The Effects of Land-Use Regulation on the Price of Housing: What Do We Know? What Can We Learn?

John M. Quigley
quigley@econ.berkeley.edu

Larry A. Rosenthal
lar@berkeley.edu

Program on Housing and Urban Policy
University of California, Berkeley
Berkeley, CA 94720-6105

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For discussion and criticism only. Comments welcome.

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Executive Summary

Effective governance of residential development and housing markets poses difficult challenges for land regulators. In theory, excessive land restrictions limit the buildable supply, tilting construction toward lower densities and larger, more expensive homes. Often, local prerogative and regional need conflict, and optimal policymaking must adjust tradeoffs carefully. When higher-income incumbents control the political processes by which local planning and zoning decisions are made, regions can become less affordable as prices increase. Housing-assistance programs meant to benefit lower-income households could be frustrated by limits on density and other restrictions on the number and size of new units.

The empirical literature on regulatory effects on price varies widely in quality of research method and strength of result. A number of credible papers seem to bear out theoretical expectations. When local regulators effectively withdraw land from buildable supplies—whether under the rubric of "zoning," "growth management," or other regulation—the land factor and the finished product can become pricier. Caps on development, restrictive zoning limits on allowable densities, urban growth boundaries, and long permit-processing delays have all been associated with increased housing prices. However, the literature fails to establish a strong, direct causal effect, if only because variations in both observed regulation and methodological precision frustrate sweeping generalizations. A substantial number of land-use and growth-control studies actually show little or no effect on price, implying that, sometimes, local regulation is symbolic, ineffectual, or only weakly enforced.

The literature as a whole also fails to address key empirical challenges. First, most studies ignore the *endogeneity* of regulation and price (e.g., a statistical association may show regulatory effect, or it may just show that wealthier, more expensive communities have stronger tastes for such regulation). Second, research tends not to recognize the complexity of local policymaking and regulatory behavior. For example, enactments *promoting* growth and development, often present in the same jurisdictions where zoning restrictions are observed, are rarely measured or analyzed. Third, regulatory surveys are administered sparsely and infrequently. Current studies are often forced to rely upon outdated land-use proxies and static observations of housing price movements. Fourth, few studies use price indicators honoring best methodological practice, which questions the veracity of simple means and medians, opting instead for repeat-sales techniques.

An agenda for future research in this area should address these shortcomings and generate replicable findings relevant for policy reform efforts. Ideally, a national regulatory census would measure, at regular intervals, municipal enactments and implementation patterns. The most demanding aspect of this task is the development of standard regulatory indices facilitating comparison at the municipal level and allowing for aggregation to the metropolitan and state

levels. Over time, this survey should help describe changes in both antecedent law and resulting land-policy behavior, so that time-series encompassing both regulation and price can be compiled. It is possible that existing building-permit surveys can be adapted to help facilitate this effort. Regular reporting from developers and builders regarding their experience of local regulatory processes should then complement the census of law and behavior. An additional source of information would be a regularly refreshed national land-use survey, mapping in some detail the ever-changing patterns of residential and other development in metropolitan areas.

Early efforts to improve and expand research should be focused mostly on the deliberate, painstaking development of better, more current data. Once this is accomplished, the existing community of land-use and economics scholars will develop methods providing more reliable tests of refutable hypotheses in this area.

Introduction

Measuring the effect of local land-use regulation on housing prices is a formidable empirical challenge. Land-use rules are intended to reduce local externalities, providing local amenities that make communities more attractive and housing prices higher. However, restrictive zoning and growth controls also tend to slow expansion and reduce net densities of the housing stock. We would expect such supply constraints to increase home prices. Distinguishing between these impacts is difficult empirically. Local homeowners seeking to maximize home values and minimize tax burdens typically control the politics underlying land-use enactments. In addition, many localities combine restrictions on new development with a range of economic incentives meant to spur it along. Measuring the economic constraints imposed by actual regulatory behavior and decisionmaking, as opposed to merely observing formal rules as adopted, is a difficult empirical problem, and comparisons across metropolitan areas are frustrated by the sheer variety of local practice.

This paper offers some background on land-use regulatory practices, particularly in terms of their history and legal basis. A review of these practices leads to a taxonomy describing the incidence and effects of land regulation in housing markets. The review of empirical literature provides a detailed framework for evaluating and understanding what is known about effects and magnitudes. In the conclusion, we recommend fruitful areas of inquiry to reduce our uncertainty about the importance of land-use regulation in the housing market.

