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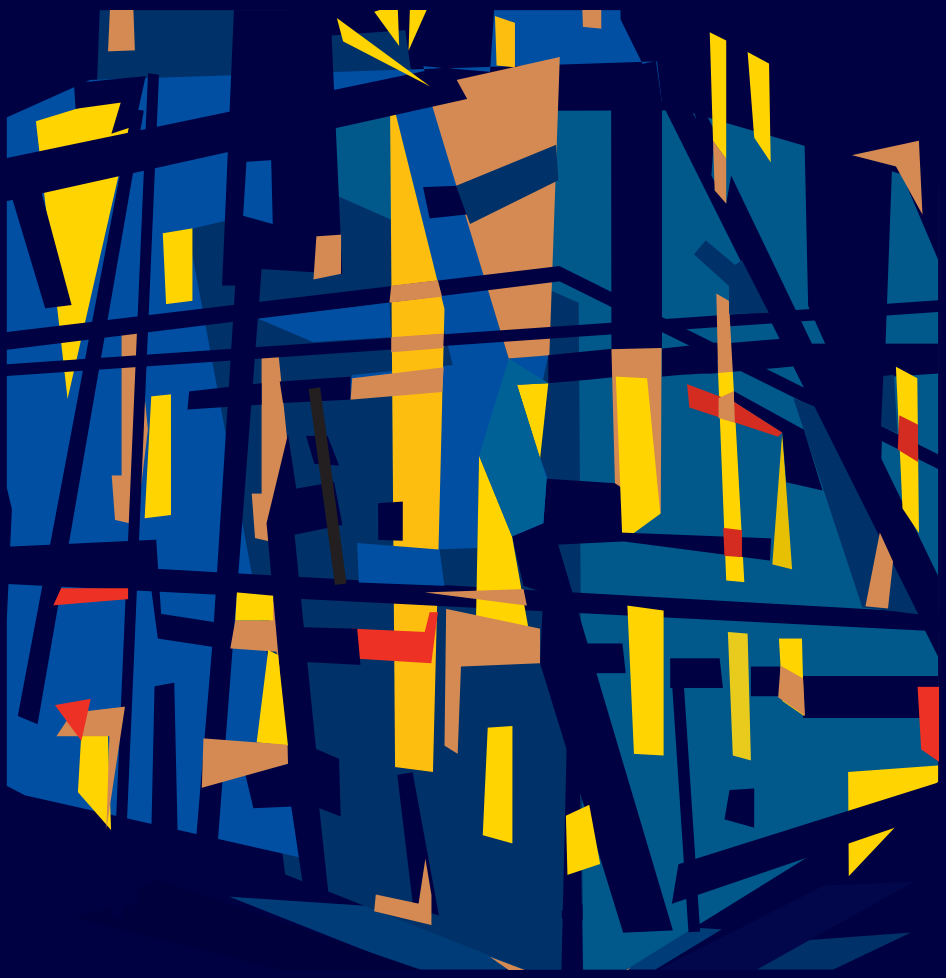

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HUD Administrative Data Linked With the National Health Interview Survey

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CONTENTS

Executive Summary

Although housing is a key social determinant of health, knowledge and understanding of the health of the nation's assisted housing population is based almost exclusively on case studies and anecdotal information.[1] Through a recent interagency effort between the Centers for Disease Control and Prevention's National Center for Health Statistics and the U.S. Department of Housing and Urban Development (HUD), National Health Interview Survey (NHIS) responses were linked with HUD's administrative data for rental assistance programs. This landmark collaboration enables, for the first time, reliable estimates of the prevalence of health conditions and healthcare utilization among HUD-assisted adults at a national level (Sperling and Helms, 2016).

HUD provides rental housing assistance to approximately 5 million households and 10 million low-income individuals. This report presents a broad overview of health characteristics of the HUD-assisted adult population using descriptive statistics based on numerous NHIS variables. The estimates and figures establish a preliminary baseline that can better inform policymakers and stimulate further research into the connection between housing and health. This report also provides context by presenting estimates for two other groups: (1) low-income adult renters who do not receive HUD housing assistance and (2) the general adult population.

Initial findings confirm and challenge various assumptions about the health of HUD-assisted adults. Most HUD-assisted adults were female, resided in households with family incomes below the federal poverty threshold, [2] lived in metropolitan areas, and had limited educational attainment. Overall, the comparison sample of adult unassisted low-income renters was younger than the sample of HUD-assisted adults. Most adults in the general population had incomes exceeding twice the federal poverty threshold and had higher educational attainment and workforce participation than the other two groups.

General Health Status

More than one-third of HUD-assisted adults reported their health as either fair or poor, a proportion considerably higher than that reported among unassisted low-income renters and the general adult population. Additionally, HUD-assisted tenants reported the highest rate of "utilizing the emergency room two or more times during the prior 12 months." The majority of HUD-assisted adults were overweight or obese and more than one-half of them lived with a disability at the time of their health interview.

Health Conditions and Diagnoses

This report explored 10 health conditions and diagnoses. Relative to unassisted low-income renters and the general adult population, HUD-assisted adults reported greater prevalence for all 10 health conditions and diagnoses, including serious chronic ailments such as heart disease, diabetes, and asthma.

[1] For some exceptions, see Ahrens et al. (2016) and Fenelon et al. (in press).
[2] Poverty thresholds from the U.S. Census Bureau are used to calculate this ratio.

Mental Health and Productivity Lost

HUD-assisted adult tenants faced higher rates of serious psychological distress and distress with mental hardship than did unassisted low-income renters and the general adult population. HUD tenants also faced higher rates of productivity loss due to injury or illness.

Healthcare Utilization and Access

HUD-assisted renters reported higher rates of healthcare access and utilization than unassisted low-income renters on several indicators. For example, the majority of HUD-assisted adults reported having public health insurance. A relatively small proportion of HUD tenants reported lacking a usual source of care, and a large percentage reported having access to doctors, Health Maintenance Organizations, and health clinics. On the other hand, HUD tenants and their unassisted low-income counterparts reported similarly high rates of unmet healthcare needs due to cost.

Health Behaviors

This report explored three health behaviors: cigarette smoking, heavy alcohol use, and physical activity. Relative to the other adult groups examined, unassisted low-income renters displayed the least healthy behaviors for two indicators, cigarette smoking and heavy drinking. HUD-assisted renters had the least healthy behavior for one outcome, with low levels of physical activity, and the most healthy behavior for another outcome, with the lowest rate of heavy alcohol use. Additionally, cigarette smoking prevalence was similar among HUD-assisted adults and unassisted, low-income renters; approximately one-third of adults reported current smoking at the time of their health interview.

The report confirms that HUD-assisted adults constitute a unique population. HUD-assisted adults face high rates of chronic health conditions and are higher utilizers of healthcare systems. These preliminary findings also underscore the value of additional research (addressing age-adjusted health disparities and controlling for causal factors) to better understand the connection between federal housing assistance and population health.

Introduction

The U.S. Department of Housing and Urban Development (HUD) provides rental housing assistance to approximately 5 million households and 10 million low-income individuals. HUD's three major rental subsidy program types are public housing, housing choice vouchers (HCVs),[3] and multifamily housing.[4] Public housing and HCVs are administered by state and local public housing agencies (PHAs), while assisted multifamily programs are administered by private building owners who contract directly with HUD to make units available at subsidized rents.

For all three housing assistance program types, housing providers verify income eligibility of subsidized renters and submit tenant data to HUD, which sets the level of tenant rent contributions. Most tenants have incomes substantially below 50 percent of Area Median Income (AMI)[5] upon admission. Tenant rent contributions generally equal about 30 percent of income, although HCV tenants are allowed to rent units requiring a greater proportion of income. By convention, 30 percent of income is considered the upper limit of "affordable" housing costs. HUD classifies housing costs between 30 and 50 percent of income as moderate cost burdens, and housing costs exceeding 50 percent of income as severe housing cost burdens (Steffen et al., 2015).

The prevalence of severe housing cost burdens has increased dramatically since 2000, increasing from 19 percent of renters in 2001 to 24 percent in 2013. In 2013, 7.7 million very low income renter households lacked housing assistance and faced severe cost burdens, severely inadequate housing units, or both (Steffen et al., 2015).[6] Severe cost burdens leave little discretionary income for critical nonhousing needs such as health care. Housing cost burdens are thus a major reason for considering housing as a social determinant of health (SDOH).

Recognizing the need to gain a better understanding of social causes of morbidity and mortality, the U.S. Department of Health and Human Services recently added SDOH as a core focus area in Healthy People 2020 (HP2020). The HP2020 program establishes a set of nationwide health-promotion and disease-prevention goals to be achieved by the year 2020. One-third of SDOH data performance objectives measure poverty, housing cost burden, or both, further indicating the need to prioritize housing as a key SDOH (HP2020, 2016).[7]

In a market economy, obtaining affordable rents may require some families to accept inadequate housing and live in hazardous neighborhoods. Physically inadequate units pose health risks through such conditions as pest infestations, deteriorated asbestos, lead hazards, dampness and mold that trigger asthma, inadequate ventilation and temperature control, and crowded conditions that spread infectious

[3] HCVs are also known as tenant-based rental assistance (TBRA).
[4] Historically, multifamily programs have also been referred to as project-based rental assistance (PBRA).
[5] AMI is the income of the median (middle) household in an area when the households are sorted by income. HUD's calculations of AMI are based on metropolitan areas, as identified by the Census Bureau, and on nonmetropolitan areas of each state.
[6] The term *very low income* refers to incomes of no more than 50 percent of AMI, with adjustments for family size. The definitions of *low income*, *very low income*, and *extremely low income* are outlined in the United States Housing Act of 1937, as amended. See statutory language at 42 U.S.C. 1437a(b)(2)(A)(B)(C) and technical documentation at https://www.huduser.gov/portal/datasets/il//il16/IncomeLimitsBriefingMaterial-FY16.pdf.
[7] As the U.S. Department of Health and Human Services develops the Healthy People 2030 plan, it is considering whether to include housing as a key SDOH in terms of physical, social, and economic environments that strengthen the potential to achieve optimal health and well-being.

disease. All of these conditions, along with high-crime and low-amenity neighborhoods, can also threaten mental health (Evans, Wells, and Moch, 2003; Fisk, Eliseeva, and Mendell, 2010; Krieger and Higgins, 2002).

Public housing programs and assisted housing programs offer higher quality housing at rents that many low-income households could not otherwise afford. Greater affordability improves housing stability and offers a critical support in the lives of disadvantaged households, freeing up household resources for better nutrition and health care (Kushel et al., 2006; Ma, Gee, and Kushel, 2008; Pollack, Griffin, and Lynch, 2010). The extent to which public and assisted housing contributes to tenant health, however, is not well understood. A major complication in assessing how housing impacts health is the preferential or otherwise selective admission that housing providers may offer to less healthy individuals and households. Such tenants may be poorer or older, may have disabilities, or may have been homeless. Another potential mechanism of selection is that individuals with extremely low household incomes and fewer housing options may be more likely to remain on lengthy waiting lists until admission.

Descriptive statistics in this report are intended to provide new insights into the link between subsidized housing and health. This brief overview of selected health conditions is intended to inspire more focused research using the National Center for Health Statistics (NCHS)-HUD data linkage. Health status and healthcare utilization variables for HUD-subsidized adult renters are summarized side by side with the same variables for unsubsidized adult renters with incomes below the federal poverty line and all adults in the general population. Making precise comparisons and identifying statistically significant differences between the presented populations and selection into HUD-assisted housing requires additional research. It is clear, however, that ongoing research efforts will lead to more rigorous and detailed findings about the relationship between housing assistance programs and population health.

HUD-NCHS Data Linkage Sources

In collaboration with HUD, the NCHS linked longitudinal HUD administrative data with two cross-sectional health interview surveys across a 14-year period (1999 to 2012): the National Health Interview Survey (NHIS) and the National Health and Nutrition Examination Survey (NHANES).[8] This report focuses on prevalence estimates produced from HUD-NHIS linked data from 2006 to 2012. A separate, forthcoming report will examine HUD-NHANES linked data.

National Health Interview Survey

The NHIS[9] is an annual cross-sectional interview survey of approximately 35,000 households (90,000 participants). NHIS is designed to monitor the health of the civilian noninstitutionalized U.S. population by collecting data on a broad range of health topics. The sampling plan follows a multistage area probability design that permits the representative sampling of households and noninstitutionalized group quarters.

The Core NHIS questionnaire contains four major components. The Household component collects limited demographic information for all individuals living in a housing unit. The Family component collects and verifies additional demographic information on each member in the housing unit and collects data on topics including health status, injuries, healthcare access and utilization, and health insurance. From each family, NCHS randomly selects one sample adult and one sample child (if any children are present) for an interview using the Sample Adult Core and the Sample Child Core components. This report largely focuses on information collected from the Sample Adult Core component.

HUD Administrative Data

HUD-affiliated housing providers collect administrative data on families participating in HUD assistance programs and transmit these data to HUD. Information collected includes

- Dates of enrollment, income recertification, and end of participation
- Name of each person living in the housing unit, and personal attributes including sex, race, Social Security Number (SSN), date of birth, and relationship to the head of household
- Family characteristics that might qualify the family for tenant selection preferences
- Detailed income and assets information for all household members
- Anticipated family income for the next 12 months and sources of that income
- Geographic information for assisted units

The forms used to collect HUD administrative data are forms HUD–50058,[10] HUD–50058 MTW,[11] and HUD–50059.[12] The data are stored in two databases: the Public and Indian Housing Information Center and the Tenant Rental Assistance Certification System.[13]

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[8] The NCHS-HUD linked data website contains more information about this linked product, including data documentation, public-use feasibility files, and analytic guidelines. For specific questions, please email NCHS_HUD_DataLinkage@hud.gov.
[9] For more information on the NHIS, visit http://www.cdc.gov/nchs/nhis.htm.
[10] Administrative Form HUD–50058, the "Family Report," is used to collect data on the people who participate in the HCV and public housing programs. Available at http://portal.hud.gov/hudportal/documents/huddoc?id=HUD50058.pdf.
[11] PHAs participating in the Moving to Work (MTW) demonstration have fewer data requirements. Form HUD–50058 MTW ("MTW Family Report") is used only by PHAs participating in MTW. Available at http://portal.hud.gov/hudportal/documents/huddoc?id=DOC_10236.pdf.
[12] Administrative Form HUD–50059, titled "Owners Certification of Compliance with HUD's Tenant Eligibility and Rent Procedures," is used to collect data on the people who participate in multifamily programs. Available at http://portal.hud.gov/hudportal/documents/huddoc?id=50059.pdf.
[13] For more information about HUD data systems, please consult (NCHS, 2016a).

Adult Groups Examined

We examined sociodemographic characteristics and health outcomes among three groups of adults ages 18 or older, defined by income and status of HUD assistance during the years 2006 to 2012. This report focuses on HUD-assisted adults, with the other two groups providing useful context. The three adult groups were defined as follows.

HUD-Assisted Adults

The primary group of interest for this study comprises linkage-eligible[14] sample adults who linked with HUD administrative data and received HUD housing assistance at the time of health interviews during NHIS survey years 2006 to 2012.[15] Adults in this category received one of three types of rental assistance: housing choice vouchers,[16] public housing, or multifamily housing. A forthcoming report will describe prevalence estimates using the NHIS-HUD linked data by type of HUD assistance.

Unassisted Low-Income Renters

A second group, defined for comparison purposes, comprises linkage-eligible sample adults who lived in unassisted rental units, did not link with HUD administrative data for the relevant years, and had incomes below the federal poverty threshold .[17] Renter status is based on NHIS responses, and individuals assisted by HUD at the time of interview are excluded from the comparison group. Adults in this group are likely eligible to receive housing assistance but are unassisted either because they did not apply for assistance or did apply but were not admitted because of limited public resources.[18]

General Adult Population

A final group that provides context for health outcomes comprises all linkage-eligible sample adults from NHIS survey cycles 2006 to 2012. Adults in this group represent the general adult population without regard to income, housing tenure, or housing assistance status.

