhood-level data at the time the data were compiled (Noelke et.al., 2020).

National Neighborhood Data Archive: Crimes by County, 2002–2014. Last updated 1/21/2020. Downloaded from the International Consortium for Political and Social Research (ICPSR) at the University of Michigan. https://www.icpsr.umich.edu/web/ICPSR/studies/38649/versions/V1.

Noelke, C., N. McArdle, M. Baek, N. Huntington, R. Huber, E. Hardy, and D. Acevedo-Garcia. 2020. Child Opportunity Index 2.0 Technical Documentation. https://www.diversitydatakids.org/sites/default/files/2020-02/ddk_coi2.0_technical_documentation_20200212.pdf.

Sackett, Chase. 2016. "Neighborhoods and Violent Crime," Evidence Matters. https://www.huduser.gov/portal/periodicals/em/summer16/highlight2.html.

Exits From HUD Assistance and Moves to Higher Poverty Neighborhoods Following the Camp Fire

Alexander Din
U.S. Department of Housing and Urban Development
Office of Policy Development and Research

The views expressed in this article are those of the author and do not represent the official positions or policies of the Office of Policy Development and Research, the U.S. Department of Housing and Urban Development, or the U.S. Government.

Abstract

Little is known about U.S. Department of Housing and Urban Development (HUD)-assisted households following a natural disaster, including continued participation status in low-income rental assistance and post-disaster location outcomes. This article compares changes in participation in HUD assistance and neighborhood poverty status between HUD-assisted households in Paradise and Magalia, California, and the rest of Butte County following the 2018 Camp Fire. The wildfire destroyed most of the community, making it the deadliest and most destructive wildfire in California's history. Approximately one-half of HUD-assisted households were not participating in HUD assistance in 2019. Of households that remained assisted, most had moved out of their neighborhood, often to higher poverty neighborhoods. This research suggests that further research is necessary to measure changes in participation in HUD assistance and locational trends for low-income subsidized households following a natural disaster.

What Was the Camp Fire?

The Camp Fire in and around Paradise, California, was the most destructive wildfire in California's history (CAL FIRE, 2022), killing 85 people, injuring others, and destroying nearly 19,000 structures (CAL FIRE, 2019). Nearly 90 percent of Paradise's housing was destroyed, and 83 percent of its residents were displaced (Kuczynski and Sharygin, 2019). Only one-fourth of

residential addresses were occupied by the end of 2021 (Din, 2022). Although some research has been conducted on households assisted by HUD after other natural disasters, little is known about HUD-assisted households after the Camp Fire or other natural disasters. This article compares the 2017 and 2019 spatial locations of HUD-assisted households in Paradise and Magalia, California, with HUD-assisted households in the rest of Butte County, California.

HUD-Assisted Households After a Natural Disaster

Approximately one-half of California's housing units are in the wildland-urban interface (WUI) (Hammer, Stewart, and Radeloff, 2007), and housing growth inside the WUI outpaces housing growth outside the WUI (Radeloff et al., 2018). However, government-subsidized housing in California is disproportionately outside of the WUI (Gabbe, Piece, and Oxlaj, 2020). Some studies have researched HUD-assisted households in disaster-prone areas in general, but fewer studies have analyzed the intersection of HUD-assisted households in wildfire-prone areas or the spatial locations of HUD-assisted pre- and post-disaster, regardless of disaster type.

Despite limited information about HUD-assisted households in either wildfire areas or post-disaster location patterns, some information is known about HUD-assisted households following a natural disaster in general. HUD-assisted households were disproportionately in neighborhoods with greater flood extents following Hurricane Harvey in Harris County, Texas (Chakraborty et al., 2021). Public housing residents in Galveston, Texas, were displaced due to Hurricane Ike and post-disaster redevelopment efforts (Rongerude and Hamideh, 2019), similar to the displacement of public housing residents in Lumberton, North Carolina, after Hurricane Matthew (Khajehei, 2019). Insufficient resources for displaced residents, particularly those who are low-income or homeless, growth in post-disaster rental costs, and housing reconstruction costs are frequent barriers to remaining or returning to a community after a disaster (Peloton Research and Economics, 2020; Rouhanizadeh, Kermanshachi, and Nipa, 2020).

Where Were HUD-Assisted Households After the Camp Fire?

After the Camp Fire destroyed most of Paradise, one-half (50.0 percent) of HUD-assisted households in Paradise and nearby Magalia that were present in the HUD administrative data in 2017 were not present in HUD's administrative data for 2019,[1] more than double the rate of HUD-assisted households elsewhere in Butte County (22.1 percent).[2] In all categories of move types, as shown in exhibit 1, households from Paradise and Magalia greatly exceed moves from the rest of Butte County.

[1] An assisted household not being present in later HUD administrative data defines an exit in this article's context.

[2] Exits from HUD assistance between 2017 and 2019 in the rest of Butte County were similar to the full universe of HUD-assisted households during the same time period.

Exhibit 1

Presence and Locations in 2019 of HUD-Assisted Households in Butte County, California, in 2017

Location Category	HUD-Assisted Households			
	Paradise/Magalia		Rest of Butte County	
	Count	Share (%)	Count	Share (%)
HUD-Assisted in 2017	370	100.0	2,597	100.0
Not HUD-Assisted in 2019	185	50.0	575	22.1
HUD-Assisted in 2019 and in Different State	17	4.6	24	0.9
HUD-Assisted in 2019 and Same State but Different County	69	18.6	48	1.8
HUD-Assisted in 2019 and Same County but Different Census Tract	79	21.4	103	4.0
HUD-Assisted in 2019 and Same Census Tract	20	5.4	1,847	71.1

Note: Percentages may not total 100 percent due to rounding.
Sources: HUD Longitudinal Files; Calculations by author

HUD households from Paradise and Magalia primarily moved to Chico and Oroville, with fewer numbers going to Gridley, Durham, and Magalia outside of the Camp Fire, as shown in exhibit 2. Half of these households moved between 11.6 and 17.6 miles from their original locations.

Exhibit 2

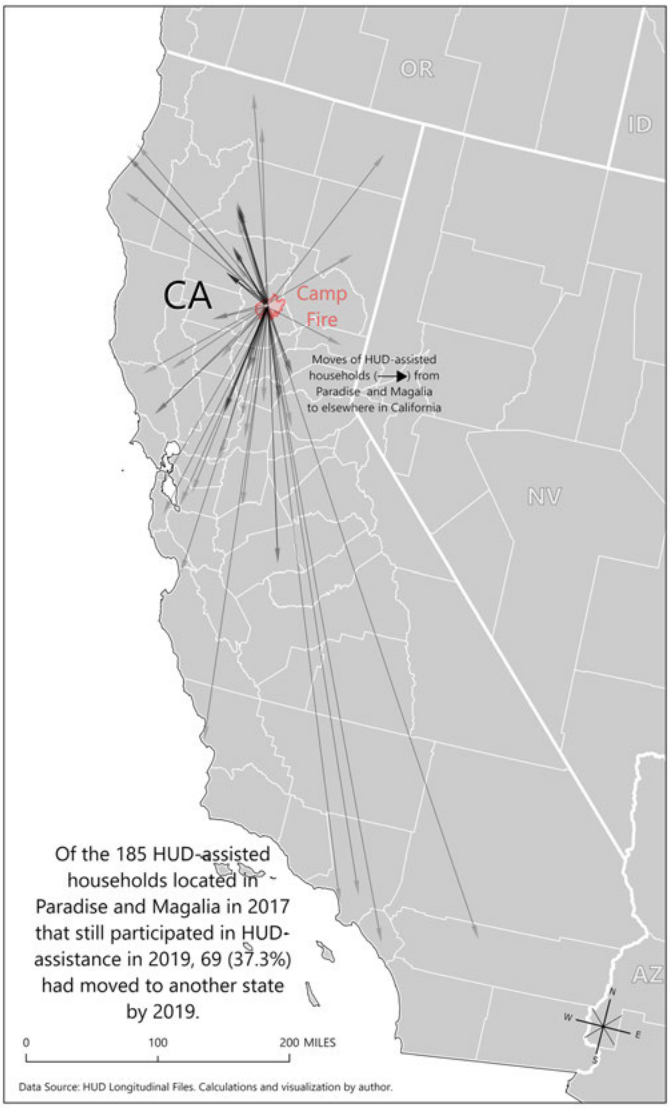
Moves of HUD-Assisted Households From Paradise and Magalia to Elsewhere in Butte County, California, Between 2017 and 2019

Sources: HUD Longitudinal Files; Calculations and visualization by author

Slightly more than one-third (37.3 percent) of HUD-assisted households that remained in assistance between 2017 and 2019 moved elsewhere in California outside of Butte County. This group mostly remained in northern California; however, a few moved to the San Francisco Bay Area. One-half of the households in this group of movers moved 72 or fewer miles. Popular destinations for this cohort were Eureka, Redding, Red Bluff, the Sacramento area, and Yuba City. Exhibit 2 visualizes the moves of this group.

Exhibit 3

Moves of HUD-Assisted Households From Paradise and Magalia to Elsewhere in California Outside of Butte County Between 2017 and 2019

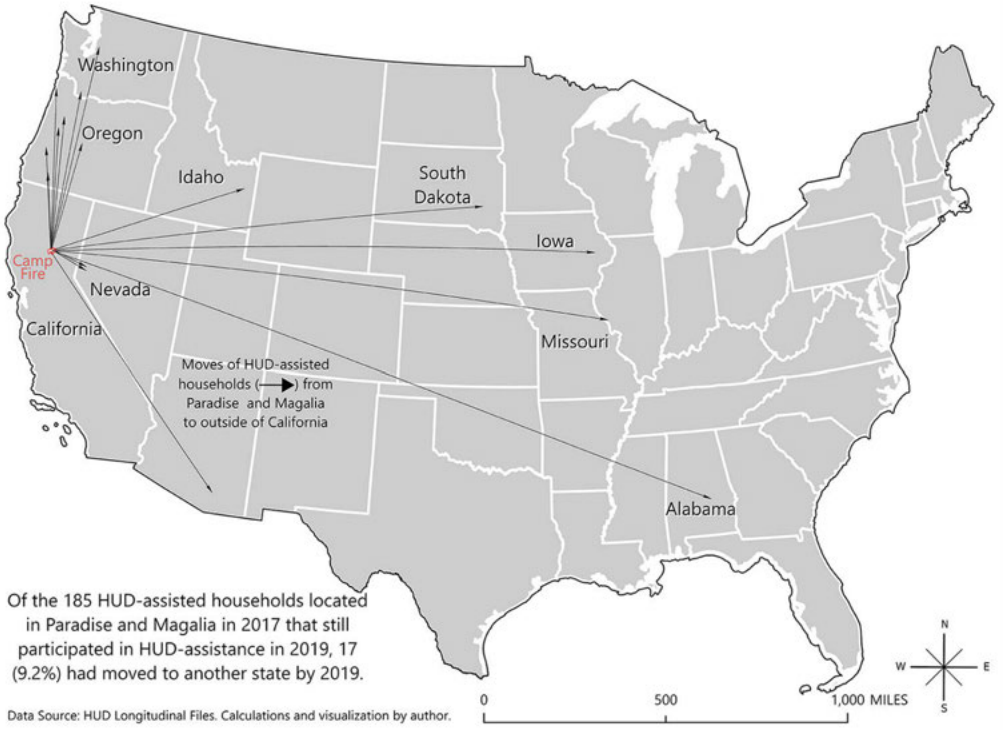


Sources: HUD Longitudinal Files; Calculations and visualization by author

A small number (17) of HUD-assisted households from Paradise and Magalia that remained in assistance from 2017 to 2019 left California for another state by 2019. Many went north to Oregon and Washington, a few to nearby Reno, Nevada, and others scattered around the country, as shown in exhibit 4.