Historical Background[1]

While casual observers presume that local land-use authority arises from the police powers of cities and towns, in the American system local control is, in fact, entirely derivative. Under the traditional "Dillon's Rule," municipalities have no more power over their land than their state governments have delegated them (see Briffault (1990); Frug (1980)).

Prior to the 1920s, experimentation with planning and zoning in U.S. cities and towns was sparse, and it arose primarily as a consequence of the desires of large-tract residential developers to eliminate industrial and commercial activities in their path. With the common law "coming to the nuisance" defense to such property-tort claims still intact, developers turned to city councils for relief in the form of authorizing ordinances clearing the way. One such measure adopted in Los Angeles outlawed the operation of a brick kiln in place long before any of the nearby residences were built. The ordinance was upheld in the face of constitutional challenges in the U.S. Supreme Court's decision in *Hadacheck v. Sebastian.*[2] Answering the kiln owner's claims of wrongful confiscation of his business, the court remarked, "There must be progress and if in its march private interests are in the way they must yield to the good of the community."

A watershed moment in the history of city zoning was New York City's 1916 adoption of its trendsetting comprehensive ordinance. With numerous older cities facing drastic changes in land use and neighborhood character as a result of rapid industrialization, the U.S. Department of Commerce adopted and circulated in 1922 its Standard State Zoning Enabling Act, which within three years had spawned hundreds of conforming city zoning ordinances around the country. Key constitutional challenges brought by developers argued that the value of their investments had been so damaged by the regulation as to constitute an uncompensated taking in violation of the Fifth Amendment, or perhaps a violation of substantive due process in contravention of the Fourteenth Amendment. These arguments were cursorily set aside in the lower courts, particularly after the zoning ordinance in the Cleveland-area suburb of Euclid, Ohio, was upheld in the high court's landmark 1926 decision in *Village of Euclid v. Ambler Realty Co.*[3]

The *Euclid* case signaled the general legal validity of zoning ordinances aimed at segregating various land uses in a town plan. More specifically in terms of housing markets, so-called "Euclidean" zoning thereafter could permissibly separate single-family and duplex developments from multi-family apartment buildings. The court endorsed the view that apartments legally stood as commercial operations having lesser land-use standing than detached homes. The landowner's claim to lost property value in *Euclid* turned largely upon a desire to build higher density residential structures, hoping to collect commensurately higher per-acre returns. The high court practically equated such development with noxious industrial activities having deleterious effects on single-family neighborhoods:

> [A]partment houses [have] sometimes resulted in destroying the entire section for private house purposes …. [T]he apartment house is a mere parasite, constructed in order to take advantage of the open spaces and attractive surroundings created by the residential character of the district. [The court then enumerated numerous evils accompanying multi-family development, such as noise, traffic, loss of open space, and loss of safety for children.] Under these circumstances, apartment houses, which in a different environment would be not only entirely unobjectionable but also highly desirable, come very near to being nuisances.

The court's blessing of local zoning prerogative in *Euclid* led to expansive exercise of such authority, in ways plainly biased toward protecting single-family home values.

Zoning and planning practice evolved into widely recognized professional disciplines as the American suburb came of age in the post-war period. Where developers and buyers would have reached identical arrangements of well-segregated uses, such ordinances were simply legal formalities rather than binding constraints. But as the inner cities deteriorated and federal urban renewal policy foundered, suburban arrivistes grew increasingly defensive of their property values. In the fragmented metropolis, the capture of a sustainable property tax base came to be viewed as a zero-sum game, and large-lot zoning became a tool for smaller governments to exclude low-income residents.

Lawyers and policy reformers during the civil rights era deemed such practices as "exclusionary zoning." Local land-use practice was criticized for exacerbating segregation, not simply by consistency of land-use and housing stock characteristics, but in more blatant ways by income and even racial characteristics (Danielson (1976)). Additionally, with adjacent towns essentially colluding in their land-use policies to keep property values high, regions recognized the implicit tradeoff between, on the one hand, parochial development control via strict zoning, and, on the other hand, the resulting decline in overall housing production as vacant urban land supplies dwindled. A number of states experimented with land-use reform, most notably in judicial form in the famous *Mount Laurel* exclusionary zoning cases in New Jersey.[4]