[14] Approximately 55 percent of NHIS survey participants were linkage-eligible during NHIS survey years 2006–2012. Details describing linkage eligibility criteria and linkage processes are described in Lloyd et al. (forthcoming) and Lloyd and Helms (2016). Linkage eligibility is also briefly described in this report (see Methods section, page 5).

[15] Receipt of HUD assistance for NHIS participants was determined using the standard NCHS concurrency variables, which are based on the survey date being preceded and followed by HUD administrative records that are not more than 425 days apart, or 790 days apart for MTW agencies. See Lloyd and Helms, 2016, p. 26–28.

[16] The homeownership program and the moderate rehabilitation single-room occupancy program, both included in the HCV program category, have trivial effects on estimates.

[17] In this report, *low-income* is used generically to mean incomes below the federal poverty threshold—incomes that are comparable with the incomes of the majority of HUD-assisted renters. The term neither means nor aligns with the substantially greater threshold of 80 percent of AMI that HUD uses to define which families are "low-income" for purposes of program administration.

[18] Only 25 percent of those eligible receive housing assistance. For more information regarding unmet housing needs, consult Steffen et al. (2015).

Methods

Data Linkage

NHIS participant data were linked to administrative records on individuals from HUD's largest housing assistance programs by using SSN, name, gender, and date of birth to identify HUD-assisted adults who were also NHIS respondents. Based on assurances and procedures to ensure confidentiality and privacy, the NCHS Research Ethics Review Board and HUD's legal staff approved the data linkage.

The NCHS-HUD linkage was primarily a deterministic, rules-based process. The NHIS questionnaire, implemented since 1997, has Core questions and Supplements. From each family in the NHIS, one sample adult is randomly selected and information on each is collected with the Sample Adult component. During survey years 2006 to 2012, approximately 191,000 sample adults were surveyed. Among survey participants, approximately 55 percent of sample adults met all of the following linkage eligibility criteria: they provided sufficient personal identifying information, provided linkage consent, and did not refuse to answer a question about housing assistance status. During survey years 2006 to 2012, approximately 5,222 adults were linkage-eligible and received housing assistance at the time of their interview (NCHS, 2016b).

Statistical Analysis

Data analysis was performed using SAS software, version 9.4 (SAS Institute, Cary, NC), and SAS-callable SUDAAN, version 9.0 (RTI, Research Triangle Park, NC). NHIS sample weights, which account for nonresponse and for unequal probabilities of selection, were adjusted to account for linkage eligibility. Weighted percentages were based on the linkage eligibility-adjusted sample weights, and standard errors of the percentages were estimated accounting for the complex survey sampling design (NCHS, 2012). Multiple imputation methods enabled the ratio of family income to the poverty threshold to be estimated without omitting cases that lack complete income data (NCHS, 2013).[19]

This report primarily uses data from the Sample Adult Core component of NHIS. Throughout this report, weighted percentages of demographic, socioeconomic, and health characteristics among adults in the three groups are presented. Estimates of standard errors are provided in appendix tables. Data were pooled across 7 survey years (2006 to 2012) to ensure a sufficient sample for statistically valid estimates. To avoid biasing prevalence estimates, the data are not age adjusted, so comparisons of reported health conditions across the three groups may be influenced by different within-group age distributions.

We emphasize that the purpose of this report is to provide a broad descriptive summary of health characteristics of HUD-assisted adult renters. This purpose is distinct from testing narrow, theory-guided hypotheses about causal associations between assisted housing and health outcomes.

[19] Since the 1997 NHIS, poverty ratio intervals have been provided on the NHIS public use data files. The poverty ratio is a ratio of the family's income to the appropriate federal poverty threshold. Published poverty thresholds from the Census Bureau are used to calculate this ratio.

Sociodemographic Characteristics

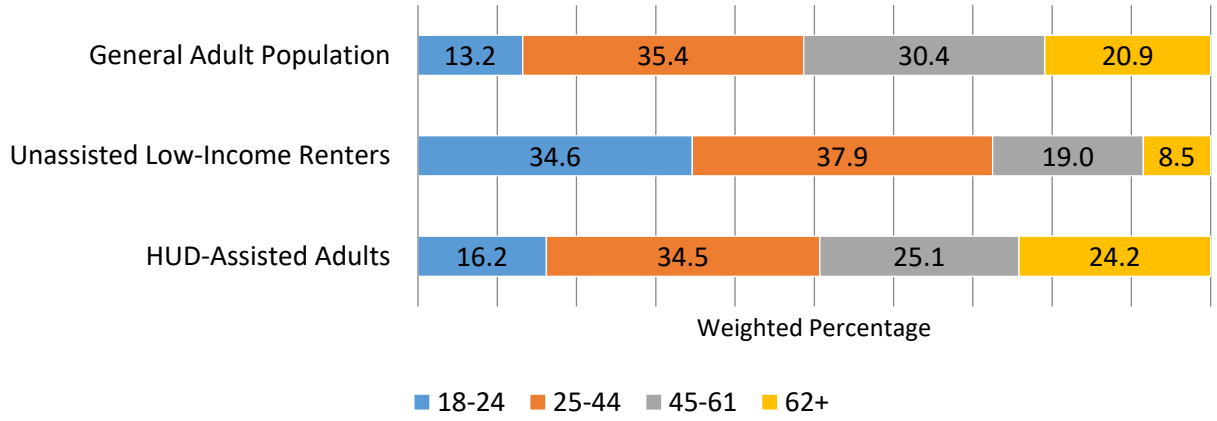
Individual-level and household-level characteristics were examined among HUD-assisted adults, unassisted low-income renters, and the general adult population. Table A-1, "Demographic and Socioeconomic Characteristics of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status," contains weighted percentages and standard error estimates for each of the three groups examined.[20] In this section, 12 sociodemographic characteristics are examined.

Age at Interview

The following four age categories were utilized for analysis: 18–24 years, 25–44, 45–61, and 62 and older. The 18-to-24 cohort represents young adults, 25-to-44 represents working-age adults of reproductive age, and 45-to-61 represents middle-aged working adults past reproductive age. The 62 and older grouping was used to capture elderly individuals (HUD generally defines elderly as 62 or older).

The HUD-assisted adult population had a substantially higher proportion (24.2 percent) of adults aged 62 and older than did the unassisted low-income renter group (8.5 percent; figure 1). The elderly share of the HUD population was also greater than that of the general population (20.9 percent). The percentage of adults aged 25 to 44 was similar among all three groups. Among all three groups, unassisted low-income renters had the highest percentage (34.6 percent) of adults aged 18 to 24.

Figure 1: Distribution of Age Categories by Adult Subgroup, 2006-2012



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Elderly in Household

Approximately 22.7 percent of HUD-assisted adults resided in households with adults aged 65 and older (table A-1). In the general adult population, about the same proportion of adults, 22.2 percent, resided in households with elderly persons. In contrast, a small percentage of unassisted low-income renters, 8.1 percent, resided in households with elderly adults.

[20] Due to rounding, not all reported percentages precisely equal 100.0 percent.

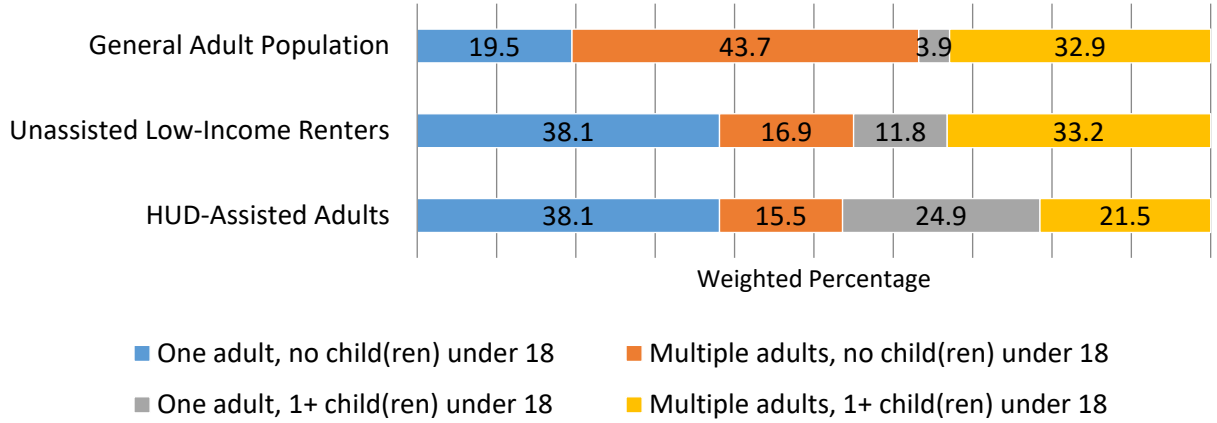
Sex

Consistent with HUD populations described in previous research, most (73.8 percent) HUD-assisted adults in the linked sample were women (table A-1).[21] In comparison, the sex ratio is more balanced among unassisted low-income renters and the general adult population. Slightly more than one-half (56.2 percent) of unassisted low-income renters were women, similar to the 51.7 percent observed among the general adult population.

Family Type

Family type varied across the three adult groups (figure 2). Most adults in the general population resided in households with multiple adults and no children (43.7 percent) or with multiple adults and one or more children (32.9 percent). Among both HUD-assisted adults and unassisted low-income renters, most adults reported residing in one-adult households with no children.

Figure 2: Distribution of Family Type by Adult Subgroup, 2006-2012



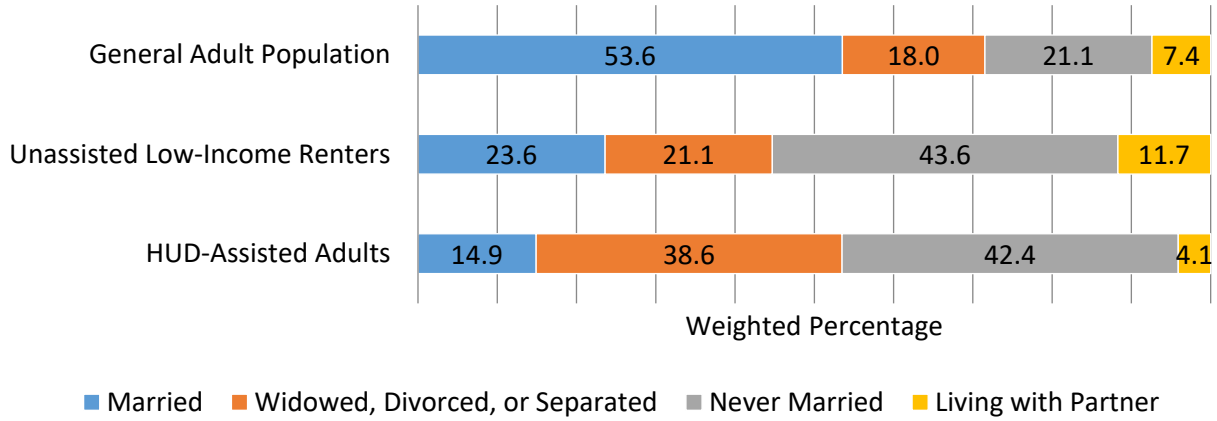
SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Marital Status

Most HUD-assisted adults were either never married (42.4 percent) or were widowed, divorced, or separated (38.6 percent; figure 3). Relative to unassisted low-income renters, HUD-assisted adults were less likely to be married or living with a partner, and more likely to be widowed, divorced, or separated. Over one-half (53.6 percent) of the general adult population was married, in contrast with the low-income groups presented. Such differences reflect the well-known association between female-headed households and poverty, and the predomination of females in assisted housing.

[21] HUD's Picture of Subsidized Households reports that 77 percent of assisted households in 2012 were headed by a female. huduser.gov/portal/datasets/picture/yearlydata.html.

Figure 3: Distribution of Marital Status by Adult Subgroup, 2006-2012



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

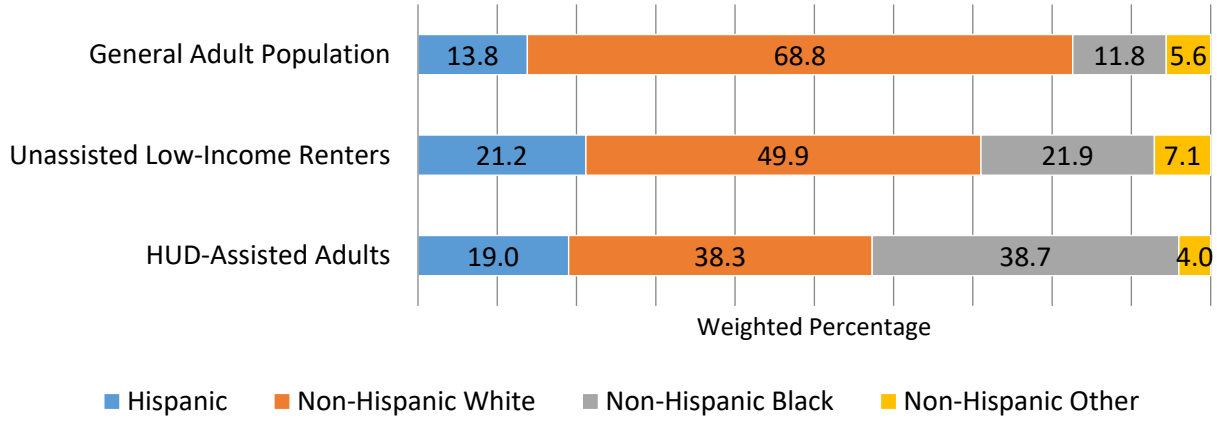
Ratio of Family Income to Poverty Threshold

The majority (65.1 percent) of HUD-assisted adults had incomes below the federal poverty threshold (table A-1). One of the three criteria defining the unassisted low-income renter population is income below the federal poverty threshold, so all adults in that group had incomes below the threshold. Among the general population, in contrast, more than two-thirds of adults (67.9 percent) had family incomes exceeding twice the federal poverty threshold (200 percent or more).

Race and Ethnicity

Due to potential sample size limitations, race and ethnicity variables were recoded into four broad categories: Hispanic, non-Hispanic White, non-Hispanic Black, and non-Hispanic other. The racial and ethnic makeup of the HUD-assisted and unassisted low-income renter populations differ from the general adult population (figure 4).

Figure 4: Distribution of Race and Ethnicity by Adult Subgroup, 2006-2012



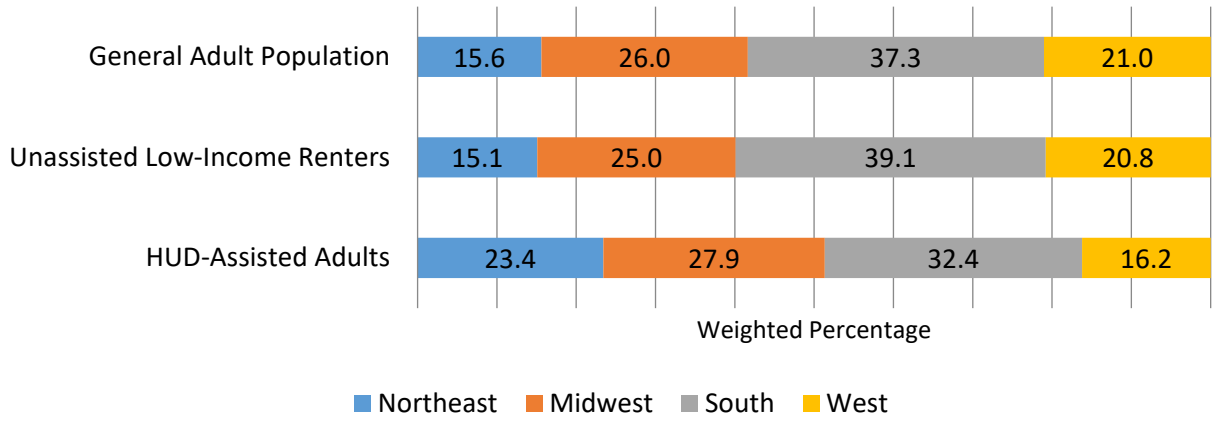
SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Among HUD-assisted adults, the majority were non-Hispanic Black (38.7 percent) or non-Hispanic White (38.3 percent). Relatively few assisted adults (4.0 percent) identified as non-Hispanic other. About one-half of unassisted low-income renter adults were non-Hispanic White (49.9 percent), with non-Hispanic Black and Hispanic individuals balanced in smaller yet sizable shares. The general adult population is less diverse, with 68.8 percent non-Hispanic White. Such differences between the HUD-assisted and unassisted low-income renters, on the one hand, and the general adult population, on the other, reflect the persistent association between poverty and minority status in the United States.