Exhibit 4

Moves of HUD-Assisted Households From Paradise and Magalia to Elsewhere Outside of California Between 2017 and 2019



Sources: HUD Longitudinal Files; Calculations and visualization by author

Did the Neighborhood Poverty Rate Change for HUD-Assisted Households That Moved After the Camp Fire?

Evidence supports that living in neighborhoods with higher opportunity is associated with increased benefits to HUD-assisted households (Chetty, Hendren, and Katz, 2016). A common measurement of neighborhood opportunity is a census tract's poverty rate, where a lower poverty rate is equivalent to a supposed greater level of opportunity (Brazil, Wagner, and Ramil, 2022). Contrary to HUD programs nationwide (McClure, 2010), most HUD-assisted households in Paradise and Magalia lived in low-poverty census tracts prior to the Camp Fire. By 2019, most households that remained in HUD assistance had moved to higher poverty rate census tracts. Exhibit 5 shows that of HUD-assisted households in Paradise and Magalia in 2017, those that

moved shorter distances (e.g., to nearby census tracts within the same county) tended to move to higher poverty neighborhoods, suggesting a decrease in potential neighborhood opportunity benefits for these assisted households.

Exhibit 5

Change in Neighborhood Poverty for HUD-Assisted Households in Paradise and Magalia, California, in 2017

Move Type	Neighborhood Poverty Category		HUD-Assisted Households			Poverty Rate Change		Miles Moved	
	2017	2019	Count (N=165)	Within Move Type Share (%)	Overall Share (%)	Mean (%)	Median (%)	Mean	Median
Different census tract within Butte County	Low-Poverty	Low-Poverty	28	35.4	20.4	– 0.2	– 6.8	13	12
	Low-Poverty	High-Poverty	34	43.0	24.8	16.1	16.6	15	15
	Low-Poverty	Extremely High-Poverty	15	19.0	10.9	30.3	27.4	13	13
	High-Poverty	Low-Poverty	2	2.5	1.5	– 6.8	– 1.1	7	7
Different census tract outside of Butte County but within California	Low-Poverty	Low-Poverty	38	55.1	27.7	– 0.2	– 1.3	113	76
	Low-Poverty	High-Poverty	31	44.9	22.6	13.2	11.8	96	45
Different census tract outside of California	Low-Poverty	Low-Poverty	13	76.5	9.5	– 4.1	– 3.9	740	409
	Low-Poverty	High-Poverty	4	23.5	2.9	16.9	17.6	316	189

Notes: This exhibit does not include the 20 HUD-assisted households that remained in the same census tract in 2017 and 2019. Percentages may not total 100 percent due to rounding.

Sources: HUD Longitudinal Files; American Community Survey; Calculations by author

What Else is There to Learn About HUD-Assisted Households After the Camp Fire or Other Natural Disasters?

Little has been researched about HUD-assisted households following a disaster, including those that have exited assistance. Although public housing authorities can offer some help following a disaster, such as portability or reissuing the voucher (PIH, 2022), the surge in demand for rental housing following the Camp Fire in the tri-county region further constrained an already tight rental market (Peloton Research and Economics, 2020). The Stafford Act mandates that the Federal Emergency Management Agency (FEMA) take the lead on the post-disaster mission. In contrast, HUD's efforts are directed toward long-term recovery via Community Development Block Grant Disaster Recovery (CDBG-DR) grants, which are long-term and take time to be appropriated by Congress and then enacted by local grantee communities (Martín, Teles, and DuBois, 2021).

The large exit from HUD assistance and moves to higher poverty neighborhoods after the Camp Fire suggests this trend may occur following other disaster types. Analyzing post-disaster spatial trends of HUD-assisted households may help to understand the effects of a natural disaster on long-term outcomes for assisted renters in general. For some of the United States' most vulnerable renters, it would be beneficial to further measure post-disaster mobility and exits from low-income subsidized rental assistance. This assessment would identify potential policy improvements to maintain housing and protect them from harm following a disaster.

Notes

Prior to the Camp Fire, there were 2,967 HUD-assisted households in Butte County, including 370 households in Paradise or Magalia. A two-thirds majority of assisted households in Butte County participated in the Housing Choice Voucher (HCV) program, followed by Project-Based Section 8 (PBS8) (17.5 percent), Public Housing (11.5 percent), Section 202 (3.3 percent), and Section 811 (1.0 percent). HUD-assisted households in Paradise and Magalia participated only in the HCV and PBS8 programs.

Acknowledgments

The author thanks Cody Bowles in Public and Indian Housing for his helpful comments.

Author

Alexander Din is a social science analyst in the Office of Policy Development and Research at the U.S. Department of Housing and Urban Development.

References

Brazil, Noli, Jenny Wagner, and Raziel Ramil. 2022. "Measuring and Mapping Neighborhood Opportunity: A Comparison of Indices in California," *Urban Analytics and City Science* 50 (3): 1–19.

California Department of Forestry and Fire Protection (CAL FIRE). 2022. "Top 20 Most Destructive California Wildfires."

———. 2019. "Camp Fire." https://www.fire.ca.gov/incidents/2018/11/8/camp-fire/.

Chakraborty, Jayajit, Ashley A. McAfee, Timothy W. Collins, and Sara E. Grineski. 2021. "Exposure to Hurricane Harvey Flooding for Subsidized Housing Residents of Harris County, Texas," *Natural Hazards* 106: 2815–2205.

Chetty, Raj, Nathaniel Hendren, and Lawrence F. Katz. 2016. "The Effects of Exposure to Better Neighborhoods on Children; New Evidence from the Moving to Opportunity Experiment," *American Economic Review* 106 (4): 855–902.

Din, Alexander. 2022. "What Do Visualizations of Administrative Address Data Show About the Camp Fire in Paradise, California?" *Cityscape* 24 (3): 261–271.

Gabbe, C.J., Gregory Piece, and Efren Oxlaj. 2020. "Subsidized Households and Wildfire Hazards in California," *Environmental Management* 66: 873–883.

Hammer, Roger B., Susan I. Stewart, and Volker C. Radeloff. 2007. "Demographic Trends, the Wildland–Urban Interface, and Wildfire Management," *Society and Natural Resources* 22: 777–782.

Khajehei, Sayma. 2019. "Recovery Challenges of Public Housing Residents After Disasters: Lumberton, North Carolina After Hurricane Matthew." Master of Community and Regional Planning Thesis, Iowa State University, Ames, Iowa.

Kuczynski, Doug, and Ethan Sharygin. 2019. *California Tops 39.9 Million Residents at New Year per New State Demographic Report*. Sacramento, CA: California Department of Finance. https://htv-prod-media.s3.amazonaws.com/files/e-1-2019-press-release-1556737607.pdf.

Martín, Carlos, Daniel Teles, and Nicole DuBois. 2021. "Understanding the Pace of HUD's Disaster Housing Recovery Efforts," *Housing Policy Debate* 32 (1): 102–127.

McClure, Kirk. 2010. "The Prospects for Guiding Housing Choice Voucher Households to High-Opportunity Neighborhoods," *Cityscape: A Journal of Policy Development and Research* 12 (3): 101–122.

Peloton Research and Economics. 2020. *The Impacts of Camp Fire Disaster on Housing Market Conditions and Housing Opportunities in the Tri-County Region: Study Prepared for North Valley Community Foundation*. Chico: Peloton Research and Economics.

Public and Indian Housing (PIH). 2022. "Rehousing Families." https://files.hudexchange.info/resources/documents/PHA-Disaster-Readiness-Response-and-Recovery-Rehousing-Families-Fact-Sheet.pdf.

Radeloff, Volker C., David P. Helmers, H. Anu Kramer, Miranda H. Mockrin, Patricia M. Alexandre, Avi Bar-Massada, Van Butsic, Todd J. Hawkbaker, Sebastián Martinuzzi, Alexandra D. Syphard, and Susan I. Stewart. 2018. "Rapid Growth of the U.S. Wildland-Urban Interface Raises Wildfire Risk," *Proceedings of the National Academy of Sciences* 115 (13): 3314–3319.

Rongerude, Jane, and Sara Hamideh. 2019. "Post-Disaster Recovery of Public Housing in Galveston, Texas: An Opportunity for Whom?" Lincoln Land Institute. https://www.lincolninst.edu/sites/default/files/pubfiles/2019_inquiry_post_disaster_recovery_texas_rongerude_hamideh.pdf.

Rouhanizadeh, Behzad, Sharareh Kermanshachi, and Thahomina Jahan Nipa. 2020. "Exploratory Analysis of Barriers to Effective Post-Disaster Recovery," *International Journal of Disaster Risk Reduction* 50 101735.

Industrial Revolution

Every home that is built is a representation of compromises made between different and often competing goals: comfort, convenience, durability, energy consumption, maintenance, construction costs, appearance, strength, community acceptance, and resale value. Consumers and developers tend to make tradeoffs among these goals with incomplete information which increases risks and slows the process of innovation in the housing industry. The slowing of innovation, in turn, negatively affects productivity, quality, performance, and value. This department piece features a few promising improvements to the U.S. housing stock, illustrating how advancements in housing technologies can play a vital role in transforming the industry in important ways.