By the time suburbanization slowed substantially in the 1970s, land-use practice turned to address a slightly different malady, that of the town which perceived new housing and population growth of any kind to be a threat to quality of life and household property value. "Growth control" regulation—which introduced such land-use measures as numerical permit caps and outright moratoria on new residential construction—are largely a creature of sprawl in metropolitan areas in the West, where substantial open space still remained along corridors within tolerable commute distances of job centers (Lewis (2000); Landis (1992)). One early cap on building permits was enacted by the exurban Bay Area town of Petaluma, California. Environmental advocates for "smart growth," compact development, and "infill" reuse of parcels in central cities sponsored the adoption of "urban growth boundaries" such as that mapped around metropolitan Portland, Oregon, in the late 1970s. Modern land-use regulation of the type that might conceivably affect housing prices comprises both traditional zoning and more recently developed devices grouped under the aegis of growth control.

Taxonomies of Land-Use Regulation

The sheer variety of local land-use enactments makes it difficult to disentangle the link between regulation and its economic effects. Such measures can be grouped into five rough categories proposed by Deakin (1989):

-- Limits and geographic preferences on the density and intensity of development
-- Design and performance standards for lots and buildings
-- Cost shifting from the locality to the developer

-- Withdrawal of land from developable supplies
-- Direct and indirect controls on growth, applied against buildings and population

Downs (1991) lists several kinds of regulation (e.g., land-use restrictions, building codes, environmental protection, and process requirements) that add delay and cost to housing production, thereby reducing the affordability of housing. Downs classifies three separate kinds of cost-increasing effects: (1) direct restrictions on the supply of housing units and land usable for housing purposes; (2) direct cost increases; and (3) delay. Reducing the supply of affordable housing also removes price competition, which might lower the price of existing housing.

Table 1 lists a more detailed taxonomy of observed land-use regulations. Its categories are derived from a 1992 planning survey of municipal development authorities in California (see Levine (1999)). Presumably, empirical models relating land-use regulation to house prices would recognize this dimensionality. But this level of comprehensiveness is ordinarily infeasible in practice. In synthesizing prior work, we seek to identify the measures of regulation actually used in a variety of credible studies and to suggest the strengths and limitations of the body of professional literature.

As a way of categorizing types of regional growth strategies, Nelson (2000a) introduces a category of land-use regulation he calls "urban containment." Such policies are borne of desires to make development more compact and to preserve agriculturally and environmentally rich sources of open-space beyond exurban areas.[5] Nelson distinguishes among various containment systems: (1) "closed regions," outside of which development is substantially curtailed and within which it is encouraged; (2) "open regions" not proscribing development beyond them; and (3) "isolated" containment lacking within-boundary incentives and leading to displaced construction beyond the metropolitan region (Nelson (2000b); see also Downs (2002)). A recent survey of "containment" by Nelson and colleagues (Nelson, Dawkins, and Sanchez (2003)) analyzed a variety of regulations to ascertain:

-- If any "boundary" had been established
-- If all urban areas within the boundary were surrounded
-- How frequently land gets added to the circumscribed area
-- If techniques, if any, are used to prevent development outside the boundary

    -- Large-lot zoning (>10 acre minimum)
    -- Farm, forest, or open-space exclusive use
    -- Development right purchase/transfer
    -- Land banking
    -- Land suitability evaluation systems
    -- Others

The "urban containment" approach isolates land-use regulation within an identified region context at the expense of mapping intra-metropolitan variation in any great detail.

Table 1. Land-use regulatory categories

Residential Development	Building Permit Cap Population Cap Floor Area Ratio Limit Downzoning to Open Space/Agricultural Use Reduction in Permitted Residential Density Referendum for Density Increase Super-Majority in Legislative Body for Density Increase
Commercial/Industrial Development	Square Footage Cap (Commercial) Square Footage Cap (Industrial) Rezoning to Lower Intensity Height Reduction
Land Planning	Growth Management Element Moratoria Urban Growth Boundary Tiered Development Subdivision Cap Other Growth Control
Adequate Public Facilities (APF) Requirements	Roads Highways Mass Transit Parking Water Supply Water Distribution Water Purification Sewer Collection Sewer Treatment Flood Control Other APF Measures
Service Capacity Restrictions	Roads Water Supply Water Distribution Wastewater Collection/Treatment Capacity Wastewater Treatment Quality Flood Control
Development Impact Fee Coverage	Administration Traffic Mitigation Mass Transit Parking Water: Service Treatment Sewer Flood Control Parks/Open Space Natural Resources Schools Libraries and Arts Other Development Fees