Region

When examining region among the three adult groups, low-income renters were similar to the general adult population (figure 5). Among HUD-assisted adults, similar percentages resided in the Northeast (23.4 percent) and the Midwest (27.9 percent). The South is home to 32.4 percent of HUD-assisted adults, and only 16.2 percent of HUD-assisted adults resided in the West.

Figure 5: Distribution of Region by Adult Subgroup, 2006-2012



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

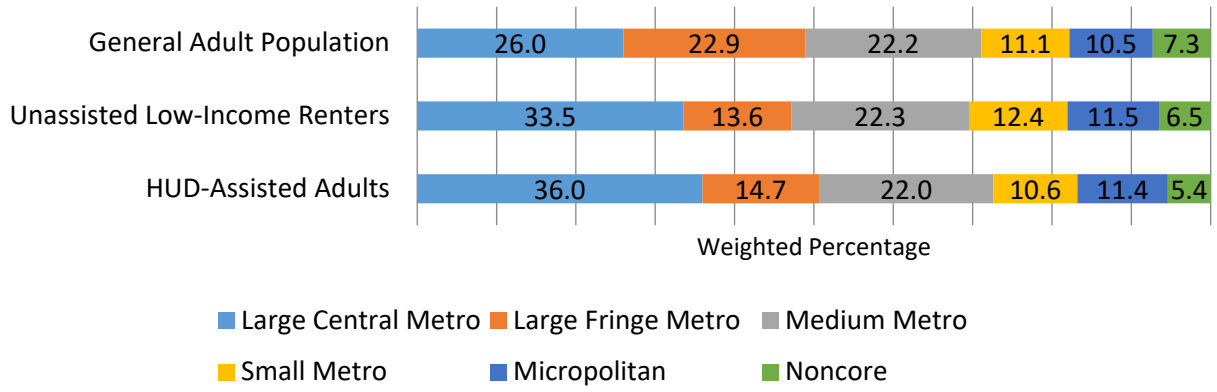
Metropolitan Classification

An urban-rural classification schema developed by NCHS was used to examine urban-rural differences across groups. The measure defines U.S. counties and county-equivalent entities to one of six categories.[22] The 2006 version used in this report is based on the 2000 Census and the Office of Management and Budget's 2005 delineation of metropolitan statistical areas and micropolitan statistical areas.[23] The most urban category consists of "central" counties of large metropolitan areas while the most rural category consists of nonmetropolitan "noncore" counties.

[22] For more information about urbanization level classification, visit http://www.cdc.gov/nchs/data_access/urban_rural.htm.
[23] For more information about 2005 statistical areas, visit http://www.census.gov/population/metro/data/pastmetro.html.

The majority of HUD-assisted adults resided in large central metropolitan counties (36.0 percent), large fringe metropolitan counties (14.7 percent), or medium metropolitan counties (22.0 percent; figure 6). The urban-rural distribution was similar across the three adult groups except that, relative to the general population, greater proportions of HUD-assisted and low-income renter adults were concentrated in the largest central metropolitan areas.

Figure 6: Distribution of Metropolitan Classification by Adult Subgroup, 2006-2012

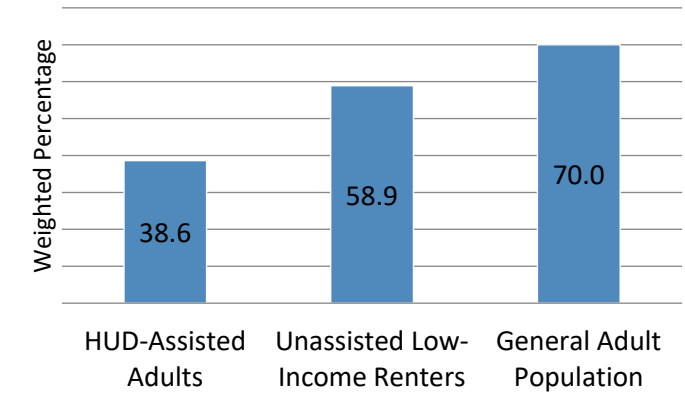


SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Work Status During Past 12 Months

NHIS survey participants were asked about their work status during the prior 12 months. Adults who reported they had never worked during this period were considered to be nonworking. The majority (61.4 percent) of HUD-assisted adults were nonworking (figure 7). In contrast, among the general adult population, the majority (70.0 percent) reported working during the past 12 months.

Figure 7: Percentage of Working Adults During the Past Year by Subgroup, 2006-2012



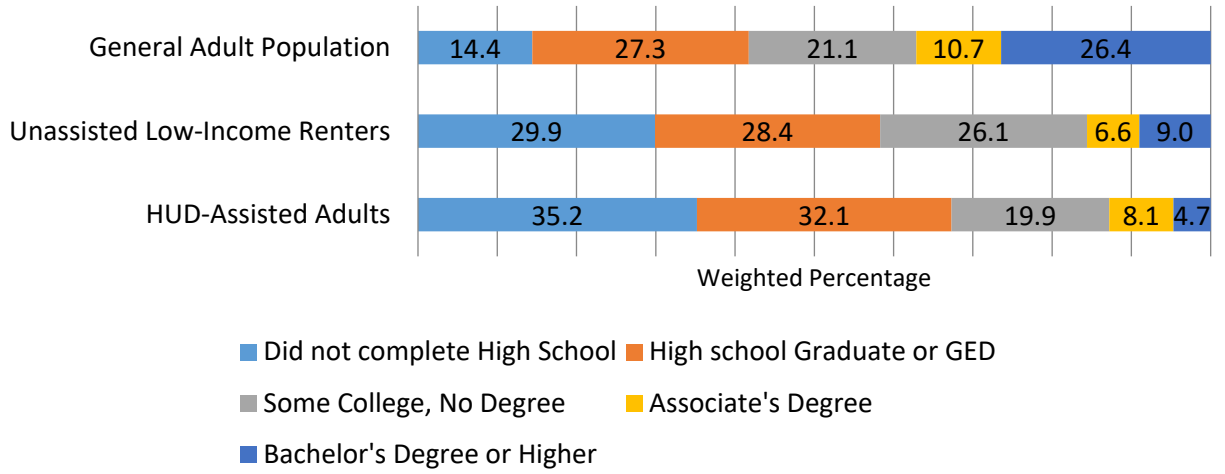
SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Unassisted low-income renters were somewhat more similar to the general adult population, with 58.9 percent working in the past 12 months. It is likely that the greater proportion of elderly and disabled adults in the HUD population and the greater proportion of young adults in the unassisted low-income renter population account for some of the differences in work participation. Additionally, having housing assistance could potentially discourage participation in the workforce.

Educational Attainment

The linked NHIS data shed light on educational attainment levels among HUD-assisted adults and comparison groups (figure 8). Similar proportions of all three groups ended their formal education with a high school diploma or GED (general educational development) certification. Other educational outcomes, however, differ. Among HUD-assisted adults, 35.2 percent did not complete high school, likely due in part to the greater proportion of elderly individuals with limited formal education (data not shown). Unassisted low-income renters, although slightly better educated, were half as likely as adults in general to have completed high school. Over 67 percent of HUD-assisted adults had a high school diploma or less, compared with 58 percent of unassisted low-income renters and 42 percent of adults in general. Only 4.7 percent of HUD-assisted adults reported a bachelor's degree or higher, compared with 9.0 percent of unassisted low-income renters and 26.4 percent of the general adult population.

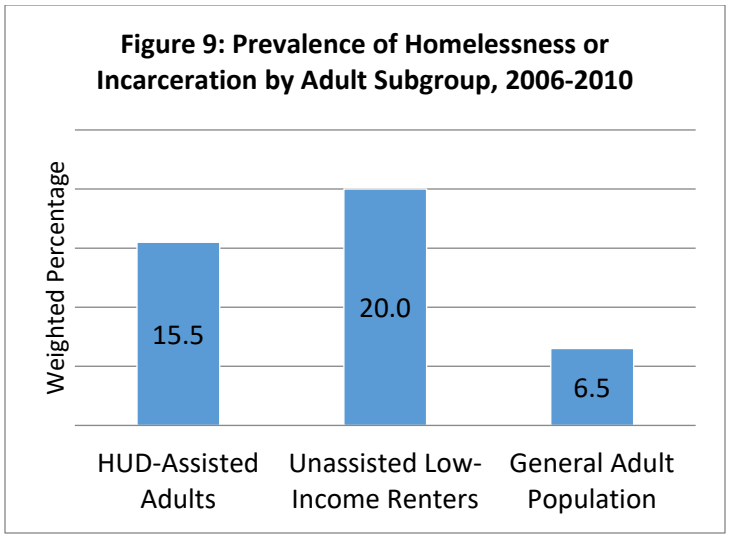
Figure 8: Distribution of Educational Attainment by Adult Subgroup, 2006-2012



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Homelessness or Incarceration

During NHIS survey years 2006 to 2010, survey participants were asked if they had ever spent more than 24 hours living on the streets, in a shelter, or in a jail or prison. Among HUD-assisted adults, 15.5 percent reported experiencing incarceration or homelessness at some point (figure 9). A somewhat larger proportion of unassisted adult renters (20.0 percent) and a much smaller percentage of the general adult population (6.5 percent) reported experiencing incarceration or homelessness at some point. The implications of this indicator for housing assistance and health are unclear because incarceration and homeless were combined into one measure.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Summary of Sociodemographic Characteristics

Descriptive statistics revealed key differences across the three adult groups examined. Most HUD-assisted adults were female, resided below the federal poverty threshold, lived in metropolitan areas, and had limited educational attainment. The unassisted low-income adult renter population was younger than HUD-assisted adults, with more than 70 percent younger than 45. Further, relative to HUD-assisted adults, larger proportions of unassisted low-income renters were non-Hispanic White, resided in the South, were never married, and resided in households with one adult and no children. Stark sociodemographic differences were evident between the two low-income groups and the general adult population. Adults in the general population had much higher incomes, higher educational attainment, and higher levels of workforce participation than adults in the two other groups.

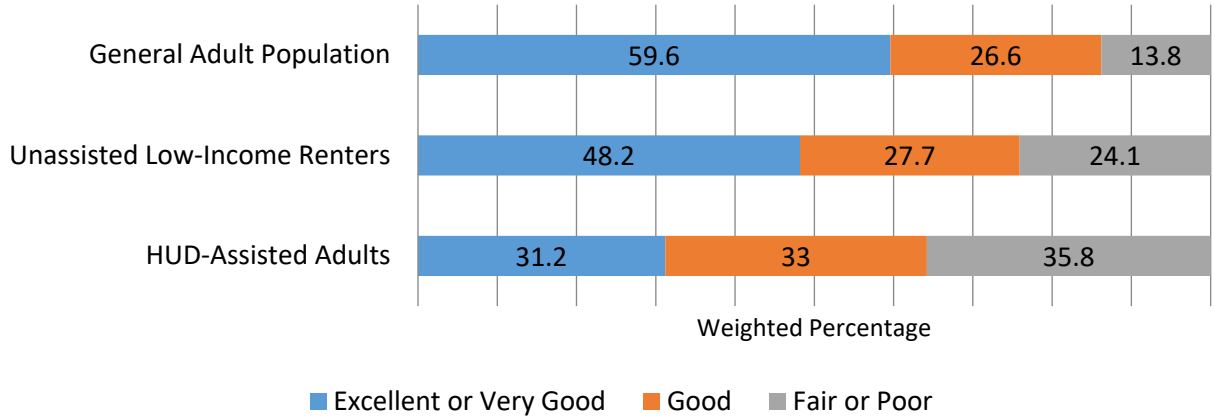
General Health Status

We examined individual-level health characteristics among HUD-assisted sample adults and two relevant adult groups to provide context. Underlying data for this section are presented in table A-2, "General Health Status of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status," which includes weighted percentages and standard error estimates. Self-reported health status, emergency room (ER) visits during the past 12 months, weight classification based on body mass index (BMI), and disability measures are examined in this section.

Self-Reported Health Status

The NHIS asks survey participants to self-rate their general health status, one of the best-known predictors of mortality (Jylhä, 2009). The distribution of self-reported health varied across the adult groups (figure 10). Among HUD-assisted renters, less than one-third of adults, 31.2 percent, reported their health as excellent or good. Substantially larger proportions of individuals reported excellent or good health among the unassisted low-income adult renters (48.2 percent) and the general adult populations (59.6 percent). HUD-assisted adults had the greatest proportion of adults reporting fair or poor health (35.8 percent), more than twice the proportion among the general adult population (13.8 percent).

Figure 10: Distribution of Self-Reported Health by Adult Subgroup, 2006-2012

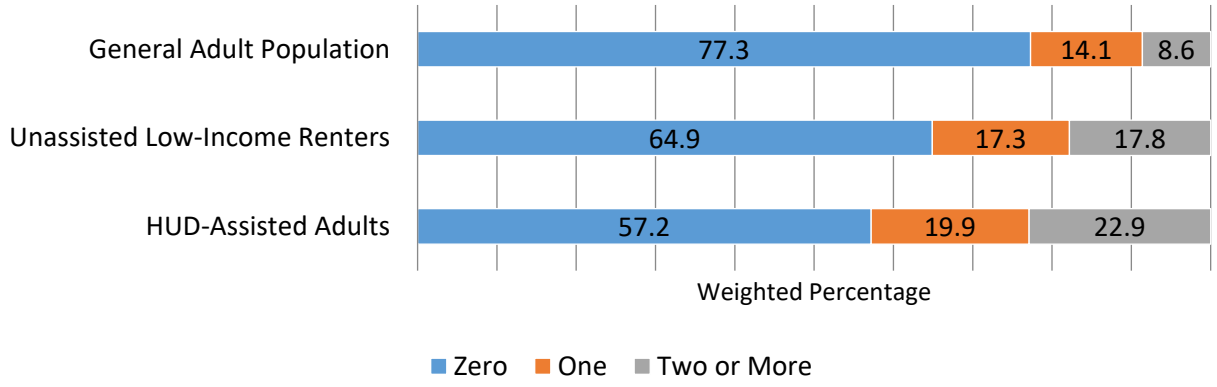


SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Emergency Room Visits

Frequent use of emergency rooms can signal repeated health emergencies or lack of access to a regular healthcare provider, including inadequate preventive care or inability to afford out-of-pocket costs of office visits. Nearly one-fourth (22.9 percent) of HUD-assisted adults reported two or more ER visits during the past 12 months (figure 11). This rate is greater than the 17.8 percent rate among unassisted low-income renters, and more than twice the 8.6 percent rate among adults in the general population.