Hiding in Plain Sight: How Reconsideration of Codes for Existing and Historic Buildings Can Expand Affordable Housing

Marilyn E. Kaplan
Fellow, Association for Preservation Technology International
Preservation Architecture

Mike Jackson
Fellow, American Institute of Architects
Fellow, Association for Preservation Technology International

Abstract

Current policy conversations regarding the critical need to increase the availability of affordable housing rarely include discussions regarding the reuse of existing and historic buildings, including the thousands of vacant housing units on Main Streets across the United States. Recapturing these spaces has many advantages, including carbon-reduction, expanded use of existing infrastructure, and building or strengthening communities. Nearly 50 years ago, the U.S. Department of Housing and Urban Development (HUD) led many of the efforts to identify barriers to building reuse that were embedded in the building codes, resulting in the framework that is now the basis of the widely adopted model for existing building code(s). A half-century after these initial efforts, many factors have contributed to the reemergence of codes as a barrier to greater reuse of existing buildings. An updated assessment and strategy to address current code barriers can make an unparalleled contribution to meeting the nation's current and projected housing needs.

Introduction

The nation's shortage of affordable housing—estimated at 3.8 million housing units according to a 2021 Freddie Mac estimate—is widely recognized and critical to the health, safety, and welfare of the public and the social and economic well-being of families and communities. Although no precise estimate exists quantifying the number of vacant housing units and other underutilized real estate, it is common sense to envision that vacant buildings have tremendous potential to ameliorate the housing shortage. Many efforts to address the housing shortage focus on new construction, often undertaken by larger developers.

In the late decades of the 20th century, many factors contributed to the public's acceptance of reusing existing buildings. Federal policy, state and federal tax credits for the rehabilitation of qualified historic structures, and a rediscovered appreciation of walkable communities created opportunities throughout the United States to reuse buildings. Although this back-to-the-city trend has continued, it has been affected by code requirements for fire and life safety and other societal goals such as accessibility and resiliency. In many respects, it appears that the advances which brought forth the nation's first existing building codes 25 years ago have been thwarted by advancing codes for all new and existing buildings and state and federal housing policies favoring new construction. Reliance on new buildings may have become widespread due to the ready ability to replicate standard designs and eliminate the problems created by the nuances and unique conditions presented by existing buildings, including environmental concerns and the difficulties encountered when trying to meet construction standards written for new construction.

Communities throughout the United States share the dual challenges of the inability to meet their housing needs and the underutilization of vacant buildings in their traditional community cores. Some vacancies can be attributed to the long-term effects of urban renewal and the expansion of the suburbs; others can be considered the result of building and fire codes that are unevenly punitive to older structures. Although not all buildings are candidates for reuse, the codes' devaluing of existing buildings in favor of new construction that is easier to standardize and codify has been shortsighted, often creating conditions where projects are unaffordable or technically infeasible.

The primary building types discussed in this article—small two-, three-, and four-story buildings along Main Street, as illustrated in Exhibit 1—are among those that are underutilized but present great opportunity for addressing housing needs. The recent recession, pandemic, and changing patterns in retail and the workplace have created high vacancy and underutilization rates in large retail malls and downtown offices, ranging from high-to low-rise construction and buildings with large to small floor plates. For all these building types, retrofits and adaptive reuse for new occupancies will require new and creative approaches to the construction codes that govern their rehabilitation. For larger buildings, reuse for residential purposes will need to address requirements such as those for natural light, ventilation, and exit travel. Some of these requirements create barriers shared with the smaller Main Street buildings, whereas others are unique to the building or occupancy types. To unlock the opportunities and benefits of the reuse of these structures, a broad and fresh look, as supported by HUD nearly 50 years ago, is required.

On Main Street, the opportunity to create housing on vacant upper floors is obvious. In some buildings, new units will be added or reinstated above existing businesses and offices; in other buildings that have no first-floor use, additional opportunities exist to create nonresidential occupancies that support or enhance the residential use. Unfortunately, code requirements seeking to have existing buildings function like new construction can present insurmountable challenges, with the greatest penalty paid when the code classifies the rehabilitation effort as a Change of Occupancy. Based on the framework of earlier efforts to encourage building rehabilitation through improved building codes, this article presents an updated approach to removing code barriers to meet the current critical housing needs within existing buildings.

How Building Codes Work

Until the 1997 forming of the International Code Council (ICC), model building codes adopted by jurisdictions were published by one of three model code organizations: the Building Officials and Code Administrators International (BOCA), formed in 1915; the International Conference of Building Officials (ICBO), founded in 1922; and the Southern Building Code Congress International, formed in 1941. Created to standardize the construction industry via a national mode, the ICC now publishes 15 model codes (the I-codes), updated at 3-year cycles. The next family of codes to be published will be the 2024 edition.

A model code only becomes law once adopted by the jurisdiction. A jurisdiction can adopt one, many, or all of the model codes and is free to update to current editions when desired. Adoption most often includes modifications to the administrative procedures of Chapter 1 of each model code to reflect local policy, but it can also include modifications to any other code sections. Great

variety is possible in adoption across the nation. States may adopt recent editions of the I-codes for all construction. Alternatively, states or smaller jurisdictions might adopt select codes applicable only to particular building or occupancy types. In addition, codes and reference standards available for adoption may be published by other organizations, such as the National Fire Protection Association; focus on particular priorities of a jurisdiction, such as energy conservation or wildfire; or be in place as a requirement of the funding source, as is typical for state or federally funded housing or hospitals.

The first full model code intended for the rehabilitation of existing buildings, the International Existing Building Code (IEBC), was published in 2003 by the ICC. The IEBC was created by merging and enhancing the codes or provisions for existing and historic buildings previously published by the regional model code organizations. The IEBC applies to existing and historic buildings of all occupancy and construction types, whether otherwise governed by the International Building Code (IBC) or the International Residential Code (IRC).

Application of the IEBC requires interaction with the IBC, International Energy Conservation Code (IECC), and ICC 117.1 Accessible and Usable Buildings and Facilities. Chapter 11 of the International Fire Code (IFC), "Construction Requirements for Existing Buildings," provides limited retroactive requirements for building rehabilitation. In contrast, the simpler format of the IRC is applicable to new one-and two-family dwellings and townhouses up to three stories in height, with separate entrances and accessory structures, and it is largely a stand-alone document. Although the IRC is easier to use, the only provisions for rehabilitation of an existing building are included in an appendix that must be independently adopted by the jurisdiction.

Compliance with building-related requirements established under other federal policies is required by reference in the code and/or other program requirements. Achieving the safety objectives of these policies is integral to the approval and construction processes. However, difficulties in addressing issues such as asbestos and lead paint have resulted in policy shifts that, in contrast to the earliest objectives, resulted in the unintended consequences of reduction or abandonment of rehabilitation programs.

HUD's Nationally Applicable Recommended Rehabilitation Provisions (NARRP)

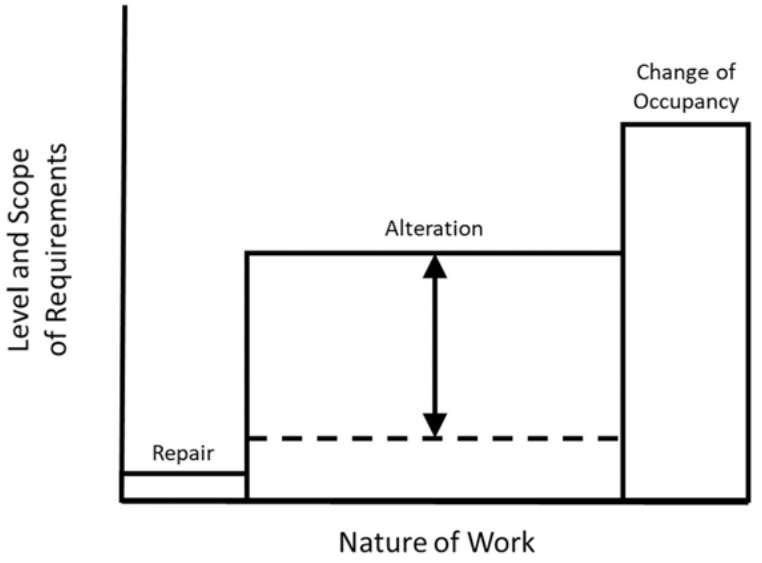
Prior to the IEBC, the near-insurmountable challenges of bringing existing buildings to comply with new construction standards were widely recognized, particularly for historic buildings undergoing restoration. The 1968 Kerner and Douglas Commissions addressed the deplorable conditions of existing housing and urban neighborhoods abandoned by urban renewal and other federal housing programs. HUD's initiatives included the publication of a series of Rehabilitation Guidelines, including those addressing code administration and enforcement of housing and property maintenance codes. HUD also supported research and code development, culminating in the 1997 publication of a model rehabilitation code, the Nationally Applicable Recommended Rehabilitation Provisions (NARRP).[1] The NARRP served as the basis of the IEBC, and with

[1] https://www.huduser.gov/Publications/pdf/HUD-7842.pdf

modifications to format, New Jersey and Maryland were among the early adopters of rehabilitation codes based on NARRP (exhibits 1 and 2).

Exhibit 1

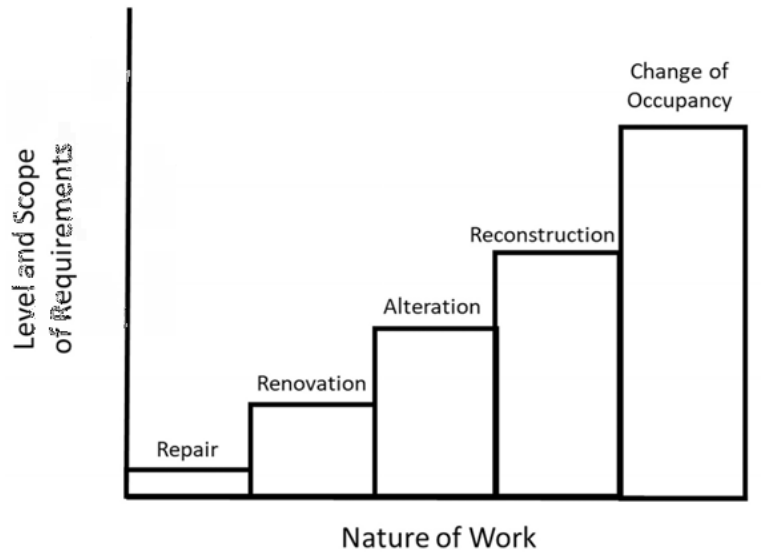
Rehabilitation Building Code Requirements Prior to NARRP



Source: https://www.huduser.gov/Publications/pdf/HUD-7842.pdf

Exhibit 2

Rehabilitation Building Code Requirements After NARRP



Source: https://www.huduser.gov/Publications/pdf/HUD-7842.pdf

The IEBC intended to provide predictability to the code and design process, consider the unique conditions presented by existing buildings, and establish a graduated basis for the imposition of required improvements to address safety and building performance. This graduated basis was achieved by an approach generally based on the footprint, or "Work Area," of the property owner's proposed work. This approach contrasted with the widely accepted pre-IEBC "50 percent rule," wherein the imposed requirements were a function of comparing the cost of rehabilitation against the value of the building. Only projects where the rehabilitation expense exceeded 50 percent of a building's value were required to meet the current code (i.e., the code for new construction).