Glickfeld and Levine's monograph (1992) reports the results of an exhaustive study of 907 growth control measures in 443 California jurisdictions, including 14 specific measures affecting pace, intensity, infrastructure quality, and spatial extent of new residential, commercial, and industrial development. These were population growth caps, housing permit caps, adequate public facilities ordinances (APFOs), residential downzoning, required voter approval for upzoning, required council supermajority for upzoning, commercial square footage limits, industrial square footage limits, commercial/industrial infrastructure limitations, commercial/industrial downzoning, commercial height restrictions, growth management elements of general plans, and urban growth boundaries (UGBs) or greenbelts. Three things explain the boom in growth control: (1) sheer population growth; (2) changing patterns of growth toward edge cities; and (3) the popular identification of growth as the cause for traffic, congestion, and declines in quality of life.

Differences in the average number of restrictive measures were associated with jurisdiction size. Jurisdictions lacking such measures tend to have a smaller population, lesser education, are only slightly poorer, and exhibit no real ethnic difference. The authors tested prevailing assumptions about means of adoption, and found that enactment of growth control via popular vote (so-called "ballot box planning") was far less prevalent than believed. Glickfeld and Levine found little association between growth control and actual local growth, leading to the possibility that adoption is largely symbolic or rhetorical. Actual development permits show some correlation with growth control, but this is an artifact of population size. Factor analysis of adoption patterns showed six rather distinct patterns:

-- Population control (permit and growth caps, UGBs)
-- Floor space control (commercial and industrial)
-- Infrastructure control (residential and commercial/industrial)
-- Zoning control (rezoning, downzoning)
-- Political control (voter approval, supermajority reqs.)
-- General control (growth elements and others)

Reasons stated for growth control fell into three categories: (1) rural land preservation; (2) urban population growth containment; and (3) urban infrastructure protection. Higher numbers of measures adopted actually corresponded with higher adoption of pro-housing programs, but this, too, was apparently a population size effect. For overall construction trends, the authors detected a strong quadratic relationship between a three-year lag of non-residential permit valuation and growth control adoption. The overall conclusion is that local growth control is a response to regional growth more than local social or fiscal conditions. Theories why growth control does not stem growth include:

-- Regulations are local, growth is regional
-- Regulation cannot compete with exogenous population pressures
-- Leakage occurs, so that nearby growth bleeds across jurisdictional boundaries

-- Political compromise leads to strong talk in ordinances and plans, but weak walk in enforcement, variances, and permits actually negotiated

Constructing a Framework

The traditional rationale for the regulation of land uses within urban areas is the promotion of economic efficiency through the control of external effects. Early litigation and judicial decisions describe these externalities in physical terms (e.g., smoke and vibration from a manufacturing operation interfering with basic enjoyment of residential property [*cf. Hadacheck*]). Numerous commercial activities, such as professional office practices in medical clinics and hospitals, are costlier if not adequately insulated from the disruptions caused by incompatible neighboring uses.

The economic prescription for limiting these external effects is the segregation of land uses—the partitioning of urban space so that these externalities are contained spatially. After all, the particulates from industrial smokestacks are inoffensive when placed in an area zoned for heavy industry, but may cause economic losses in an area zoned for laundries.

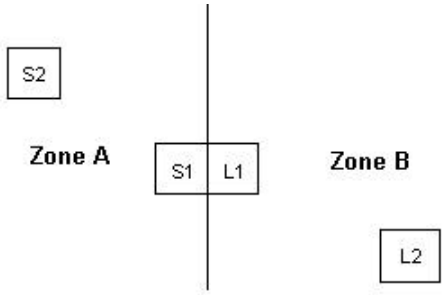

Figure 1. Neighboring Zones: Boundary and Interior Parcels

Figure 1, adapted from Bailey (1959), illustrates the effects of zoning regulations on the price of land put to different uses. In equilibrium, adjacent parcels of identical uses command equal prices, and this condition is not altered by drawing and administrative boundary between them. Adjacent parcels of land as inputs at S1 and L1 are priced identically due to their proximity to one another. If S parcels (with "smokestacks") provide a negative externality to L parcels (with "laundries"), then L parcels further from the boundary (e.g., L2) will be more valuable. As long as L parcels provide no externality to S parcels, the latter will be priced identically (e.g., S2=S1). For any pattern of externalities, it is easy to show that segregation of land uses maximizes land values and enhances efficiency.