Figure 11: Distribution of Emergency Room Visits during the Past 12 Months by Adult Subgroup, 2006-2012

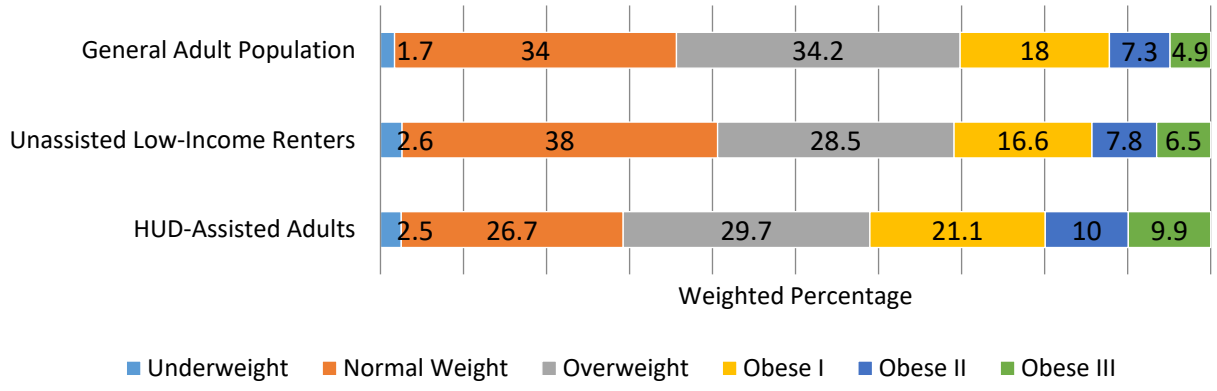


SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Weight Classification Based on BMI

NHIS survey participants were asked about their self-reported height and weight, and NCHS used these variables to calculate BMI. We then classified BMI into six categories based on weight classifications described by the Centers for Disease Control and Prevention (CDC).[24] It is important to note that self-reported weight measures can be unreliable (Stewart, 1982). The majority of HUD-assisted adults (71 percent) were overweight or obese (figure 12). Of the three groups, HUD-assisted adults also had the highest rates of the two most extreme classes of obesity. As obesity predisposes individuals to diabetes and other chronic and costly health problems, HUD-assisted adults represent a population that potentially could benefit from targeted weight loss interventions.

Figure 12: Distribution of Weight Classifciation based on BMI by Adult Subgroup, 2006-2012



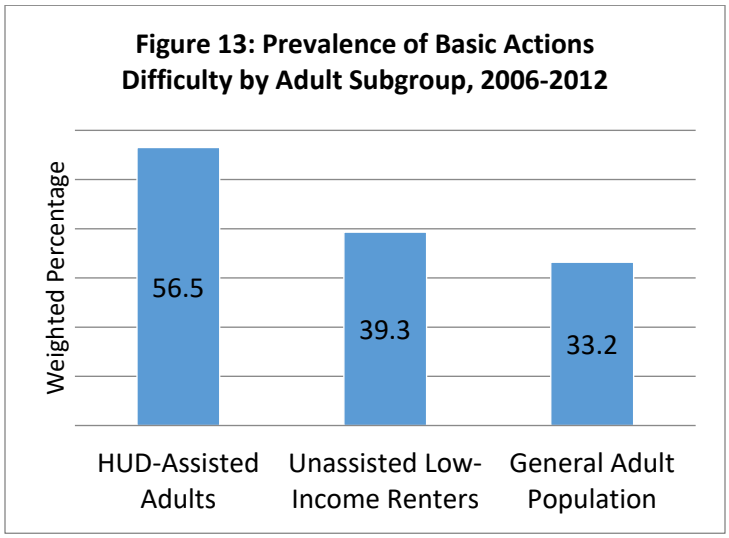
SOURCE: Authors' tabulations of NHIS-HUD Linked Data

[24] For more information about obesity and CDC obesity measures, visit https://www.cdc.gov/obesity/adult/defining.html.

Disability Measures

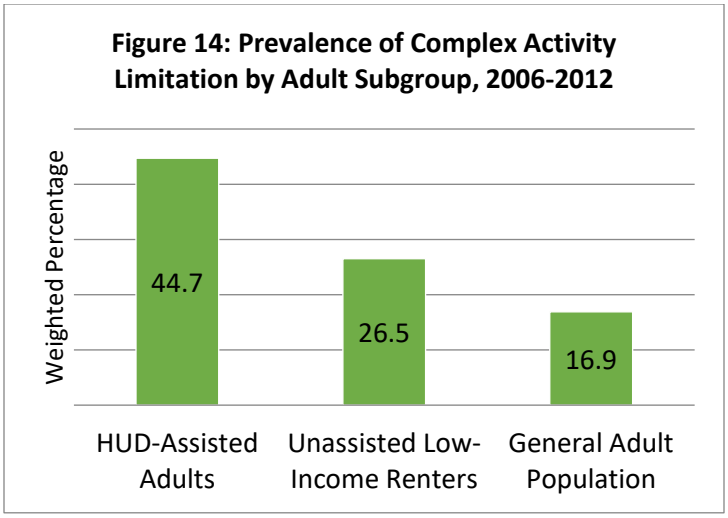
Disability is defined in the NHIS data using two conceptual disability models developed by the CDC: basic actions difficulty and complex activity limitation. These models are described in CDC literature (Altman and Bernstein, 2008).

Basic actions difficulty captures limitations in an individual's ability to accomplish tasks needed to maintain independence and participate in social activities. NHIS data do not cover the full range of basic actions, but some NHIS questions can identify a range of difficulty levels in core areas of movement and of sensory, emotional, and cognitive functioning. Among HUD-assisted adults, more than one-half (56.5 percent) reported basic actions difficulty, compared with 39.3 percent of unassisted low-income renters and 33.2 percent of adults in general (figure 13).



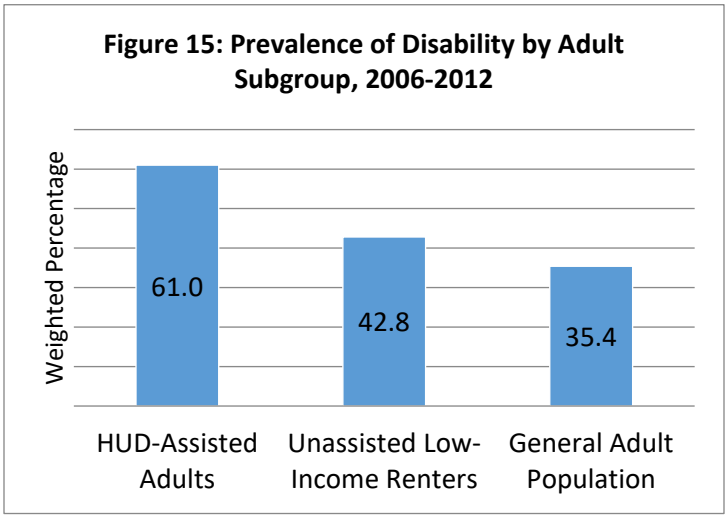
SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Complex activity limitation describes restrictions in a person's ability to fully participate in society through work, social activities, or maintaining a household. Among HUD-assisted adults, 44.7 percent reported having a complex activity limitation (figure 14). Complex activity limitations were less prevalent among the comparison groups, at 26.5 percent among unassisted low-income renters and 16.9 percent among the general adult population.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

An examination of whether adults had either of the two disability measures—basic actions difficulty or complex activity limitation—shows that 6 out of 10 HUD-assisted adults, 61 percent, had some form of reported disability (figure 15). Among unassisted low-income renters, 42.8 percent reported any type of disability, and 35.4 percent of the general adult population reported basic actions difficulty or complex activity limitation. The high prevalence of disability among HUD-assisted adults and the difference relative to the other groups is notable.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Summary of General Health Status

Across the three adult groups, HUD-assisted adults emerged as a population facing unique challenges. More than one-third of HUD-assisted adults reported their health as fair or poor, a proportion considerably greater than the proportions reported among unassisted low-income renters and the general adult population. HUD-assisted tenants also reported the highest rate (22.9 percent) of utilizing the ER two or more times during the prior 12 months. Finally, the majority of HUD-assisted adults were overweight or obese (71 percent), and 61 percent had a disability at the time of their health interview.

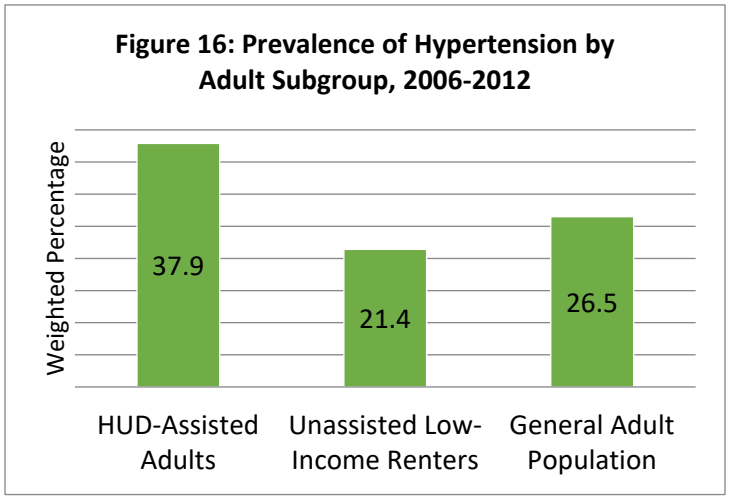
Health Conditions and Diagnoses

NHIS sample adults were asked about 10 specific conditions and diagnoses. Table A-3, "Health Conditions and Diagnoses of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status," contains weighted percentages and standard error estimates for all 10 conditions and diagnoses for each of the three groups examined.

Findings about health conditions and diagnoses are not age adjusted and are susceptible to the influence of differing age distributions across adult groups. Age can influence prevalence estimates because health problems are associated with age and also because the cumulative probability that a given health condition will be diagnosed increases over time. In particular, the greater proportion of young adults in the unassisted low-income renter group compared with the proportion in the other two groups likely influences several of the health disparities reported in what follows.

Hypertension

Hypertension,[25] or high blood pressure, is a long-term medical condition associated with consistently elevated blood pressure in the arteries. Among the three groups, HUD-assisted adults had the highest reported prevalence (37.9 percent) of ever being told by a doctor or medical professional that they had hypertension during two separate clinical visits (figure 16). Unassisted low-income renters had the lowest prevalence of hypertension (21.4 percent), while 26.5 percent of the general adult population reported hypertension.

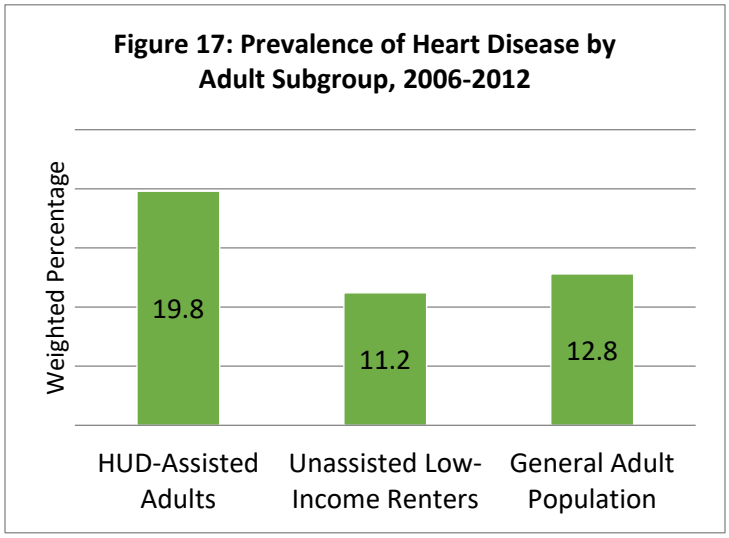


SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Heart Disease

Heart disease is the leading cause of mortality in the United States.[26] NHIS survey participants were asked a number of questions about various heart conditions to identify heart disease. We identified individuals as having heart disease if they reported ever being told by a doctor or health professional that they had coronary heart disease, angina, a heart attack, or another kind of heart condition. Of the three adult groups, HUD-assisted adults had the highest prevalence of heart disease, at 19.8 percent (figure 17). Among unassisted low-income renters, 11.2 percent reported a heart disease diagnosis, similar to the 12.8 percent among the general adult population.

[25] For more information about hypertension, visit https://www.cdc.gov/bloodpressure/.
[26] For more information about heart disease, visit https://www.cdc.gov/heartdisease/.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

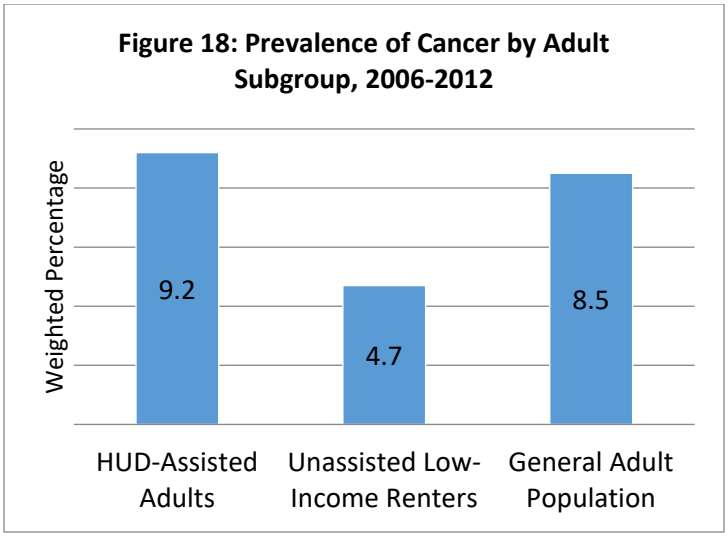
Stroke

Strokes, characterized by poor blood flow in the brain or sudden bleeding in the brain, represent the fifth leading cause of death in the United States and the leading cause of serious long-term disability.[27] More than 80 percent of strokes are ischemic strokes, a type of stroke that occurs when blood flow to the brain is blocked. NHIS sample adults were asked if they had ever been told by a doctor or medical professional that they had had a stroke. Among HUD-assisted adults, 6.6 percent reported ever being told that they had had a stroke, compared with 3.0 percent of the general adult population (table A-3). Similarly to the general adult population, 3.7 percent of unassisted low-income renters reported ever having had a stroke.

Cancer

Cancer is an umbrella term for diseases in which cells divide uncontrollably and abnormally; more than 100 kinds of cancer have been identified to date.[28] NHIS survey participants were asked about ever having a cancer diagnosis by way of the following question: *Have you ever been told by a doctor or other health professional that you had cancer or a malignancy of any kind?* Among HUD-assisted adults, 9.2 percent reported ever being diagnosed with any kind of cancer (figure 18). Among unassisted low-income renters, 4.7 percent reported ever being diagnosed with any kind of cancer. Among the general adult population, 8.5 percent reported ever being diagnosed with any kind of cancer, a rate similar to HUD-assisted adults.

[27] For more information about stroke, visit https://www.cdc.gov/stroke/.
[28] For more information about cancer, visit https://www.cdc.gov/cancer/.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Liver Conditions

The liver is an organ essential for digestion and detoxification.[29] Liver disease, characterized by liver damage, can be inherited or caused by such factors as viruses and alcohol use. NHIS survey participants were asked about the health of their liver via the following question: *During the past 12 months, have you been told by a doctor or other health professional that you had any kind of liver condition?* Of HUD-assisted adults, 3.6 percent reported liver conditions compared with 2.6 percent of unassisted low-income renters and 1.6 percent of the general population (table A-3).

Kidney Condition

Kidneys perform key regulatory roles in the human body. Chronic kidney disease occurs when the kidneys are damaged and cannot filter blood properly.[30] NHIS survey participants were asked the following question to capture kidney failure: *During the past 12 months, have you been told by a doctor or other health professional that you had… Weak or failing kidneys? Do not include kidney stones, bladder infections or incontinence.* The prevalence of kidney conditions was low among sampled adults (table A-3). Among HUD-assisted adults, 4.5 percent reported kidney conditions. In comparison, 1.9 percent of the general adult population and 2.6 percent of the unassisted low-income renter population reported kidney conditions.