Conceptually, little has changed in the IEBC since its original publication. However, like all codes and standards, the minimum thresholds for safety and building performance have increased, diminishing the overall intent of the IEBC and its NARRP predecessor of encouraging building rehabilitation via the removal of code barriers. Unfortunately, as HUD's active role in the maintenance of its model rehabilitation code has neither continued nor been assumed by others, code changes during the past 20-plus years have created new barriers to building rehabilitation.

Barriers Reemerged

Although the IEBC achieved its goal of removing many of the barriers to rehabilitation, its utility as a tool to encourage rehabilitation has been hampered by 2 decades of increasing code stringency, paralleling the trajectory of the codes written for new construction. Since the publication of the 2003 IEBC, the scope of both new and rehabilitation codes has also expanded to regulate newly prioritized or emerging topics such as resiliency, energy efficiency, and rural fire protection. During this 20-year period, it is arguable that the acceptable disparity in performance between existing buildings and new construction has shrunk.

These reemerged code barriers stifle the opportunity to use existing vacant or underutilized buildings to meet current housing needs. Some barriers are rooted in the complexity of the codes and their administration. Others are associated with particular building types, such as the two- and three-story Main Street buildings, which, by nature of their smaller scale, should be the easiest to address with solutions that are widely applicable.

The Main Street Building

Nearly every older community has a core of empty and underutilized buildings that originally contained housing units above a nonresidential first floor. Common code barriers to the rehabilitation of these buildings have already been identified:

- Inadequate egress.
- Lack of a fire separation between occupancies, sprinklers, or elevator access to upper floors.
- Potential building science issues affecting long-term building durability when required to meet new construction energy standards.

- The code's inflexibility to accept even those minimal dimensional variations which could have an insignificant impact on safety and building performance.

Perhaps most problematic is the penalizing of projects classified as a "Change of Occupancy," whereby rehabilitation projects must essentially meet or exceed standards for new construction.

Knowledge and Technical Expertise

Other barriers include the lack of awareness by many code officials and design professionals of the three optional code compliance methods included in the IEBC: Prescriptive, Work Area, and Performance. Although the ability to choose the compliance path most advantageous to a project is beneficial to the existing and historic building project, this added complication to an already complex process is one reason the IEBC is not recognized or adopted. This situation is most common in smaller and rural communities where there may be little support for code official training, a hesitancy to adopt additional codes or the most current codes, and few design professionals with knowledge of the IEBC.

Leadership

In contrast with the commercial marketplace's current focus on larger office buildings and malls, no broad unified effort to study barriers and opportunities has been undertaken for the smaller-scale commercial buildings of Main Street. Since the founding of the ICC, ready opportunities to influence code have shifted upstream from localities to a national forum, and jurisdictions are often reluctant to introduce innovative provisions that vary from the national model. Thus, the codes' lack of focus on expanding opportunities to create housing is best understood by noting the ICC's much broader mission of developing a single set of model codes that provide minimum safeguards for people at home, the workplace, and other places of commerce and assembly. The ICC has not led the charge to address the gap between the little-used International Property Maintenance Code and the IEBC. Housing advocates and others outside the ICC community are often reluctant or unsuccessful in engaging in the highly organized ICC code development process.

Moving Forward

Twenty years of experience with the IEBC has demonstrated its great value and the barriers still faced by existing buildings. This experience is particularly important now because vacant buildings and vacant upper floors of smaller-scale structures on Main Street present unequaled opportunities for addressing climate change and the nation's housing shortages. The infrastructure and building shells exist, and the time required for planning approvals may be significantly shorter than for new construction projects. Other benefits include the creation and strengthening of walkable communities and the transformation of vacant, underutilized, and unsafe structures to viable community resources.

Although the impetus of the earliest rehabilitation codes was to address urban blight and substandard housing conditions, much of the current conversation focuses on the insufficient

number of housing units available and their affordability. These current needs can be partially met through many of the benefits associated with an expanded use of existing and historic buildings:

- Adjacency to existing urban infrastructure, including public transportation, community amenities, etc.
- Increased neighborhood safety results from increased occupancy.
- Many have demonstrated their inherent resiliency and construction with durable materials.
- Shortened time periods for planning, review processes, and construction processes.
- Smaller-scale projects can create ownership and wealth for individuals.
- Ability to couple with financial incentives such as state and historic tax credits for the rehabilitation of historic buildings. Between 1976 and 2021, this federal program, administered by the National Park Service, rehabilitated 302,506 housing units, created 334,367 new housing units, and resulted in a total estimated expenditure of $116.34 billion.
- Reductions in demolition costs, landfill, and carbon production.
- Durability. Current construction practices accept the use of less durable materials than those present in existing and historic buildings.

To support greater use of these buildings, a reevaluation is needed that mirrors the investigative and creative process that began nearly 50 years ago and was responsible for the 1980s' Rehabilitation Guidelines and the publication of the NARRP.

Research is needed to evaluate current code barriers and performance criteria for existing versus new buildings. Researchers must identify unique solutions adopted by jurisdictions, with the long-term goal of influencing the model code(s). A comparison of the relative level of safety and building performance provided by each code compliance method of the IEBC should occur, and a similar study evaluating the continuum bookended by housing and other minimum property maintenance codes and the IEBC. The dissemination of research findings and incorporation into the codes may be most valuable for smaller Main Street buildings least likely to benefit from the engagement of design professionals and code officials familiar with code options for rehabilitation projects.

Examples of unique solutions adopted by jurisdictions are listed below. Although these concepts are not universally appropriate or adoptable, many merit serious consideration.

- Provisions permitting any documented previous use to be considered when determining whether a project will be classified as a Change of (California State Historical Building Code).
- Greater acceptance of smaller housing units, including accessory dwelling units.
- Sprinklers as compensation for other code deficiencies, or alternate fire protection systems as compensation for lack of sprinklers.

- For mixed-use Main Street buildings, expanded use of sprinkler systems that have lower cost alternate materials and coverage, including those installed with plastic piping and connected to the domestic water supply system.
- Expanded acceptance of the single-stair building.
- Use of the Residential Code for up to six-unit buildings or, in smaller Main Street buildings, for upper-floor units above certain nonresidential occupancies.
- A jurisdiction's greater commitment to the training of code officials and design professionals, with a more proactive role in determining the optimum code path and permitting efficiency.

Finally, research should examine and disseminate current approaches and new technologies and programs available to protect existing vulnerable housing, including monitoring and maintaining existing housing units. Equally critical is the spectrum and interaction of minimum standards from housing and property maintenance codes through new construction standards. Minimum housing or property maintenance codes, applicable when public funds are involved, set a particular mark in the continuum. Clearer definitions and an understanding of the relative performance requirements are warranted.

The Role of Collaboration

The goals of rehabilitation are broad and require numerous champions and resources. Among these resources, the National Main Street Center, a subsidiary of the National Trust for Historic Preservation, has worked with more than 2,000 communities, encouraging them to prioritize housing in their downtowns, including the recreation of the traditional mix of housing above retail or business occupancies that decreased during the second half of the 20th century. Greater use of these buildings can replace or complement current models for mixed-use development, such as the ubiquitous five-plus-one housing block built beyond a community's downtown. These smaller-scale projects present accessible opportunities for smaller projects that may be more easily achieved and are more financially feasible than large-scale housing projects. These projects can still benefit from state and federal historic credits designed to encourage building rehabilitation.

The Association for Preservation Technology International (APTI) Technical Committee on Codes and Standards is seeking support for a second Rehabilitation Code Summit, which will follow the summit that occurred in 2019 that set the agenda for APTI's most recent code-related efforts. These initiatives included a 3-day training session on applying codes on Main Street buildings and proposing code changes to the IEBC. The aims are to coordinate better with state and national federal preservation programs and to codify alternatives to sprinkler systems in smaller buildings. Additionally, early discussions have begun on a followup to APTI's 2022 virtual conference *Building Codes on Main Street*, albeit with a particular focus on housing.

One approach is for HUD and other federal entities engaged in housing research and policy to join forces with organizations such as the National Main Street Center and APTI to advocate for better codes that encourage building reuse.

The yet unmet opportunity to recapture the vacant upper floors of buildings along Main Street and other redundant structures requires another reexamination of the codes to reshape them to help, rather than hinder, the achievement of housing and related urban policy goals.

Further Reading

National Trust for Historic Preservation and the National Preservation Partners Network. 2021. Issue Brief: Preservation Priority: Affordable Housing and Density, Fall 2021.

National Trust for Historic Preservation. 2014. Older, Smaller, Better: Measuring How the Character of Buildings and Blocks Influences Urban Vitality. Preservation Green Lab, May 2014.

Authors

Marilyn Kaplan is an Architect and Principal of Preservation/Architecture in Albany, New York. She is the co-chair of the Association for Preservation Technology International Technical Committee on Codes and Standards. Mike Jackson is a preservation architect in Springfield, Illinois. He is currently the co-chair of the Codes and Standards Technical Committee of the Association for Preservation Technology and coordinator of a committee task force on Building Codes on Main Street.

Policy Briefs

The Policy Briefs department summarizes a change or trend in national policy that may have escaped the attention of researchers. The purpose is to stimulate the analysis of policy in the field while the policy is being implemented and thereafter. If you have an idea for future Policy Briefs, please contact david.l.hardiman@hud.gov.

Mortgage Risk and Disparate Impact Associated With Student Debt

Kevin A. Park
Joshua J. Miller
U.S. Department of Housing and Urban Development

Abstract

Student debt payments represent a barrier to homeownership because student loan debt increases the difficulty in qualifying for a mortgage and decreases the amount of income available to sustain homeownership. Yet student loans are different from other types of debt, such as automobile loans and credit card debt, because student loans represent a direct investment in human capital, and higher educational attainment is associated with higher lifetime earnings. To explore the effect of student loan debt in mortgage performance, the authors disaggregate the back-end debt-to-income ratio commonly used in mortgage underwriting into payments on mortgage, student debt, and other debt. The authors find that the presence of student debt is associated with a lower *risk of mortgage default, all else equal. However, while disaggregating debt ratios improves the ability to assess default risk and could expand overall access to credit, it also increases the disparate impact on most non-White borrowers.*

Introduction

Federal student loan debt is owed by over 43 million borrowers with an average outstanding balance of over $37,000 (Hanson, 2022). Many borrowers view student loan debt as a significant barrier to major lifetime milestones, including homeownership.