Clearly, a large body of land-use regulation in urban areas is intended to enforce this efficiency principle. The location of industrial activity is heavily regulated and retail sites are allocated, at least in principle, recognizing the adverse consequence that might affect residences.

As land-use regulation has evolved, however, the fiscal externalities between land uses may have become more important than the physical externalities that originally motivated the introduction

of zoning. Suppose instead of laundries and smokestacks in Figure 1, S refers to high-income ("snob") housing, and L refers to low-income housing, located in adjacent bedroom communities (in this instance, treating zones on either side of that diagram's main boundary as separate towns), each lacking substantial nonresidential tax base. Suppose further that taxes on housing finance public expenditures enjoyed on an equal per-household basis. It is not hard to show under these conditions that the segregation of housing illustrated in Figure 1 is efficient (e.g., Hamilton (1976))[6]. Taxes paid by residents on parcel S1 in Town A are returned to them as public expenditures, as are the taxes paid by residents in parcel L1. Introducing a few units of L housing into Town A provides a negative externality to other residents of Town A and a positive externality to the residents of those units of L housing in Town A. (S households now pay more in taxes than they receive in public expenditures; L households are in the opposite circumstance.) Given sufficient coercive authority, land-use regulators in towns dedicated to S housing can price development licenses to require builders of new L units to pay for the cost of the fiscal externality those units impose on existing residents (see, e.g., Courant (1976); Cooley and Civita (1972)).

Absent zoning regulation or other forms of development licensing, this spatial pattern of residences is inherently unstable. Those consuming S housing will always wish to form an exclusive enclave, yet it will always be in the interests of those consuming L housing to locate in the midst of that higher-income enclave. Zoning, thus, is a mechanism that permits a stable equilibrium in residential patterns and can promote efficiency in the urban region. Zoning laws chosen to limit the ability of builders to produce L houses in S communities creates an artificial scarcity resulting in differences in the price of otherwise identical land as an input into L and S housing. If the price of land in L housing, thereby, is increased to reflect the capitalized value of the fiscal externality, the allocation is efficient. Households choose efficiently between L and S housing; all households pay for the public services they consume, and some residential integration between consumers of L and S housing is possible in equilibrium.[7]

These stylized models of land-use regulation are far removed from zoning in practice and do not reflect real-world political and distributional considerations. It may be impossible to separate fiscal externalities from physical or social ones; for example, if lower-income residents of L housing make a neighborhood of S housing less "desirable." It may be impossible to separate these latter externalities from simple prejudice against residents of L housing who may be members of minority groups or, perhaps, are just poor. It also may be infeasible or socially undesirable to distribute local public expenditures efficiently; for example, if local schools or health facilities redistribute local resources to lower-income households.

Finally, the political considerations of fiscal or social externalities may not lead planners to seek efficiency in resource allocation at all. If local governments can act as monopolists, then it will be in their interests to zone out less valuable houses or less desirable neighbors. Moreover, as a political matter, it will be expedient to characterize these actions as eliminating physical externalities. As inflation increases home prices and the cost of providing local public service, local demand for restrictive zoning controls also will increase (Thorson (1996); Cooley and

LaCivita (1982)). Fischel (1985) points out that even where monopoly power is associated with higher home prices, it is possible that other motivations (e.g., wealth and endowment effects, preferences for segregation, and locked-in effects) may drive demand for regulation.

Figures 2 and 3 illustrate externality zoning and monopoly zoning. As Figure 2 is drawn, the imposition of a restriction on land available for housing may increase social welfare when the incremental social cost per unit exceeds the private cost borne by the incremental resident. The imposition of a supply restriction, reducing available housing from Q_u to Q*, improves welfare by the amount of the shaded area. In contrast, Figure 3 illustrates the effects of zoning in the absence of these externalities. Restricting supply from Q* to Q_r reduces social welfare by the amount of the shaded area. Importantly, the exercise of monopoly power increases the housing prices paid by new residents from P* to P_r. With property tax finance, this enriches current residences at the expense of new residents.