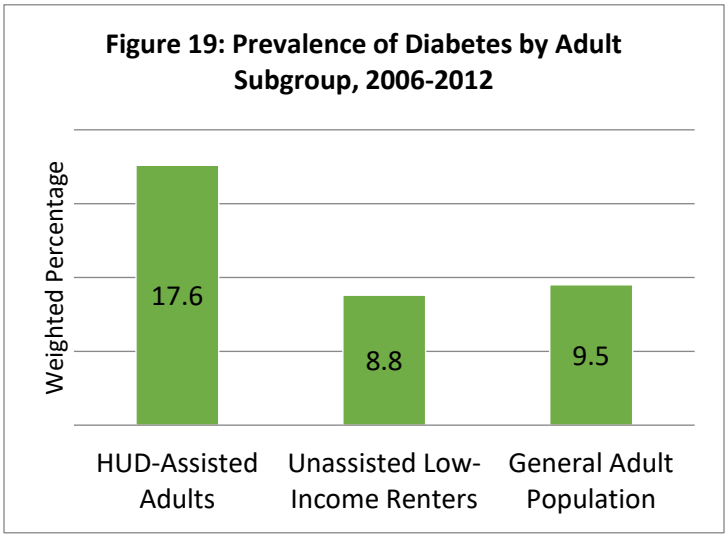
Diabetes

Diabetes is a metabolic disease in which blood glucose levels are elevated.[31] More than 29 million Americans have diabetes. Across the three adult groups, HUD-assisted adults had the highest prevalence of a diabetes diagnosis, with 17.6 percent reporting ever having been told they had diabetes (figure 19). Among unassisted low-income renters, 8.8 percent reported a diabetes diagnoses. Among the general adult population, 9.5 percent reported a diabetes diagnoses. The data suggest that HUD-assisted adults represent an at-risk population that could benefit from diabetes prevention and management interventions. Additionally, the high prevalence of diabetes among HUD-assisted adults could be associated with their high rates of obesity. As previously shown in figure 12, approximately 70 percent of HUD-assisted adults were overweight or obese.

[29] For more information about liver conditions, visit http://www.mayoclinic.org/diseases-conditions/liver-problems/basics/definition/con-20025300.

[30] For more information about kidney disease, visit http://www.cdc.gov/diabetes/programs/initiatives/kidney.html.

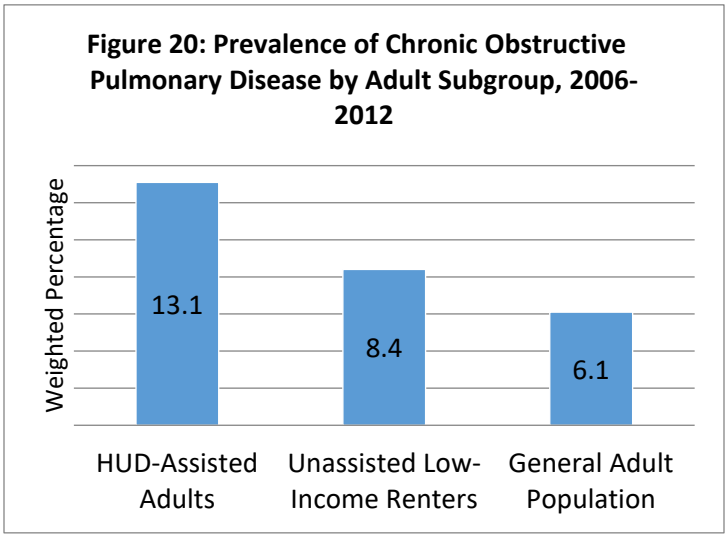
[31] For more information about diabetes, visit http://www.cdc.gov/diabetes/.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Chronic Obstructive Pulmonary Disease

Chronic obstructive pulmonary disease (COPD) is a progressive disease characterized by poor airflow in the lungs.[32] Cigarette smoking is the leading cause of COPD. The estimated prevalence of COPD varied across the adult groups (figure 20). In the HUD-assisted group, 13.6 percent of adults reported COPD, which is more than double the prevalence among the general adult population (6.3 percent). Among unassisted low-income renters, 8.6 percent reported COPD.

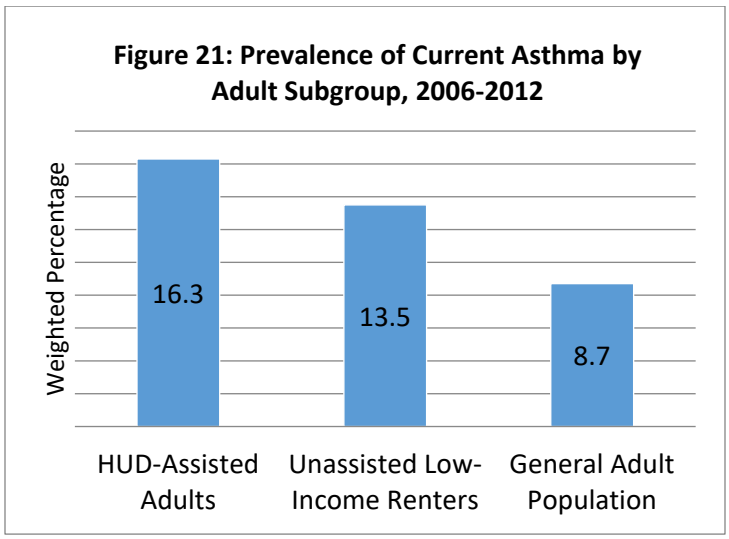


SOURCE: Authors' tabulations of NHIS-HUD Linked Data

[32] For more information about COPD, visit http://www.nhlbi.nih.gov/health/health-topics/topics/copd.

Current Asthma

Asthma is a potentially fatal inflammatory disease that affects the lungs and is characterized by episodes of wheezing, breathlessness, coughing, or chest tightness. [33] Environmental allergens, including some of those found in substandard housing, can be significant asthma triggers. NHIS survey participants were considered to have current asthma if they answered affirmatively when asked whether they had ever had asthma and whether they still had asthma. Among HUD-assisted adults, 16.3 percent reported current asthma (figure 21). Among unassisted low-income renters, 13.5 percent reported current asthma, while only 8.7 percent of the general adult population did so.

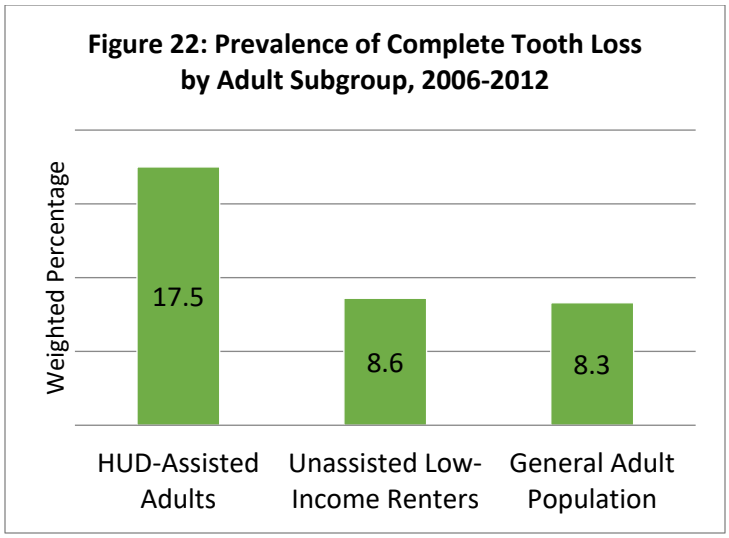


SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Complete Tooth Loss

Survey participants were asked if they had lost all of their upper and lower natural (permanent) teeth. Although tooth decay and complete tooth loss have decreased in prevalence in the United States since the 1960s, racial, ethnic, socioeconomic, and age disparities in tooth loss continue. [34] More than twice the percentage of HUD-assisted adults reported tooth loss (17.5 percent) than did unassisted low-income renters (8.6 percent) or the general adult population (8.3 percent; figure 22). It is important to note that these prevalence estimates are not age adjusted.

[33] For more information about asthma, visit https://www.cdc.gov/asthma/.
[34] For more information about tooth loss, visit http://www.cdc.gov/nchs/products/databriefs/db197.htm.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Summary of Physical Health Conditions

Of the 10 health conditions and diagnoses examined in this section, HUD-assisted adults reported greater prevalence (that is, worse health) than unassisted low-income renters and the general adult population on every measure. The greater share of elderly individuals in the HUD population likely accounts for some of the disparity relative to unassisted low-income renters, and the well-established association between health and poverty likely accounts for some of the difference relative to the general population. Such results point to the value of additional focused research that addresses age-adjusted health disparities and controls for causal factors; such research would provide greater understanding of the link between federal housing assistance and population health. Additionally, such research would be useful for the design and implementation of interventions to improve the health of HUD-assisted adults.

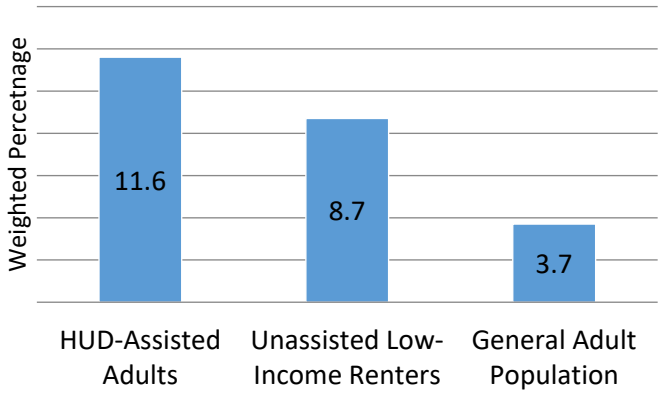
Mental Health Measures

NHIS survey participants were asked a series of six questions meant to identify mental distress: *During the past 30 days, how often did you feel … (1) so sad that nothing could cheer you up, (2) nervous, (3) restless or fidgety, (4) hopeless, (5) that everything was an effort, (6) worthless?* Five response categories were included: all of the time, most of the time, some of the time, a little of the time, and none of the time. Table A-4, "Mental Health Measures and Productivity Lost Due to Illness or Injury of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status," contains weighted percentages and standard error estimates for two mental health measures for each of the three groups examined.

Serious Psychological Distress

Serious psychological distress was measured using a score of 13 or greater on the previously validated Kessler-6 index, which consists of the six questions mentioned previously (Kessler et al., 2002).[35] Among the three adult groups, HUD-assisted adults reported the highest prevalence of serious psychological distress: an estimated 11.6 percent (figure 23). In comparison, 8.7 percent of unassisted low-income renters and only 3.7 percent of the general adult population reported serious psychological distress.

Figure 23: Prevalence of Serious Psychological Distress by Adult Subgroup, 2006-2012



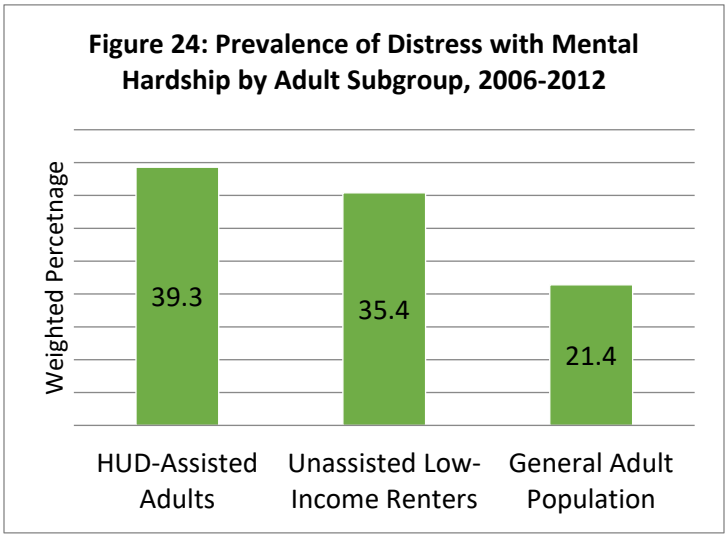
SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Distress With Mental Hardship

NHIS survey participants who answered all of the time, most of the time, or some of the time on any of the Kessler-6 questions were also asked the following question: *We just talked about a number of feelings you had during the past 30 days. Altogether, how much did these feelings interfere with your life or*

[35] The Kessler-6 index represents a scale of 0 to 24 points. (Each of the six questions is coded 0 to 4 and the results are summed.) Calibration studies suggest that a score of 13 or more is the optimal cut point for assessing the prevalence of serious mental illness (SMI), as defined by Public Law 102-321. The definition of SMI stipulates that a person have at least one 12-month Diagnostic and Statistical Manual of Mental Disorders disorder, other than a substance use disorder, and have "serious impairment."

activities: a lot, some, a little, or not at all?[36] Survey participants who answered a lot or some were considered to have distress with mental hardship. Among HUD-assisted adults, 39.3 percent reported distress with mental hardship, similar to the 35.4 percent rates for unassisted low-income renters (figure 24). Among the general adult population, 21.4 percent reported distress with mental hardship.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Summary of Mental Health Indicators

In addition to their poorer physical health documented in the previous section, HUD-assisted tenants faced higher rates of serious psychological distress and distress with mental hardship than did unassisted low-income renters and the general adult population. By both measures, both low-income groups (HUD-assisted adults and unassisted, low-income renters) were more likely to report problems than the general population group, suggesting that the economic disadvantage of income below the poverty line is a key social determinant of mental health that affects the HUD-assisted population and unassisted low-income renters.

[36] This question captures the CDC measure of "frequent mental distress." The measure has a more skewed distribution than the Kessler-6 and represents the top 1 to 2 percent of the population. Alternatively, the Kessler-6 is meant to capture 5 to 8 percent of the population. More information is available at https://www.hcp.med.harvard.edu/ncs/k6_scales.php.

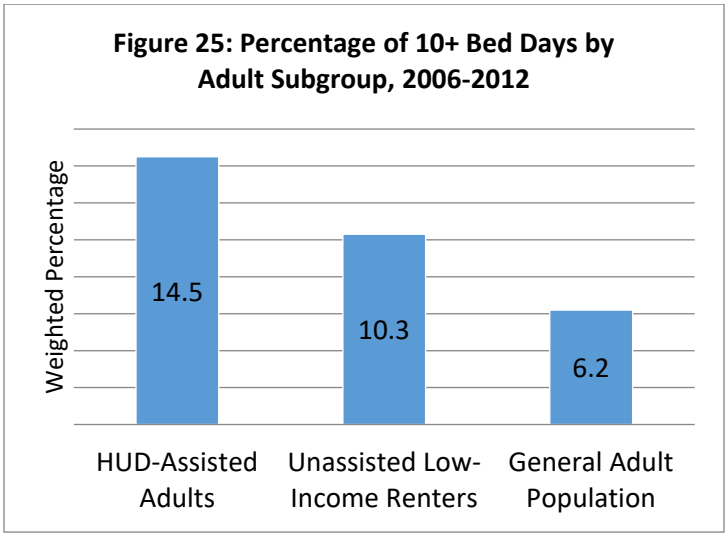
Productivity Loss Due to Illness or Injury

To assess potential productivity loss due to illness or injury, bed days and reported work loss days were assessed among all three adult groups. For both measures, a 10-day threshold was used to identify individuals experiencing productivity loss due to illness or injury. Table A-4 contains weighted percentages and standard error estimates for two productivity measures for each of the three groups examined.

Bed Days, Past 12 Months

Bed days (defined as being bedridden for at least one-half of a day) during the past 12 months due to illness or injury (including overnight hospitalization) were assessed. Among HUD-assisted adults, 14.5 percent reported having 10 or more bed days during the past 12 months (figure 25). A smaller proportion, 10.3 percent, of unassisted low-income renters reported 10 or more bed days, while the rate among the general adult population was 6.2 percent.