Several researchers have examined the relationship between student loan debt and homeownership; however, no researchers to the authors' knowledge have examined the effect of student loan debt on mortgage performance. Understanding the relationship between student loan debt and timely mortgage payments is important because student debt payments affect the "back-end" debt-to-income (DTI) ratio, a common risk factor in mortgage underwriting. The DTI ratio is the sum of all required monthly debt payments as a share of the borrower's income but does not distinguish between types of nonmortgage debt. Payments on student loans are traditionally treated the same as consumer debt in mortgage underwriting.

However, student debt may instead be considered an investment in human capital. Graduates earn significantly more than workers that did not attend college. On the other hand, the net wealth premium associated with higher education has declined, possibly due to the increasing cost of college being financed with rising student debt (Emmons, Kent, and Rickets, 2019). To the extent that student debt also hinders qualifying for a mortgage, it also indirectly limits borrowers from the wealth-building potential of homeownership (Stegman, Quercia, and Davis, 2007).

To explore the effect of student loan debt in mortgage performance, the authors disaggregate the back-end DTI ratio commonly used in mortgage underwriting into payments on mortgage, student, and other debt. Findings show that student debt is associated with a *lower* risk of default overall. This finding is likely because student debt is correlated with higher educational attainment, which is not observed or used in mortgage underwriting. Obtaining a college or graduate degree increases the potential income of the borrower. Borrowers with student debt that do not graduate likely experience the worst outcomes.

However, while disaggregating debt ratios improves the ability to assess default risk and could expand overall access to credit, it also increases the disparate impact on most non-White borrowers. As with the debate over the progressiveness of student debt forgiveness,[1] the disparate impact of student debt in mortgage underwriting is complicated. Black borrowers are more likely to have student debt than White borrowers, but Hispanic and other minority borrowers are less likely. Therefore, discounting student debt in underwriting increases the likelihood of approval for Black and White borrowers but not Hispanic and others relative to the baseline of only using the overall DTI ratio.

Literature Review

The literature on student loan debt and economic outcomes is broad. The presence and accumulation of student loan debt is shown to affect numerous milestones and economic

[1] For example, Looney (2022) argues student debt forgiveness is regressive, whereas Perry, Steinbaum, and Romer (2021) argue it is not. See also Leonhardt (2018).

outcomes. Studies have found, for example, that student loan debt is associated with delayed marriage (Bozick and Estacion, 2014; Gicheva, 2011; Stone, Van Horn, and Zukin, 2012) and childrearing (Nau, Dwyer, and Hodson, 2015; Sieg and Wang, 2017).

Another relevant strand of the literature looks at the relationship between student loan debt and the financial health of borrowers post-schooling, such as repayment difficulties. Using the 2007–2009 Survey of Consumer Finances, Elliott and Nam (2013) find lower net worth for those with high student loan debt, and Thompson and Bricker (2014) find families with student loans more likely to be 60 or more days late paying bills. In addition, the research consistently finds high student loan debt is not a strong predictor of repayment difficulties (Baum and Johnson, 2016; Dynarski and Kreisman, 2013). Instead, high student loan debt is associated with higher levels of degree attainment and completion. A recent study from Baum and Looney (2020) found that those with professional and doctorate degrees, only 3 percent of the population sampled, held 20 percent of the outstanding student loan debt.

In the context of homeownership, the relationship between student loan debt and homeownership is also well examined. However, the findings are mixed between studies finding no relationship between student loan debt and homeownership (Velez, Cominole, and Bentz, 2019; Zhang, 2013), and others finding a negative relationship between student loan debt and homeownership (Bleemer et al., 2017; Mezza et al., 2016; Miller and Nikaj, 2018). The conflicting results are likely explained by two factors. First, student loan debt is not randomly assigned, and selection into student loan debt and homeownership are correlated. Studies have addressed this concern through instrumental variables (Houle and Berger, 2015; Mezza et al., 2020; Velez, Cominole, and Bentz, 2019). The second concern is omitted variables. Dynarski (2016) and Miller and Nikaj (2018) find degree completion to be an important consideration.

The literature on student loan debt is extensive. Prior studies find a direct relationship between student loan debt and adult milestones such as marriage, childrearing, and homeownership. Although the student loan literature is informative, this article may be the first to examine the relationship between student loan debt and mortgage performance.

Data

To conduct the analysis, the authors obtained information on borrower characteristics and loan performance from the National Mortgage Database (NMDB). The NMDB program is administered by the Federal Housing Finance Agency (FHFA) and combines credit attributes and performance data from a 1-in-20 sample of residential first lien mortgages from one of the three primary credit bureaus with administrative records and information from the Home Mortgage Disclosure Act.

The authors examined owner-occupied home purchase mortgages originated between 2014 and 2018 and observed performance through 2019, ending before the COVID-19 pandemic. Observations are restricted to loans with at least one borrower with a credit score and where the reported back-end DTI ratio used in underwriting is greater than or equal to the sum of the mortgage and any student debt payments reported to the credit bureau. Borrowers with student debt are defined as any nonzero student debt balances when the mortgage was originated. The

student debt payment is defined as the median nonzero student debt payment between the two quarters prior to and after origination for those with a nonzero student debt balance at origination.

These parameters result in a sample of roughly 800,000 loan borrowers, of whom 29 percent had student debt at the time of origination. Exhibit 1 provides descriptive statistics on the loans and borrowers. Non-Hispanic White borrowers account for nearly three-fourths of all borrowers. Exhibit 2 shows Black borrowers are more likely to have student debt than White borrowers, but other minority groups are less likely. This pattern among mortgage borrowers by race and ethnicity reflects a similar distribution of debt among recent graduates. For example, among 2015–16 bachelor's degree recipients, 86.3 percent of Black graduates still owed on federal student loan debt 12 months after completion—compared to 70.1 percent of Hispanic graduates, 67.7 percent of White graduates, and 43.9 percent of Asian graduates (National Center for Education Statistics, 2021).

Exhibit 1

Descriptive Statistics

	No Student Debt		With Student Debt		All
	Non-Hispanic White	All Other	Non-Hispanic White	All Other	
Share of Loans	52.4	18.3	22.2	7.1	100.0
DTI Ratio (%)	35.1	38.4	37.5	40.8	36.7
	(10.1)	(9.8)	(9.1)	(9.0)	(9.9)
Front-End	21.4	25.6	20.5	23.5	22.1
	(9.3)	(9.9)	(7.8)	(8.5)	(9.2)
Student			3.7	3.3	1.0
			(3.4)	(3.3)	(2.4)
Credit Score	734	718	719	699	725
	(66)	(66)	(59)	(60)	(65)
CLTV Ratio (%)	82.3	85.5	89.3	91.2	85.1
	(19.5)	(17.0)	(14.2)	(12.8)	(17.9)
ARM (%)	19.7	20.4	16.3	14.1	18.8
Term≤15 (%)	31.7	26.8	22.0	17.7	28.2
Default Rate (%)	12.3	14.4	11.8	16.6	12.9

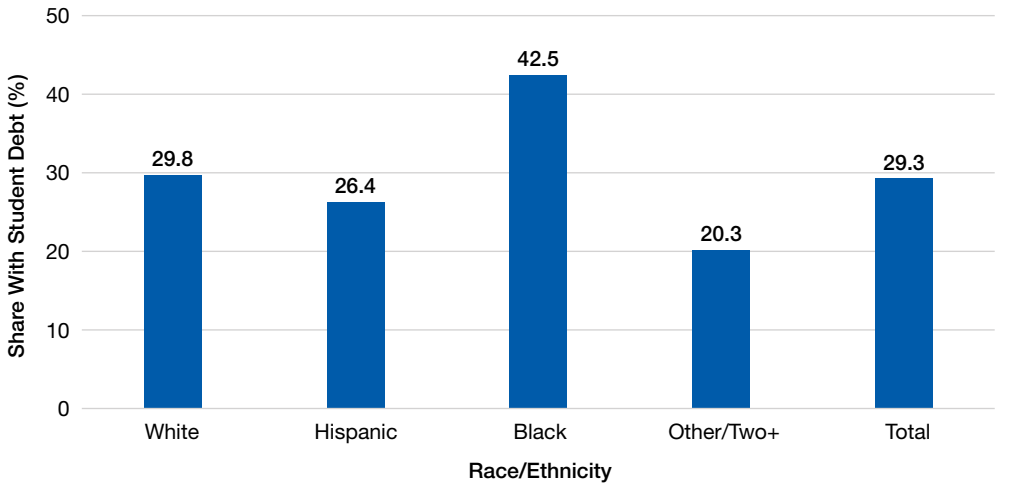
ARM = adjustable-rate mortgage. CLTV = combined loan-to-value. DTI = debt-to-income.

Note: Standard deviation is indicated using parentheses.

Source: National Mortgage Database

Exhibit 2

Share of Mortgage Borrowers With Student Debt by Race/Ethnicity



Source: National Mortgage Database

The average back-end DTI ratio is nearly 37 percent. Student debt payments account for roughly 3.6 percent of borrower income on average. Borrowers with student debt have higher overall DTI ratios even though the share of income devoted to mortgage payments is lower, which suggests student debt is constraining housing consumption. Borrowers with student debt also have lower credit scores and higher combined loan-to-value (CLTV) ratios than borrowers without student debt.

Methodology

To explore the effect of student loan debt in mortgage performance, the authors define default as the first instance of a 90-day delinquency in the mortgage tradeline and utilize a Cox proportional hazard model. The Cox proportional hazard model is defined as—

$$\lambda(t) = \lambda_0(t)e^{f(x)}$$

$$f(x) = \beta\Omega + \gamma DTI + \delta STD$$

Where λ_0 is an unspecified baseline hazard, and Ω represents a vector of common underwriting factors at loan origination, including credit score, CLTV ratio, and binary indicators of adjustable interest rates and loan terms less than or equal to 15 years. *STD* represents a binary indicator of a nonzero student debt balance in the quarter in which the mortgage was originated. *DTI* represents various formulations of the debt-to-income ratio. In addition to the commonly used overall back-end DTI ratio, the authors also include separate ratios for mortgage principal, interest, tax, and insurance payments (payment-to-income [PTI] ratio) and student debt payments relative to income (STDTI ratio). The remaining back-end DTI ratio excludes these subcomponents when they are included directly as separate explanatory variables.