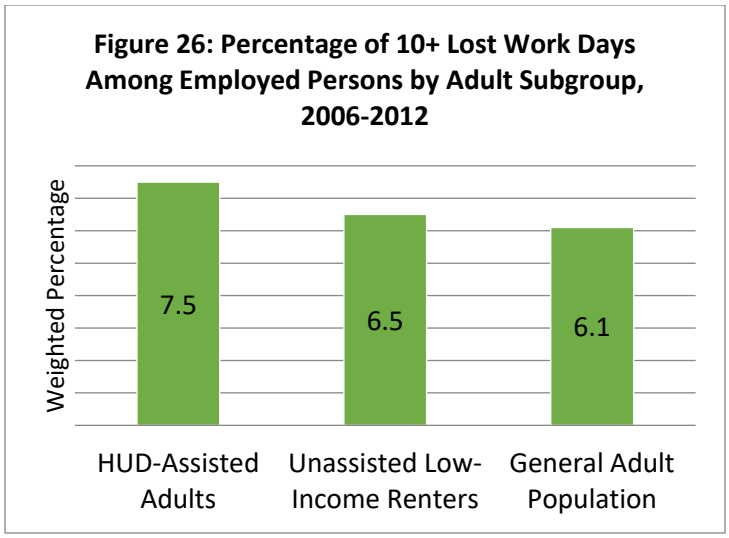
Figure 25: Percentage of 10+ Bed Days by Adult Subgroup, 2006-2012



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Lost Work Days, Past 12 Months

The number of lost work days in the past 12 months due to illness or injury (excluding maternity leave) was assessed among employed individuals (figure 26). Among all three adult groups, the prevalence of 10 or more work days lost was approximately 7 percent. Among HUD-assisted adults, 7.5 percent of employed individuals reported 10 or more lost work days due to injury or illness. As documented in figure 7, however, the proportion of adults in the work force is substantially lower in the HUD-assisted population. A greater prevalence of lost work days for health reasons could contribute to low workforce participation.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Summary of Productivity Indicators

HUD-assisted tenants faced higher rates of productivity loss due to injury or illness when compared with rates among unassisted low-income renters and the general adult population. Prevalence was greater for the HUD-assisted population both for 10 or more bed days and for 10 or more lost work days.

Healthcare Utilization and Access

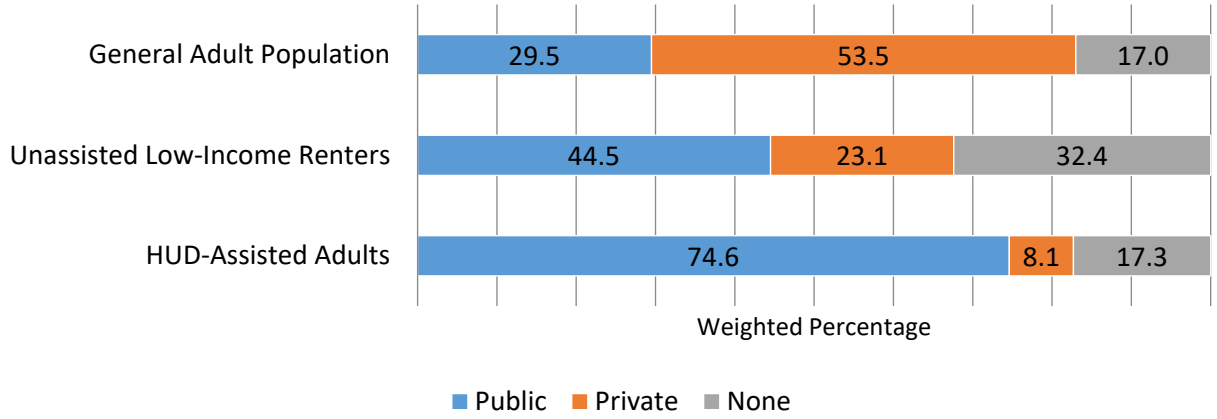
Individual-level healthcare access and utilization characteristics were examined among HUD-assisted adults and two adult groups to provide context. The NHIS asks survey participants several questions about sources of health care, including access to general practitioners, specialists, and mental health professionals. Table A-5, "Health Access and Healthcare Utilization of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status," contains weighted percentages and standard error estimates for each of the three groups examined.

Health Insurance Coverage

The NHIS asks a series of questions about health insurance status. Individuals were considered to have public health insurance if they reported coverage through any of the following: Medicare, Medicaid, the State Children's Health Insurance Program, a state-sponsored health plan, other government programs, or a military health plan.

Health insurance coverage varied among the adult groups (Table A-5; figure 27). Most HUD-assisted adults reported having public health insurance (74.6 percent).[37] When compared with HUD-assisted adults, substantially fewer unassisted low-income renters reported public health insurance (44.5 percent), and 23.1 percent reported private health insurance. In the general population, the majority of adults had private health insurance (53.5 percent). Rates of uninsurance were similar among HUD-assisted adults (17.3 percent) and the general adult population (17.0 percent), but the rate was nearly double among unassisted low-income renters (32.4 percent). It is important to note that the survey years preceded the implementation of the Affordable Care Act's expansion of health insurance options.

Figure 27: Distribution of Health Insurance Status by Adult Subgroup, 2006-2012



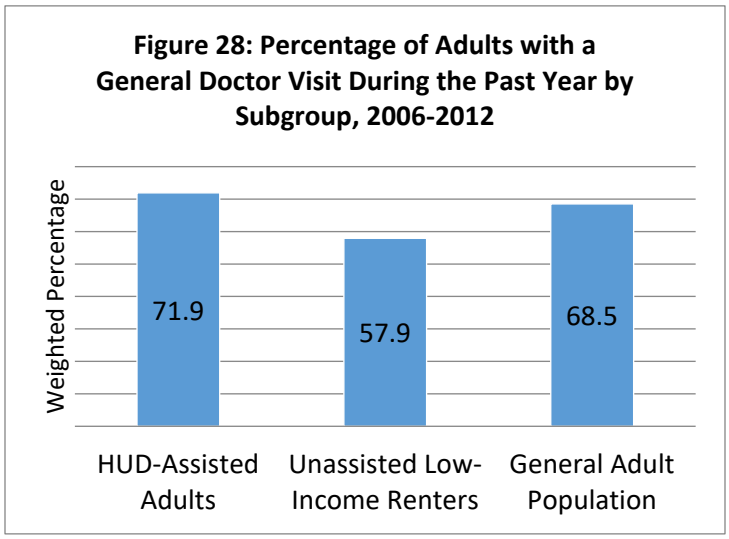
SOURCE: Authors' tabulations of NHIS-HUD Linked Data

General Doctor Visits

The NHIS asks survey participants several questions about healthcare sources, including the following question meant to capture whether a respondent had contact with a general practitioner during the prior year: *During the past 12 months, have you seen or talked to any of the following health care providers*

[37] For a study based on administrative linkage of HUD tenant data with Medicare and Medicaid records among elderly tenants, see Assistant Secretary for Planning and Evaluation (2014).

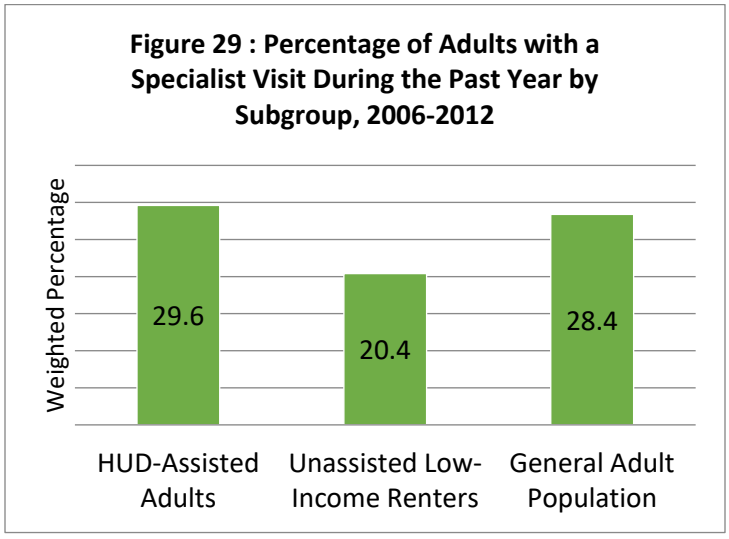
about your own health?... A general doctor who treats a variety of illnesses (a doctor in general practice, family medicine, or internal medicine). Among HUD-assisted adults, 71.9 percent reported access to a general practitioner (figure 28). This rate exceeds the percentage among both unassisted low-income renters (57.9 percent) and the general adult population (68.5 percent).



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Specialist Visits

Another potential response to the NHIS question about healthcare sources (*During the past 12 months, have you seen or talked to any of the following health care providers about your own health?...)* is a specialist, defined in NHIS as a *medical doctor who specializes in a particular medical disease or problem (other than obstetrician/gynecologist, psychiatrist or ophthalmologist).* Among HUD-assisted adults, 29.6 percent reported visiting a specialist during the past year, which was similar to the general adult population (28.4 percent; figure 29). Among unassisted low-income renters, 20.4 percent reported a specialist visit during the prior year.

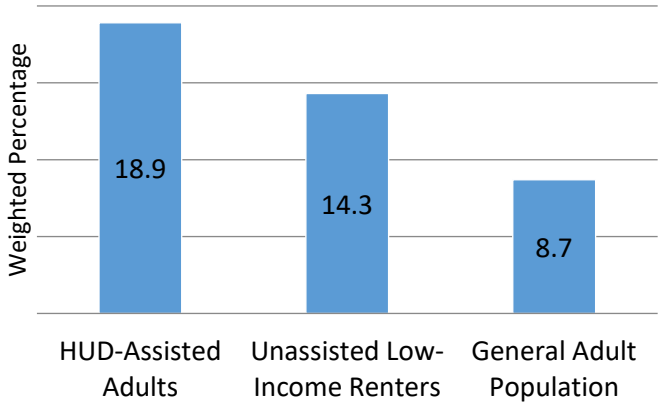


SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Mental Health Professional Visits

The NHIS asks survey participants several questions about sources of health care, including the following question meant to capture whether a respondent had contact with a mental health professional: *During the past 12 months, have you seen or talked to any of the following health care providers about your own health?....A mental health professional such as a psychiatrist, psychologist, psychiatric nurse, or clinical social worker.* Among HUD-assisted adults, 18.9 percent reported seeing or talking to a mental health professional during the past 12 months (figure 30), while 14.3 percent of unassisted low-income renters and 8.7 percent of the general adult population reported doing so.

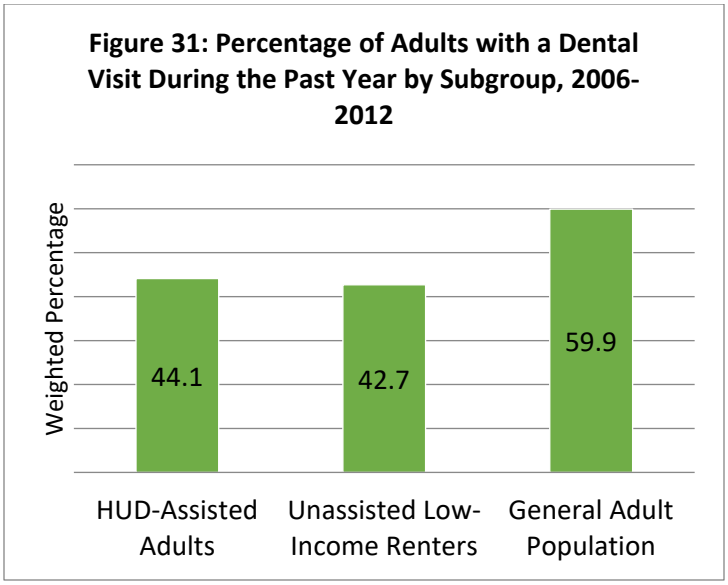
Figure 30: Percentage of Adults with a Mental Health Professional Visit During the Past Year by Subgroup, 2006-2012



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Dental Visits

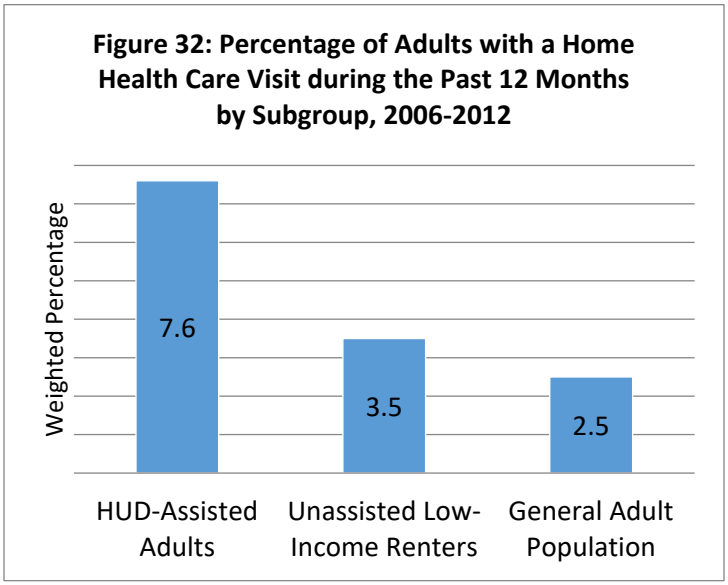
To capture dental visits during the prior year, NHIS asks survey participants the following question: *About how long has it been since you last saw a dentist? Include all types of dentists, such as orthodontists, oral surgeons, and all other dental specialists, as well as dental hygienists.* Individuals who reported seeing a dentist in the past 12 months were considered to have utilized oral health services during the prior year. Among HUD-assisted adults, 44.1 percent reported a dental visit during the past year (figure 31). This rate slightly exceeded the rate for unassisted low-income renters (42.7 percent) but was substantially lower than the 59.9 percent rate among adults in general.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Receipt of Home Health Care

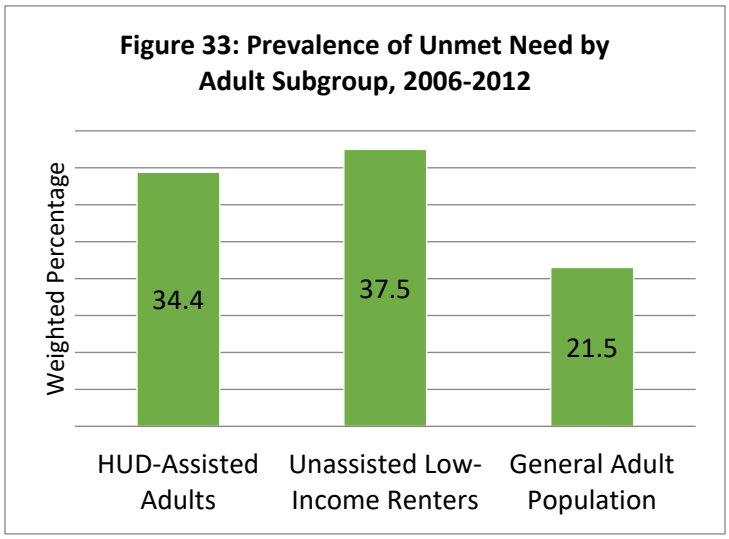
Previous research suggests that low-income populations may benefit from home healthcare options and targeted home visiting interventions. To assess the prevalence of home health care, NHIS survey participants were asked the following question: *During the past 12 months, did you receive care at home from a nurse or other health care professional?* Among HUD-assisted adults, 7.6 percent reported home health care, exceeding the rates for unassisted low-income renters, at 3.5 percent, and the general adult population (2.5 percent; figure 32). Such health services can be an important part of the supports necessary for frail elderly adults to age in place rather than move to skilled nursing facilities.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Unmet Needs for Health Care

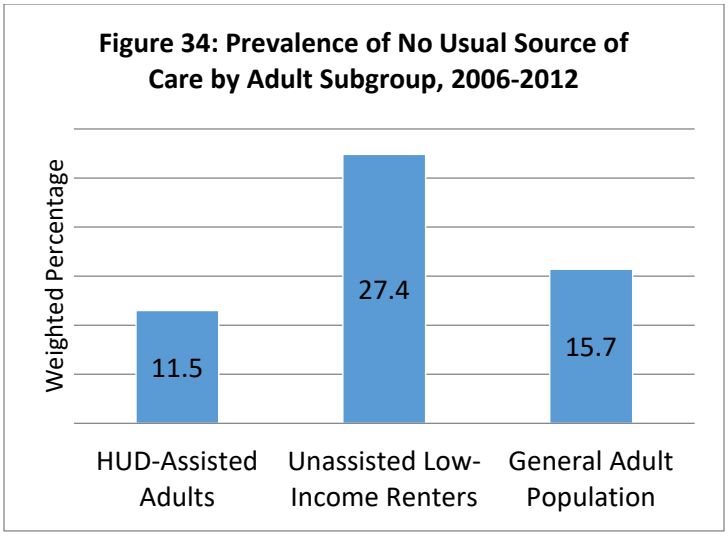
NHIS survey participants were asked a series of questions that can be used to determine unmet need for health care. Questionnaire language included a series of questions regarding needs that remained unmet due to cost: *During the past 12 months, was there any time when you needed [prescription medicines, mental health care or counseling, dental care (including checkups), or eyeglasses], but didn't get it because you couldn't afford it?* Survey participants who answered yes to any of the four affordability questions were considered to have unmet need for healthcare services. Among HUD-assisted adults, 34.4 percent reported unmet healthcare need (figure 33). Comparatively, 37.5 percent of unassisted low-income renters and 21.5 percent of the general adult population reported unmet need.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

No Usual Source of Care

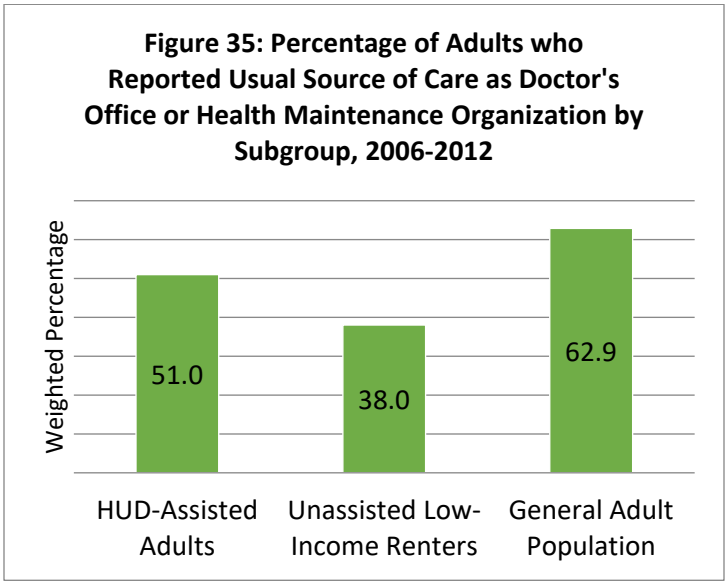
NHIS survey participants were asked if they had a usual source of health care via the following question: *Is there a place that you usually go to when you are sick or need advice about your health?* If survey participants said they had no usual place, then they were classified as having no usual source of care. Among the three adult groups, HUD-assisted adults reported the lowest prevalence of having no usual source of care, 11.5 percent (figure 34). Among the general adult population, a slightly higher proportion of 15.7 percent lacked a usual source of care. Among unassisted low-income renters, 27.4 percent reported no usual source of care.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Usual Source of Care Is a Doctor's Office or Health Maintenance Organization

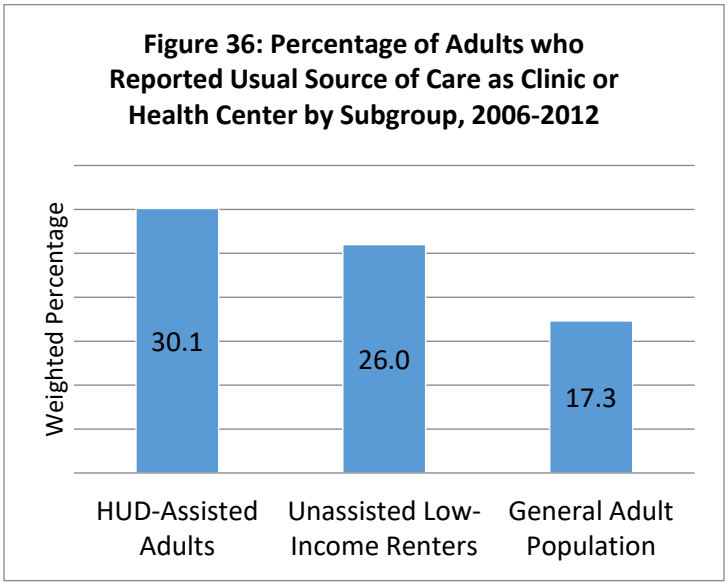
NHIS survey participants were asked what type of place they most frequently visit for health care. One-half (51.0 percent) of HUD-assisted adults reported their usual source of care as a doctor's office or Health Maintenance Organization (HMO; figure 35). An estimated 38.0 percent of unassisted low-income adult renters and 62.9 percent of the general adult population reported their usual source of care as a doctor's office or HMO.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Usual Source of Care Is a Clinic or Health Center

NHIS survey participants were given the opportunity to mention a clinic or health center as the type of place they most frequently visit for care, in addition to the options of a doctor's office or HMO. Among HUD-assisted adults, 30.1 percent reported a clinic or health center as their usual source of care (figure 36), while 26.0 percent of unassisted low-income renters and 17.3 percent of the general adult population reported their usual source of care as a clinic or health center.



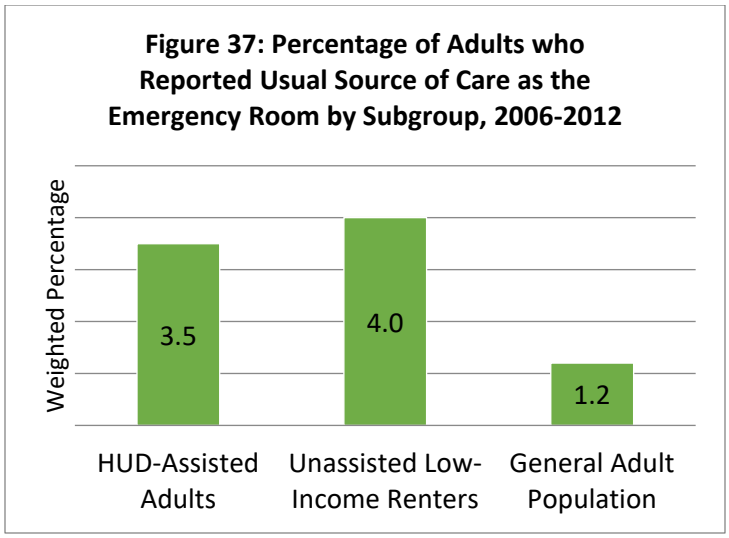
SOURCE: Authors' tabulations of NHIS-HUD Linked Data

A significant share of health centers represented in this indicator may be federally qualified health centers that specifically serve low-income populations. To the extent that such health centers are located close to HUD-assisted properties, HUD tenants may find such centers an appealing and accessible source of health services.[38]

Usual Source of Care Reported as the Emergency Room

Although the ER isn't generally considered to be a usual source of care by public health researchers, some survey participants identified the ER as their usual source of care. A small percentage of HUD-assisted adults (3.5 percent) reported the ER as their usual source of care (figure 37). This percentage is about the same as the 4.0 percent among unassisted low-income renters and exceeds the 1.2 percent rate among the general adult population. It is possible that the health insurance coverage rates reported in figure 27 influence reliance on ERs, as 17.3 percent of HUD-assisted adults and 32.4 percent of unassisted, low-income renters reported no health insurance.

[38] Public Housing Primary Care Health Centers funded by the U.S. Health Resources and Services Administration served about 220,000 public housing residents in 2012—approximately one-fifth of public housing households. See http://bphc.hrsa.gov/qualityimprovement/strategicpartnerships/specialpopulations/index.html.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Summary of Healthcare Utilization and Access

Overall, HUD-assisted renters reported better rates of access and utilization than did unassisted low-income renters on several of the indicators reported previously. A relatively small proportion of HUD tenants reported lacking a usual source of care; sizable proportions of them reported access to doctors, HMOs, and health clinics. Nevertheless, HUD tenants and unassisted low-income renters reported similarly high rates of unmet healthcare needs due to cost. Differences between the two groups may be related to location or to better health insurance coverage—including public health insurance coverage—among HUD populations. Age-associated chronic health problems in the HUD-assisted population may also drive higher healthcare utilization. Supporting evidence that needs are greater for HUD-assisted adults may lie in the greater prevalence of home healthcare visits, specialist visits, and mental healthcare visits; such utilization potentially points to a subset of HUD tenants with special needs.

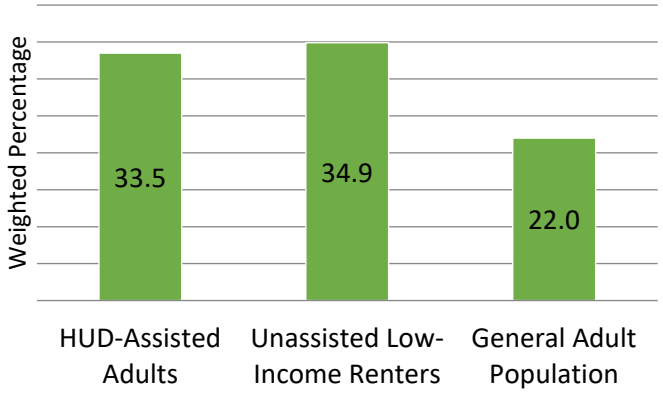
Health Behaviors

Individual-level health behaviors were examined among HUD-assisted adults and two relevant adult groups to provide context. Table A-6, "Health Behaviors of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status," contains weighted percentages and standard error estimates for each of the three groups examined.

Cigarette Smoking

Current cigarette smokers were defined as adults (age 18 and over) who ever smoked 100 cigarettes in their entire life and answered "every day" or "some days" to the question: *Do you now smoke cigarettes every day, some days or not at all?* NHIS sample adults were asked a series of questions about cigarette smoking, including behaviors and consumption. Among HUD-assisted adults, one-third (33.5 percent) were current cigarette smokers at the time of their health interview (figure 38). The rate of cigarette smoking among unassisted low-income renters was similar to HUD-assisted adults, at 34.9 percent. Among the general adult population, 22.0 percent were current cigarette smokers at the time of the health interview. Assisted housing programs represent a key platform for initiatives to reduce exposure to secondhand smoke and encourage cessation, such as the recent Smoke-free Public Housing rule,[39] which has the potential to reduce secondhand smoke exposure and positively impact the lives of millions of assisted individuals and the PHA workforce.

Figure 38: Prevalence of Cigarette Smoking by Adult Subgroup, 2006-2012

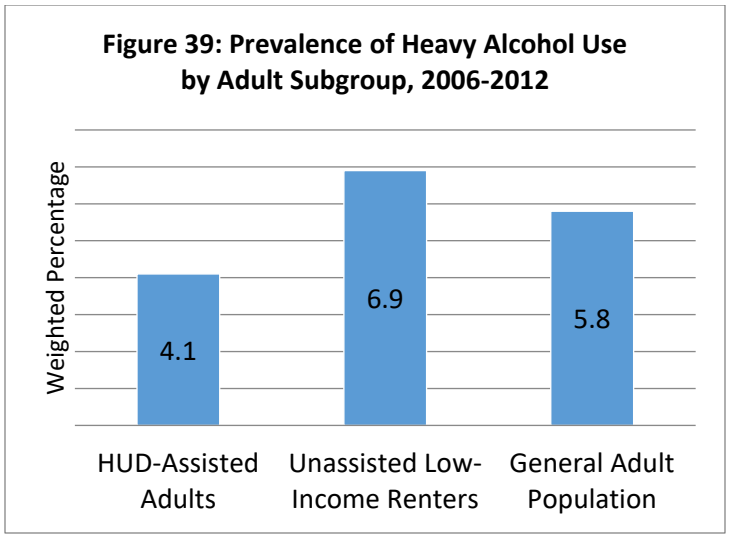


SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Heavy Alcohol Use

NHIS sample adults were asked a series of questions about alcohol usage. Male adults who reported drinking 12 or more drinks during their lifetime and more than 14 drinks a week (average estimated consumption) during the past year were considered to have heavy alcohol use. Female adults who reported drinking 12 or more drinks during their lifetime and more than 7 drinks a week (average estimated consumption) during the past year were considered to have heavy alcohol use. Among the three groups, HUD-assisted adults reported the lowest prevalence (4.1 percent) of heavy alcohol use (figure 39). Approximately 6.9 percent of unassisted low-income renters and 5.8 percent of the general adult population reported heavy alcohol use.

[39] For more about the Smoke-free Public Housing rule, refer to FR 5597-P-02. Instituting Smoke-Free Public Housing. Available at https://www.regulations.gov/document?D=HUD-2015-0101-0001.



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

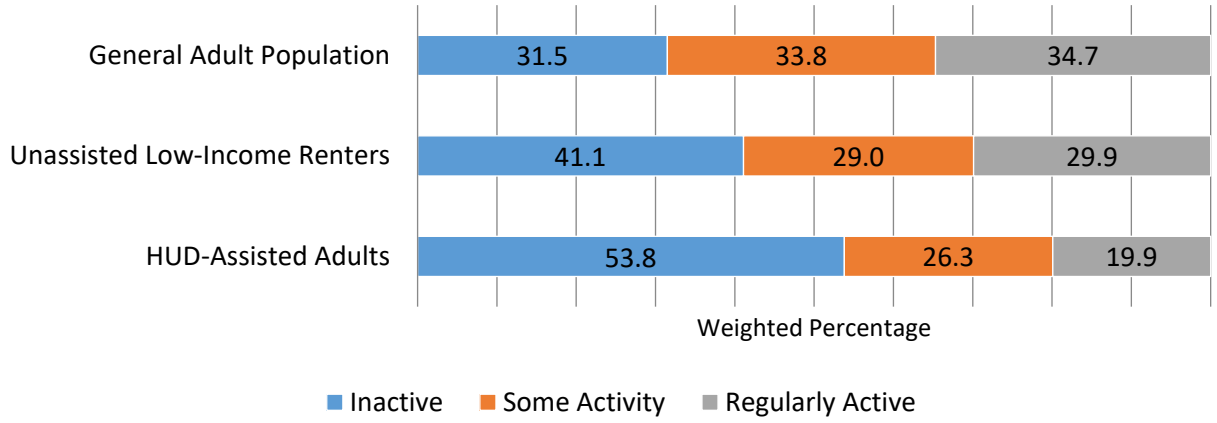
Physical Activity

NCHS provides guidance for researchers to use NHIS data to construct physical activity indicators consistent with those used to track progress toward national health objectives.[40] NHIS questions sample adults about usual light-moderate and usual vigorous leisure-time physical activity to determine into which of three categories of physical activity they fall: regularly active, some activity (less than regular), and inactive. Regularly active adults reported at least 20 minutes of vigorous activity three or more times a week or at least 30 minutes of light-moderate activity five or more times a week. Adults were considered to have some activity if they engaged in some sort of rigorous or light-moderate activity but their activity did not meet the criteria for regular activity. Inactive adults are those who reported never engaging in any vigorous or light-moderate activity or who volunteered that they were unable to engage in such activities.

Among HUD-assisted adults, 19.9 percent reported regular activity and 53.8 percent reported that they had no physical activity or were inactive (figure 40). Among all three adult groups, HUD-assisted adults reported the highest rates of inactivity. Approximately 41.1 percent of unassisted low-income renters and 31.5 percent of the general adult population were physically inactive at the time of their health interview. Given the high rates of obesity among HUD-assisted adults presented in figure 12, preliminary findings suggest that HUD-assisted adults could benefit from targeted physical activity promotion programs.

[40] For more information about activity recodes, visit http://www.cdc.gov/nchs/nhis/physical_activity/pa_recodes.htm.

Figure 40: Distribution of Physical Activity by Adult Subgroup, 2006-2012



SOURCE: Authors' tabulations of NHIS-HUD Linked Data

Summary of Health Behaviors

Of the three health behaviors summarized here, the least healthy behaviors for two indicators, cigarette smoking and heavy drinking, were reported by the unassisted low-income renters. HUD-assisted renters reported the lowest level of physical activity but reported less heavy alcohol use than adults in the other two groups. Differences in age and disabilities between the groups could explain some of the physical activity disparity. Differences in income, age, and gender, among other variables, may influence consumption of tobacco and alcohol. Such factors deserve further examination to better understand the relationships and potential interactions between these variables and behaviors.

Conclusion

This descriptive summary of the linked 2006-to-2012 NCHS-HUD data presents the first nationally representative estimates of health outcomes and healthcare access and utilization for HUD-assisted adult renters. We view this report as a first step in sharing an important NCHS-HUD linked data resource with a broad audience and in supporting and stimulating followup research with these data through the NCHS Research Data Center.