The linear combination of observation values and the estimated coefficients from these specifications are then used to create risk scores that can be evaluated for predictiveness of default and disparate impact with respect to race and ethnicity. The authors use Kolmogorov-Smirnov (KS) statistics to summarize both impacts. The statistic is computed as the maximum difference in the empirical distribution functions of two subpopulations, F_1 and F_2, based on the linear combination of borrower characteristics and estimated coefficients.

$$F(x) = \frac{1}{n}\sum_{i=1}^{n} 1(X_i \le x)$$

$$KS = \max[F_1(x) - F_2(x)]$$

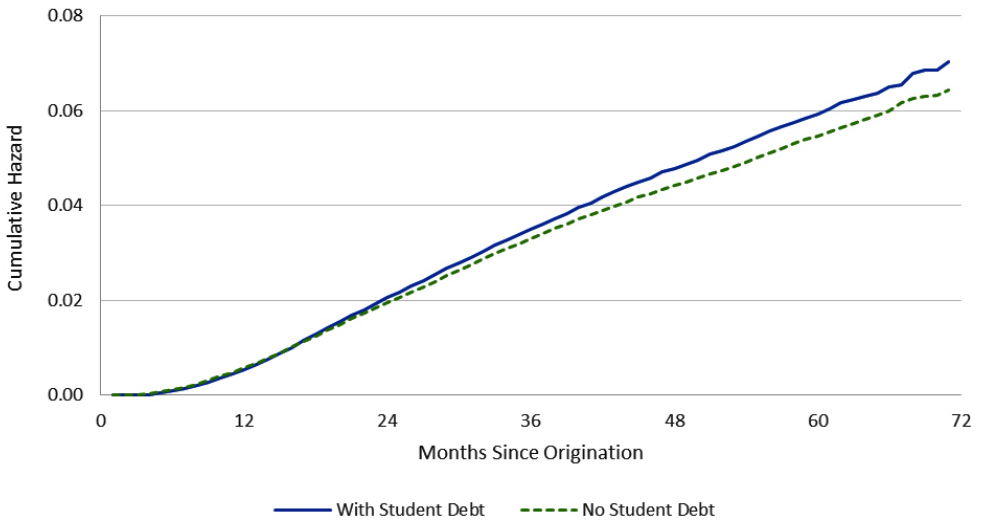
For evaluating the predictiveness of difference specifications, F_1 is the empirical distribution of mortgages that did not default within 24 months of origination, and F_2 is the distribution of loans that defaulted. The maximum difference is referred to as the *Risk KS* statistic. For evaluating disparate impact, F_1 is the empirical distribution of non-Hispanic White borrowers, and F_2 is the distribution of other racial or ethnic groups. The maximum difference is referred to as the *Race KS* statistic.

Findings

Exhibit 3 shows the cumulative default hazard by whether the borrowers have any student debt. Overall, student debt is associated with a slightly higher cumulative default hazard.

Exhibit 3

Cumulative Default Hazard



Source: National Mortgage Database

Hazard Model

Exhibit 4 presents select results of the Cox proportional hazard model of default related to student debt and DTI ratio. As expected, higher credit scores and shorter loan terms are associated with lower default risk, whereas higher CLTV ratios are associated with greater risk. Controlling for these risks, a 1-percentage-point increase in the back-end DTI ratio is associated with roughly a 2-percent increase in the likelihood of default.

Exhibit 4

Cox Proportional Hazard Model

	(1)	(2)	(3)	(4)	(5)	(6)
Any Student Debt		0.8974***		0.9533**		1.1240***
		(0.0134)		(0.0145)		(0.0225)
DTI Ratio†	1.0211***	1.0216***	1.0124***	1.0129***	1.0143***	1.0139***
	(0.0008)	(0.0008)	(0.0009)	(0.0009)	(0.0009)	(0.0009)
Front-End			1.0319***	1.0318***	1.0318***	1.0320***
			(0.0009)	(0.0009)	(0.0009)	(0.0009)
Student					0.9769***	0.9618***
					(0.0032)	(0.0044)
Credit Score	0.9840***	0.9840***	0.9839***	0.9839***	0.9840***	0.9840***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
CLTV Ratio	1.0112***	1.0115***	1.0105***	1.0106***	1.0108***	1.0106***
	(0.0005)	(0.0005)	(0.0006)	(0.0006)	(0.0006)	(0.0006)
Term≤15	0.7864***	0.7817***	0.8530***	0.8489***	0.8419***	0.8474***
	(0.0244)	(0.0242)	(0.0264)	(0.0263)	(0.0260)	(0.0262)
ARM	0.5486***	0.5452***	0.5630***	0.5612***	0.5567***	0.5585***
	(0.0382)	(0.0380)	(0.0392)	(0.0391)	(0.0388)	(0.0389)
AIC	14127671	14126530	14117171	14116959	14113836	14113056
χ^2	30492***	30639***	32274***	32289***	32630***	32759***

AIC = Akaike information criterion. ARM = adjustable-rate mortgage. CLTV = combined loan-to-value. DTI = debt-to-income.

** Statistically significant at the 0.050 level. ** Statistically significant at the 0.010 level. *** Statistically significant at the 0.001 level.*

† = back-end DTI ratio excluding components directly included.

Note: Standard errors are shown in parentheses.

Source: National Mortgage Database

The second column includes a binary indicator of whether the borrower has any student debt at the time of origination. The estimated hazard ratio indicates borrowers with student debt are associated with a 10-percent *reduction* in the likelihood of default, all else equal.

The third and fourth columns disaggregate the back-end DTI ratio into the front-end DTI ratio (PTI ratio) and the remainder; this reveals that a 1-percentage-point increase in the share of income devoted to the mortgage payment increases the likelihood of default more than a 1-percentage-point increase in share of income devoted to other forms of debt. Having student debt is still associated with a small but statistically significant reduction in the likelihood of default (fourth column).

The fifth and sixth columns further disaggregate the back-end DTI ratio into the front-end ratio, the STDTI ratio, and the remainder. A higher share of income devoted to student debt payments is associated with a *decrease* in the likelihood of default.

NMDB provides the overall DTI ratio as reported in the administrative data. The PTI ratio is the escrow payment reported by the credit bureau with some imputation by FHFA. As a robustness check, the authors replace these ratios with the median overall debt and escrow payments only as reported by the credit bureau data, comparable to how student debt payments are computed. The results shown in appendix A are substantively similar.

Kolmogorov-Smirnov Statistics

The linear combination of borrower characteristics and estimated coefficients presented in exhibit 4 can be converted into measures of predicted risk. Exhibit 5A plots the cumulative distribution of loans that defaulted within 24 months and all other loans by the risk score derived from the first specification. Borrowers that defaulted generally have higher risk scores than borrowers that did not. The maximum difference between the two cumulative distributions (Risk KS statistic) is 55.1 percentage points.

Exhibit 5B is a similar chart showing the cumulative distributions for non-Hispanic White borrowers and borrowers of all other races and ethnicities. Based on their risk factors, White borrowers have lower average levels of predicted risk. The maximum difference between the two cumulative distributions (Race KS statistic) is 13.0 percentage points.

Exhibit 5

Cumulative Distributions and Kolmogorov-Smirnov Statistics (1 of 2)

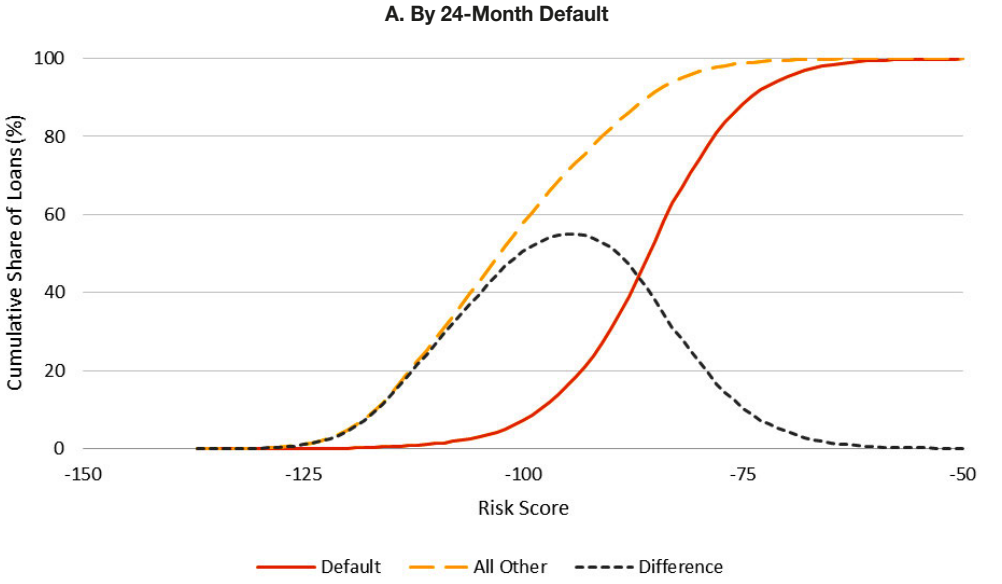
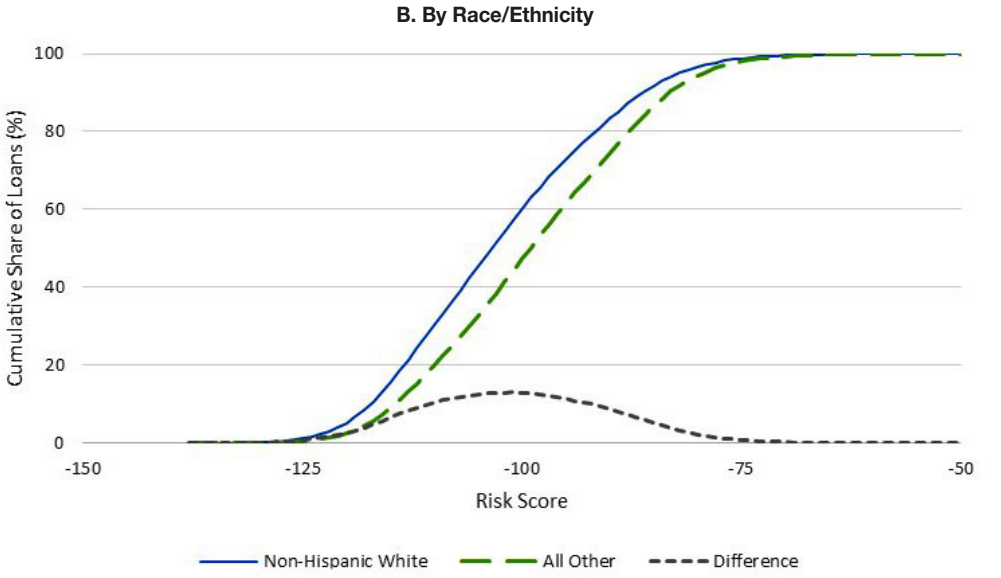


Exhibit 5

Cumulative Distributions and Kolmogorov-Smirnov Statistics (2 of 2)



Source: National Mortgage Database

Risk and Race KS statistics are found for scores derived from each of the six specifications shown in exhibit 4. In addition, seventh and eighth scores are computed using the fifth and sixth specifications, respectively, except excluding components related to student debt (that is, any student debt indicator and student debt payment to income ratio). These scores represent scenarios in which student debt is not included in DTI ratio calculations at all. The overall results are reported in the first two columns of exhibit 6 and displayed in exhibit 7A with the Risk KS on the x-axis and the Race KS on the y-axis. Disaggregating back-end DTI ratio into mortgage payments, student debt payments, and other debt payments improves the predictiveness of the derived risk score, exhibited by higher Risk KS statistics. However, the improvement in predictiveness comes with greater disparate impact, exhibited by higher Race KS statistics. Disaggregating DTI ratio but excluding student debt from the risk score (that is, not *rewarding* borrowers spending a high share of income on student debt) actually reduces its predictiveness.