Our presentation of HUD-assisted adults in comparison with unassisted low-income renters and a general adult population shows that these groups differ in significant ways on several demographic and health indicators. HUD-assisted renters have greater health needs on a number of dimensions, but they also display some advantages over unassisted low-income populations. Such conclusions, however, must be viewed as exploratory and preliminary. The primary objective has been to present an initial broad array of estimates representing each group.

The United States makes substantial public investments in both housing and health care every year. Using these newly linked data to better align housing and health policy has the potential to improve the cost effectiveness and outcomes of public investments. Targeted interventions to address specific health needs, or better coordination of existing health services with assisted housing populations, can yield great benefits and improve the nation's public health.

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Appendix

Table A-1: Demographic and Socioeconomic Characteristics of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status (Weighted NHIS-HUD Linked Data, 2006–2012)

Table A-2: General Health Status of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status (Weighted NHIS-HUD Linked Data, 2006–2012)

Table A-3: Health Conditions and Diagnoses of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status (Weighted NHIS-HUD Linked Data, 2006–2012)

Table A-4: Mental Health Measures and Productivity Lost Due to Illness or Injury of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status (Weighted NHIS-HUD Linked Data, 2006–2012)

Table A-5: Health Access and Health Care Utilization of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status (Weighted NHIS-HUD Linked Data, 2006–2012)

Table A-6: Health Behaviors of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status (Weighted NHIS-HUD Linked Data, 2006–2012)

Table A-1: Demographic and Socioeconomic Characteristics of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status (Weighted NHIS-HUD Linked Data, 2006–2012)

	HUD-Assisted Adults (n = 5,222)		Unassisted Low-Income Renters (n = 9,051)		General Population (n = 108,457)	
Characteristic	n	% (SE)	n	% (SE)	n	% (SE)
Age at interview (years)						
18–24	629	16.2 (0.97)	2,825	34.6 (1.41)	11,246	13.2 (0.24)
25–44	1,751	34.5 (1.13)	3,361	37.9 (1.00)	37,867	35.4 (0.24)
45–61	1,339	25.1 (0.85)	1,873	19.0 (0.69)	32,131	30.4 (0.22)
62+	1,503	24.2 (1.42)	992	8.5 (0.45)	27,213	20.9 (0.24)
Elderly in household (Age 65+)						
No elderly	3,900	77.3 (1.37)	8,213	91.9 (0.46)	82,478	77.8 (0.23)
Elderly	1,322	22.7 (1.37)	837	8.1 (0.46)	25,979	22.2 (0.23)
Sex						
Male	1,203	26.2 (1.00)	3,597	43.8 (0.71)	48,804	48.3 (0.21)
Female	4,019	73.8 (1.00)	5,454	56.2 (0.71)	59,653	51.7 (0.21)
Family type						
One adult, no child(ren) under 18	2,493	38.1 (1.43)	4,439	38.1 (1.39)	36,018	19.5 (0.29)
Multiple adults, no child(ren) under 18	496	15.5 (0.73)	1,017	16.9 (0.66)	37,105	43.7 (0.25)
One adult, 1+ child(ren) under 18	1,623	24.9 (1.03)	1,614	11.8 (0.44)	7,895	3.9 (0.07)
Multiple adults, 1+ child(ren) under 18	610	21.5 (0.99)	1,981	33.2 (1.04)	27,439	32.9 (0.28)
Marital status						
Married	469	14.9 (0.90)	1,509	23.6 (0.82)	47,170	53.6 (0.34)
Widowed, divorced, or separated	2,342	38.6 (1.12)	2,477	21.1 (0.71)	29,480	18.0 (0.17)
Never married	2,272	42.4 (1.17)	4,339	43.6 (1.28)	25,141	21.1 (0.26)
Living with partner	135	4.1 (0.46)	718	11.7 (0.49)	6,570	7.4 (0.13)
Poverty threshold						
< 100% federal poverty threshold	3,494	65.1 (1.03)			18,321	13.1 (0.24)
100–200% federal poverty threshold	1,390	27.7 (0.90)			22,344	19.0 (0.22)
200+ federal poverty threshold	338	7.2 (0.59)			67,792	67.9 (0.37)

	HUD-Assisted Adults (n = 5,222)		Unassisted Low-Income Renters (n = 9,051)		General Population (n = 108,457)	
Race/ethnicity						
Hispanic	965	19.0 (1.23)	1,914	21.2 (0.77)	14,674	13.8 (0.28)
White non-Hispanic	1,752	38.3 (1.78)	4,112	49.9 (1.15)	70,202	68.8 (0.40)
Black non-Hispanic	2,288	38.7 (1.68)	2,328	21.9 (0.83)	17,261	11.8 (0.29)
Other non-Hispanic	217	4.0 (0.67)	697	7.1 (0.41)	6,320	5.6 (0.17)
Region						
Northeast	1,218	23.4 (1.81)	1,324	15.1 (0.82)	16,257	15.6 (0.37)
Midwest	1,380	27.9 (2.25)	2,180	25.0 (1.43)	27,082	26.0 (0.52)
South	1,758	32.4 (1.93)	3,518	39.1 (1.31)	40,683	37.3 (0.54)
West	866	16.2 (1.63)	2,029	20.8 (1.06)	24,435	21.0 (0.43)
Metropolitan Classification						
Large central metro	2,006	36.0 (1.89)	3,267	33.5 (1.25)	30,115	26.0 (0.44)
Large fringe metro	686	14.7 (1.72)	1,156	13.6 (0.88)	22,113	22.9 (0.69)
Medium metro	1,164	22.0 (1.90)	1,983	22.3 (1.62)	23,552	22.2 (1.03)
Small metro	487	10.6 (2.17)	1,055	12.4 (1.51)	11,701	11.1 (1.02)
Micropolitan	555	11.4 (1.93)	968	11.5 (1.21)	11,995	10.5 (0.96)
Noncore	324	5.4 (1.23)	621	6.5 (0.92)	8,981	7.3 (0.88)
Work status						
Worked in past 12 months	1,898	38.6 (1.11)	5,136	58.9 (0.98)	72,167	70.0 (0.28)
Did not work in past 12 months	3,320	61.4 (1.11)	3,910	41.1 (0.98)	36,254	30.0 (0.28)
Educational attainment						
Did not complete high school	1,891	35.2 (0.98)	2,599	29.9 (0.99)	16,492	14.4 (0.23)
High school graduate or general educational development (GED)	1,623	32.1 (0.92)	2,454	28.4 (0.85)	28,724	27.3 (0.25)
Some college, no degree	1,016	19.9 (0.76)	2,395	26.1 (1.35)	22,814	21.1 (0.22)
Associate's degree or higher	434	8.1 (0.60)	637	6.6 (0.33)	11,743	10.7 (0.14)
Bachelor's degree or higher	248	4.7 (0.38)	928	9.0 (0.46)	28,408	26.4 (0.33)
Homeless or incarceration (Only 2006–2010)						
Never homeless or incarcerated	1,968	84.5 (1.04)	4,269	80.3 (0.96)	57,776	93.5 (0.14)
Ever homeless or incarcerated	338	15.5 (1.04)	1,017	19.7 (0.96)	4,166	6.5 (0.14)

HUD = U.S. Department of Housing and Urban Development. NHIS = National Health Interview Survey. SE = standard error.
Note: Due to rounding, not all reported percentages precisely equal 100.0 percent.

Table A-2: General Health Status of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status (Weighted NHIS-HUD Linked Data, 2006–2012)

	HUD-Assisted Adults (n = 5,222)		Unassisted Low-Income Renters (n = 9,051)		General Population (n= 108,457)	
Characteristic	n	% (SE)	n	% (SE)	n	% (SE)
Self-reported health						
Excellent/very good	1,577	31.2 (0.99)	4,243	48.2 (1.09)	61,679	59.6 (0.26)
Good	1,714	33.0 (0.88)	2,519	27.7 (0.72)	29,664	26.6 (0.19)
Fair/poor	1,929	35.8 (0.93)	2,284	24.1 (0.79)	17,078	13.8 (0.17)
Emergency room (ER) visits, past 12 months						
None	2,985	57.2 (0.91)	5,884	64.9 (0.71)	82,920	77.3 (0.20)
One	1,042	19.9 (0.70)	1,542	17.3 (0.51)	15,544	14.1 (0.14)
Two or more	1,191	22.9 (0.75)	1,619	17.8 (0.56)	9,938	8.6 (0.13)
Self-reported weight classification (BMI)						
Underweight (< 18.5)	113	2.5 (0.35)	224	2.6 (0.22)	1,837	1.7 (0.05)
Healthy weight (18.5–24.9)	1,341	26.7 (0.76)	3,396	38.0 (0.89)	35,872	34.0 (0.23)
Overweight (25.0–29.9)	1,536	29.7 (0.81)	2,542	28.5 (0.66)	36,489	34.2 (0.18)
Obese I (30.0–34.9)	1,049	21.1 (0.75)	1,448	16.6 (0.57)	19,129	18.0 (0.17)
Obese II (35.0–39.9)	545	10.0 (0.57)	708	7.8 (0.38)	7,977	7.3 (0.11)
Obese III (40.0+)	527	9.9 (0.53)	569	6.5 (0.40)	5,424	4.9 (0.09)
Disability measures						
Basic actions difficulty	3,001	56.5 (1.08)	3,657	39.3 (0.90)	38,135	33.2 (0.26)
Complex activity limitations	2,435	44.7 (1.23)	2,544	26.5 (0.83)	20,885	16.9 (0.19)
Any disability	3,242	61.0 (1.12)	3,969	42.8 (0.97)	40,611	35.4 (0.27)

HUD = U.S. Department of Housing and Urban Development. NHIS = National Health Interview Survey. SE = standard error.

Table A-3: Health Conditions and Diagnoses of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status (Weighted NHIS-HUD Linked Data, 2006–2012)

	HUD-Assisted Adults (n= 5,222)		Unassisted Low-Income Renters (n = 9,051)		General Population (n = 108,457)	
Characteristic	n	% (SE)	n	% (SE)	n	% (SE)
Specific conditions and diagnoses						
Hypertension	2,146	37.9 (1.09)	2,136	21.4 (0.72)	31,863	26.5 (0.23)
Heart disease, ever	1,059	19.8 (0.87)	1,084	11.2 (0.47)	15,142	12.8 (0.14)
Stroke, ever	387	6.6 (0.46)	388	3.7 (0.26)	3,867	3.0 (0.06)
Ever diagnosed with Cancer, any type	512	9.2 (0.58)	463	4.7 (0.29)	10,072	8.5 (0.11)
Liver condition	178	3.6 (0.33)	278	2.9 (0.23)	1,946	1.6 (0.05)
Kidney condition	243	4.5 (0.38)	262	2.6 (0.20)	2,434	1.9 (0.05)
Diabetes, ever	979	17.6 (0.74)	872	8.8 (0.45)	11,331	9.5 (0.13)
Chronic obstructive pulmonary disease (COPD)	663	13.1 (0.63)	761	8.4 (0.46)	7,063	6.1 (0.11)
Current asthma	833	16.3 (0.70)	1,208	13.5 (0.50)	9,769	8.7 (0.11)
Total tooth loss	985	17.5 (0.81)	879	8.6 (0.41)	10,356	8.3 (0.14)

HUD = U.S. Department of Housing and Urban Development. NHIS = National Health Interview Survey. SE = standard error.

Table A-4: Mental Health Measures and Productivity Lost Due to Illness or Injury of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status (Weighted NHIS-HUD Linked Data, 2006–2012)

	HUD-Assisted Adults (n = 5,222)		Unassisted Low-Income Renters (n = 9,051)		General Population (n = 108,457)	
Characteristic	n	% (SE)	n	% (SE)	n	% (SE)
Mental health measures						
Serious psychological distress	573	11.6 (0.66)	802	8.7 (0.47)	4,458	3.7 (0.09)
Distress with mental hardship	2,047	39.3 (0.95)	3,253	35.4 (0.76)	24,285	21.4 (0.20)
Productivity lost due to illness or injury						
10 or more bed days, past 12 months	684	14.5 (0.73)	935	10.3 (0.47)	7,229	6.2 (0.09)
10 or more lost work days, past 12 months	134	7.5 (0.73)	320	6.5 (0.49)	4,544	6.1 (0.10)

HUD = U.S. Department of Housing and Urban Development. NHIS = National Health Interview Survey. SE = standard error.

Table A-5: Health Access and Healthcare Utilization of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status (Weighted NHIS-HUD Linked Data, 2006–2012)

	HUD-Assisted Adults (n = 5,222)		Unassisted Low-Income Renters (n = 9,051)		General Population (n = 108,457)	
Characteristic	n	% (SE)	n	% (SE)	n	% (SE)
Health insurance coverage						
Public	4,023	74.6 (0.93)	4,241	44.5 (1.08)	37,836	29.5 (0.28)
Private	385	8.1 (0.54)	2,098	23.1 (1.39)	52,635	53.5 (0.34)
None	805	17.3 (0.79)	2,671	32.4 (0.92)	17,767	17.0 (0.19)
Utilization, past 12 months						
Seen general doctor or medical professional	3,834	71.9 (1.03)	5,420	57.9 (0.65)	75,077	68.5 (0.21)
Seen specialist	1,554	29.6 (0.91)	1,915	20.4 (0.56)	31,354	28.4 (0.20)
Seen mental health professional	966	18.9 (0.85)	1,358	14.3 (0.54)	10,065	8.7 (0.12)
Seen dentist	2,229	44.1 (0.94)	3,891	42.7 (1.03)	63,367	59.9 (0.29)
Received home health care	461	7.6 (0.49)	379	3.5 (0.25)	3,263	2.5 (0.06)
Access						
Unmet need	1,778	34.4 (1.08)	3,351	37.5 (0.88)	24,153	21.5 (0.22)
Usual source of care						
No usual source of care	547	11.5 (0.76)	2,314	27.4 (0.72)	16,470	15.7 (0.22)
Doctor's office or Health Maintenance Organization (HMO)	2,643	51.0 (1.35)	3,447	38.0 (0.77)	66,296	62.9 (0.35)
Clinic or health center	1,625	30.1 (1.35)	2,485	26.0 (0.71)	20,883	17.3 (0.29)
Emergency room (ER)	185	3.5 (0.31)	345	4.0 (0.28)	1,468	1.2 (0.04)
Other	220	3.8 (0.38)	457	4.6 (0.27)	3,317	2.8 (0.07)

HUD = U.S. Department of Housing and Urban Development. NHIS = National Health Interview Survey. SE = standard error.

Table A-6: Health Behaviors of Linkage-Eligible U.S. Adults, by HUD Assistance, Tenure, and Low-Income Status (Weighted NHIS-HUD Linked Data, 2006–2012)

	HUD-Assisted Adults (n = 5,222)		Unassisted Low-Income Renters (n = 9,051)		General Population (n = 108,457)	
Characteristic	n	% (SE)	n	% (SE)	n	% (SE)
Cigarette smoking						
Nonsmoker	3,531	66.5 (1.23)	6,031	65.1 (0.94)	84,543	78.0 (0.23)
Smoker	1,689	33.5 (1.23)	3,010	34.9 (0.94)	23,828	22.0 (0.23)
Heavy alcohol use						
No heavy alcohol use	5,017	95.9 (0.38)	8,442	93.1 (0.43)	102,182	94.2 (0.10)
Heavy alcohol use	205	4.1 (0.38)	609	6.9 (0.43)	6,275	5.8 (0.10)
Physical activity						
Inactive	2,775	53.8 (1.01)	3,648	41.1 (1.11)	35,285	31.5 (0.37)
Some activity	1,369	26.3 (0.78)	2,590	29.0 (0.65)	35,296	33.8 (0.23)
Regularly active	996	19.9 (0.86)	2,706	29.9 (0.94)	36,466	34.7 (0.27)

HUD = U.S. Department of Housing and Urban Development. NHIS = National Health Interview Survey. SE = standard error.