Exhibit 6

Risk and Race Kolmogorov-Smirnov Statistics

Non-Hispanic White Versus	All Others		Hispanic		Black	
Score	(1) Risk	(2) Race	(3) Risk	(4) Race	(5) Risk	(6) Race
1	55.10	13.00	54.75	20.32	55.97	30.86
2	55.26	13.24	54.93	20.62	56.07	30.70
3	55.37	14.26	54.77	21.62	56.16	31.43
4	55.45	14.34	54.83	21.74	56.20	31.29
5	55.60	14.61	55.11	22.13	56.51	31.17
6	55.50	14.55	54.96	22.06	56.45	31.28
7	55.51	14.38	54.92	21.80	56.32	31.35
8	55.49	14.39	54.92	21.83	56.31	31.32

Notes: Scores 1–6 are based on the specifications shown in exhibit 4. Scores 7 and 8 are based on the fifth and sixth specifications, respectively, but do not include components related to student debt.

Source: National Mortgage Database

Exhibit 7

Risk and Race Kolmogorov-Smirnov (1 of 2)

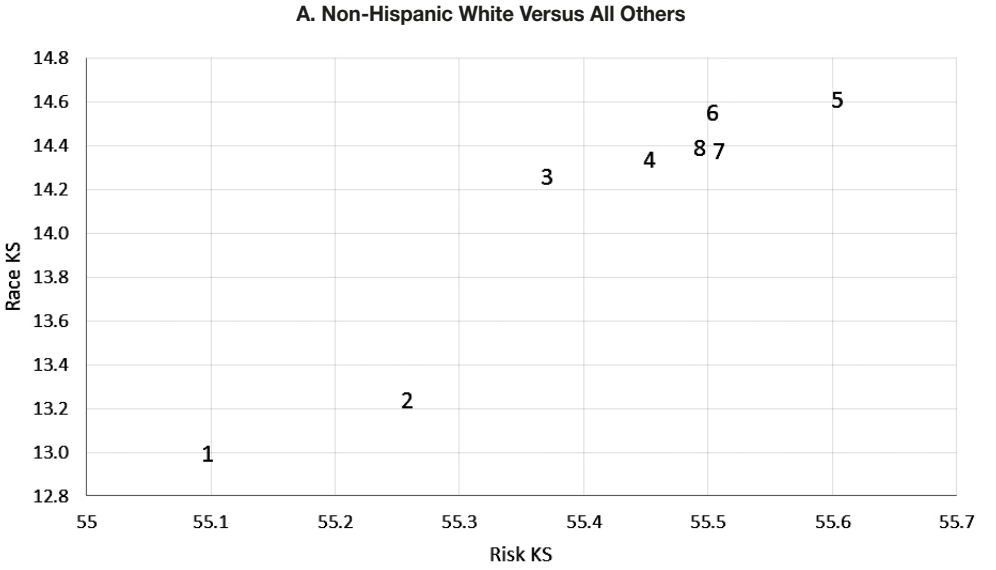
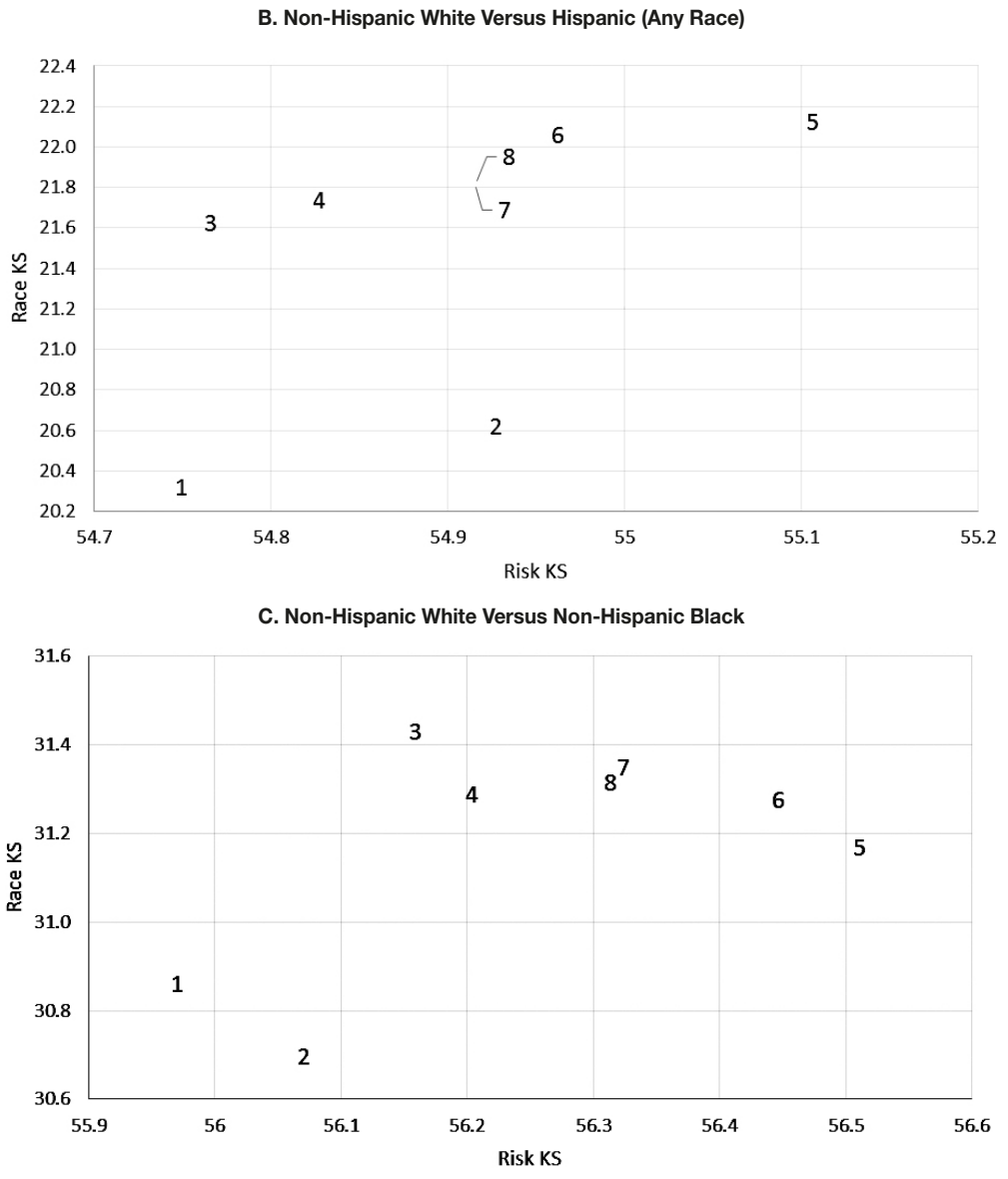


Exhibit 7

Risk and Race Kolmogorov-Smirnov (2 of 2)



KS = Kolmogorov-Smirnov statistic.
Source: National Mortgage Database

Exhibit 7B and the third and fourth columns of exhibit 6 show the KS statistics when comparing non-Hispanic White and Hispanic borrowers only. The results are similar (disaggregation improves predictiveness but worsens disparate impact), and the Race KS statistics are all notably higher.

Exhibit 7C and the fifth and sixth columns of exhibit 6 show similar statistics comparing non-Hispanic White and Black borrowers only. The Race KS statistics are even higher; however, disaggregating student debt from the nonhousing DTI ratio reduces disparate impact on Black borrowers relative to White borrowers.

Approval Rates

Measuring the differences in score distributions by race does not account for how a more predictive underwriting model allows a lender to approve more borrowers. Because the marginal borrower is more likely to be a minority borrower, this extensive margin may help offset any disparate impact.

Exhibit 8A shows the share of loans that could be approved while keeping the cumulative average predicted 24-month default rate at 1 percent or less. Exhibit 8B shows the change in number of approvals relative to the first specification. As expected, a more predictive model allows more borrowers to be approved while maintaining the same overall level of risk. However, the effects are heterogeneous: more White and Black borrowers are approved when the DTI ratio is disaggregated but fewer Hispanic and Other borrowers are approved. This pattern mirrors the differences in the share of borrowers with student debt.

Exhibit 8

Approval

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Approval Rate (%)								
White	92.4	92.4	92.7	92.7	92.8	92.8	92.7	92.7
Hispanic	86.7	86.6	86.1	86.1	86.0	86.0	86.1	86.1
Black	78.5	78.9	78.4	78.6	79.0	78.8	78.6	78.6
Other/Two+	95.3	95.4	95.2	95.2	95.2	95.2	95.2	95.2
Total	91.1	91.2	91.3	91.3	91.4	91.4	91.3	91.3
B. Change in Approvals (%) Relative to (1)								
White		0.06	0.35	0.36	0.43	0.43	0.39	0.39
Hispanic		– 0.11	– 0.65	– 0.68	– 0.76	– 0.71	– 0.68	– 0.68
Black		0.55	– 0.11	0.16	0.74	0.41	0.14	0.17
Other/Two+		0.04	– 0.16	– 0.13	– 0.14	– 0.14	– 0.14	– 0.13
Total		0.06	0.17	0.19	0.26	0.25	0.21	0.21

Note: Approval rates assuming overall cumulative average predicted 24-month default rate of 1 percent or less.
Source: National Mortgage Database

Conclusions

Student loan debt is held by a significant number of Americans. Further, researchers have shown student loan debt to be associated with delays in marriage, childrearing, and homeownership. Although student loan research is broad, this article may be the first to look at the relationship between student loan debt and mortgage performance.

Student loan debt is included in most mortgage underwriting. Traditionally, student loan debt is not differentiated from other types of debt, including auto and credit card, in the underwriting process. One could reasonably argue that student loan debt is distinct from other types of debt because it represents an identifiable investment in human capital that is associated positively with future earnings.

This article analyzes the effect of student debt on mortgage performance using data from NMDB. The authors find that student loan debt is associated with a lower risk of delinquency. The results are robust to several specifications of student loans, including separate ratios for mortgage principal, interest, tax and insurance payments, and student debt payments relative to income. The finding is consistent with the hypothesis that student debt and obtaining a college or graduate degree increases the potential income of the borrower. Borrowers with student debt that do not graduate likely experience worse outcomes.

The authors also look at the disparate impact of student debt in mortgage underwriting, finding that because of variations in the presence and burden of student loan debt by race and ethnicity, discounting student loan debt in underwriting would increase the likelihood of approval for Black and White borrowers but not Hispanic and others relative to the baseline of only using the overall back-end DTI ratio.

The findings of this article are an important first step in understanding the relationship between student loan debt and mortgage performance. The results suggest that student loan debt is distinct from other forms of debt, and mortgage underwriting would benefit from separate treatment. Policy changes, however, to the traditional treatment of student debt should carefully consider disparate impact.

Appendix A

Exhibit A-1

Cox Proportional Hazard Model, Credit Bureau Debt-to-Income

	(1)	(2)	(3)	(4)	(5)	(6)
Any Student Debt		0.8932***		0.9535**		1.1318***
		(0.0132)		(0.0147)		(0.0227)
DTI Ratio†	1.0152***	1.0156***	1.0076***	1.0080***	1.0098***	1.0096***
	(0.0005)	(0.0005)	(0.0006)	(0.0006)	(0.0006)	(0.0006)
Front-End			1.0266***	1.0263***	1.0257***	1.0261***
			(0.0008)	(0.0008)	(0.0008)	(0.0008)
Student					0.9703***	0.9546***
					(0.0032)	(0.0043)
Credit Score	0.9836***	0.9837***	0.9837***	0.9837***	0.9838***	0.9838***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
CLTV Ratio	1.0112***	1.0114***	1.0108***	1.0109***	1.0110***	1.0108***
	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)
Term≤15	0.7855***	0.7816***	0.8463***	0.8422***	0.8339***	0.8396***
	(0.0243)	(0.0242)	(0.0262)	(0.0261)	(0.0258)	(0.0260)
ARM	0.5683***	0.5657***	0.5709***	0.5698***	0.5672***	0.5686***
	(0.0396)	(0.0394)	(0.0398)	(0.0397)	(0.0395)	(0.0396)
AIC	14108182	14106939	14099969	14099764	14096339	14095468
χ^2	33004***	33290***	33414***	33558***	34242***	34299***

AIC = Akaike information criterion. ARM = adjustable-rate mortgage. CLTV = combined loan-to-value. DTI = debt-to-income.

** Statistically significant at the 0.050 level. ** Statistically significant at the 0.010 level. *** Statistically significant at the 0.001 level.*

† = back-end DTI ratio excluding components directly included.

Note: Standard errors shown in parentheses.

Source: National Mortgage Database

Acknowledgments

The authors would like to thank the National Mortgage Database staff at the Federal Housing Finance Agency, including but not limited to Robert Avery, Ian Keith, Saty Patrabansh, and Jay Schultz.

Authors

Kevin A. Park was an economist in HUD's Office of Policy Development and Research. Joshua J. Miller is an economist in HUD's Office of Fair Housing and Equal Opportunity. He can be reached at Joshua.J.Miller@hud.gov.

References

Baum, Sandy, and Martha C. Johnson. 2016. *Strengthening Federal Student Aid: Reforming the Student Loan Repayment System*. Washington, DC: Urban Institute.

Baum, Sandy, and Adam Looney. 2020. "Who Owes the Most in Student Loans: New Data from the Fed," *Brookings*, October 9.

Bleemer, Zachary, Meta Brown, Donghoon Lee, and Wilbert Van der Klaauw. 2017. *Debt, Jobs, or Housing: What's Keeping Millennials at Home?* Federal Reserve Bank of New York Staff Report No. 700.

Bozick, R., and A. Estacion. 2014. "Do Student Loans Delay Marriage? Debt Repayment and Family Formation in Young Adulthood," *Demographic Research* 30 (69): 1865–1891. doi:10.4054/DemRes.2014.30.69.

Dynarski, Susan M. 2016. "The Dividing Line Between Haves and Have-Nots in Home Ownership: Education, Not Student Debt." *Economic Studies at Brookings Evidence Speaks Reports* 1 (17). https://www.brookings.edu/research/the-dividing-line-between-haves-and-have-nots-in-home-ownership-education-not-student-debt/.

Dynarski, Susan M., and Daniel Kreisman. 2013. *Loans for Educational Opportunity: Making Borrowing Work for Today's Students*. Washington, DC: The Brookings Institution.

Elliott, W., and I. Nam. 2013. "Is Student Debt Jeopardizing the Short-Term Financial Health of U.S. Households?" *Federal Reserve Bank of St. Louis Review* 95 (5): 405–424.

Emmons, William R., Ana H. Kent, and Lowell R. Ricketts. 2019. "Is College Still Worth It? The New Calculus of Falling Returns," *Federal Reserve Bank of St. Louis Review* 101 (4): 297–329.

Gicheva, D. 2011. Does the Student-Loan Burden Weigh into the Decision to Start a Family? Department of Economics Working Paper Series. Greensboro, NC: University of North Carolina at Greensboro.

Hanson, Melanie. 2022. "Student Loan Debt Statistics," Education Data Initiative, February 10. https://educationdata.org/student-loan-debt-statistics.

Houle, Jason N., and Lawrence Berger. 2015. "Is Student Loan Debt Discouraging Homeownership Among Young Adults?" *Social Service Review* 89 (4): 589–621.

Leonhardt, David. 2018. "Eliminating All Student Debt Isn't Progressive," *New York Times*, November 18.

Looney, Adam. 2022. *Student Loan Forgiveness is Regressive Whether Measured by Income, Education, or Wealth*. Washington, DC: Hutchins Center on Fiscal & Monetary Policy at Brookings. https://www.brookings.edu/research/student-loan-forgiveness-is-regressive-whether-measured-by-income-education-or-wealth/.

Mezza, Alvaro, Daniel Ringo, Shane Sherlund, and Kamila Sommer. 2020. "Student Loans and Homeownership," *Journal of Labor Economics* 38 (1): 215–260.

———. 2016. *On the Effect of Student Loans on Access to Homeownership*. Washington, DC: Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board.

Miller, Joshua J., and Silda Nikaj. 2018. "Student Loan Debt, Educational Attainment, and Tenure Choice," *Education Economics* 26 (4): 393–410.

National Center for Education Statistics. 2021. "Loans for Undergraduate Students," *Conditions of Education*. U.S. Department of Education, Institute of Education Sciences. https://nces.ed.gov/programs/coe/indicator/cub.

Nau, M., R.E. Dwyer, and R. Hodson. 2015. "Can't Afford a Baby? Debt and Young Americans," *Research in Social Stratification and Mobility* 42: 114–122. doi:10.1016/j.rssm.2015.05.003.

Perry, Andre M., Marshall Steinbaum, and Carl Romer. 2021. *Student Loans, the Racial Wealth Divide, and Why We Need Full Student Debt Cancellation*. The Brookings Institution. https://www.brookings.edu/research/student-loans-the-racial-wealth-divide-and-why-we-need-full-student-debt-cancellation/.

Sieg, H., and Y. Wang. 2017. The Impact of Student Debt on Education, Career, and Marriage Choices of Female Lawyers. NBER Working Paper No. 23453. Cambridge, MA: National Bureau of Economic Research.

Stegman, Michael A., Roberto G. Quercia, and W. Davis. 2007. "The Wealth-Creating Potential of Homeownership," *Chasing the American Dream: New Perspectives on Affordable Homeownership* 171.

Stone, Charley, Carl Van Horn, and Cliff Zukin. 2012. "Chasing the American Dream: Recent College Graduates and the Great Recession." *Work Trends*. New Brunswick, NJ: Rutgers, The State University of New Jersey, John J. Heldrich Center for Workforce Development.

Thompson, J., and J. Bricker. 2014. *Does Education Loan Debt Influence Household Financial Distress? An Assessment Using the 2007-09 SCF Panel*, Finance, and Economics Discussion Series. Washington, DC: Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board.

Velez, Erin, Melissa Cominole, and Alexander Bentz. 2019. "Debt Burden After College: The Effect of Student Loan Debt on Graduates' Employment, Additional Schooling, Family Formation, and Home Ownership," *Education Economics* 27 (2): 186–206.

Zhang, L. 2013. "Effects of College Educational Debt on Graduate School Attendance and Early Career and Lifestyle Choices," *Education Economics* 21 (2): 154–175. doi:10.1080/09645292.2010.545204.

Referees 2022–2023

The Office of Policy Development and Research gratefully acknowledges the contributions of the following referees and their assistance in making Cityscape *worth reading.*

Jill Breysse
Jan Brueckner
Ann Carpenter
Nina Castells
Mark Coggeshall
Alexandra Curley
Prentiss Dantzler
Casey Dawkins
Lan Deng
Margaret Dewar
Judy Geyer
Colin Gordon
Jason Hackworth
Justin Hollander
David Huffer
Stephanie Ivey
Ryun Jung Lee
Jenny Liu
Feng Liu
Kirk McClure
Jennifer Molinsky
Victoria Morckel
Dan O'Flaherty
Rolf Pendall
Sue Popkin
Chris Prener
Amanda Reddy
Jason Rivera
Kimberly Skobba
Scott Susin
Sarah Szanton
Donald Vandegrift
Jennifer Vey
Cheryl Young

Symposium

Symposium

Refereed Papers 279

Departments 365

Office of Policy Development and Research

Cityscape

VOLUME 25 NUMBER 2 • 2023