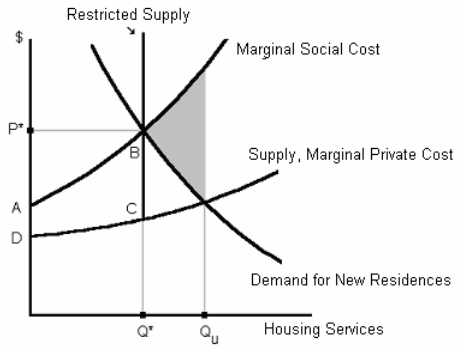

Figure 2. Zoning Causing Welfare Gain

Importantly, the most stringent forms of monopoly control in this setting arise if neighboring jurisdictions cannot undermine the supply restrictions imposed by the price-discriminating town. Monopoly control would be easiest to exercise if one regulatory body governed an entire housing market. If, instead, sets of fragmented localities are in perfect competition with one another, long-run metropolitan supply levels could remain relatively unaffected, depending upon the demographic composition of demand, among other factors. In the most competitive environment, standard house prices might remain essentially unchanged, and the total price of housing locations would differ primarily by the variable amenity packages produced in each place via land-use regulation and local spending on public goods (see Thorson (1996); Pollakowski and Wachter (1990)).

In the exercise of this kind of monopoly power over local development, town authorities may act as promoters seeking profit in league with private developers (Stoker (1995)). It also is likely that local governments act strategically, and even cooperatively with one another, to maximize private returns on their regulatory decisions (Brueckner (1996)). Many commentators argue that the regulatory regimes observed are excessively restrictive even for fiscally protective purposes (e.g., Downs (1991)), suggesting that exclusion rather than efficiency is the outcome of monopoly regulation.

When neighbors pose threats rather than opportunities, a vision of municipal competition for households on fiscal and other fronts seems quite credible. Some of the preferences that individual housing market actors and their local government representatives seek to vindicate are plainly discriminatory against minorities and the poor (Rolleston (1987); Yinger (1986)), and they contribute to the well-documented race and income segregation in metropolitan areas (Massey and Denton (1993)).[8]

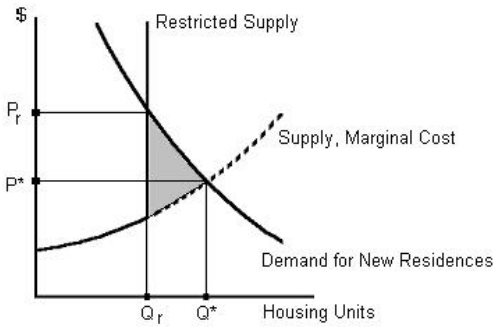

Figure 3. Zoning Causing Welfare Loss

Fiscal zoning theory thus contemplates that exclusionary zoning has efficiency advantages relative to unregulated markets. Under this view, collectively charted land-use controls ensure that public services will be provided only to those who pay their full costs. Naturally, this kind of system has regressive tendencies. Incumbents and applicants for entry have varying demands and capacities to pay the marginal cost of the public services they consume. Thus, residents are tempted to discriminate not just on a first-come, first-served basis up to some density limit, but also through sifting among potential entrants by their ability to pay and their expected consumption of publicly provided goods.

If town residents could exercise total control over growth, we would expect the median voter to reject projects that engender losses in utility, financial, or quality-of-life considerations (Cooley and LaCivita (1972)). Zoning and property taxation are the methods by which voters or public officials force newcomers to increase their contributions to the fisc. Given congestion costs and externalities, and the political impracticability of price discrimination using taxes, growth controls may be an attractive solution to the local fiscal challenge. Property tax limits, like California's Proposition 13[9] effectively make new residents less attractive and support growth control. However, the determination of if proposed new development is profitable to the community depends on the details of financing and the cost characteristics of local service packages. With average-cost pricing and decreasing-cost conditions, new residents are welcome. The linkage between demands for housing and public services, the cost conditions for public services, and regulation and house prices makes it unlikely that the optimal zoning arrangement will be identified by either planners or local politics.

Mills (1979) observes that most externalities involve only the exteriors of structures and increase with density. Such costs can be internalized through common ownership, as in some multi-family developments, but the high transaction costs of property assembly make this solution infeasible. On fiscal considerations, property taxes play the familiar role of prices in the exchange of goods: they pay production costs and deter consumption by those valuing the goods less. A head tax would be most efficient, but its regressivity makes it implausible and undesirable. Mills characterizes growth caps and permit moratoria as rather blunt instruments,

since new households are excluded regardless of the capacities to pay the private and external costs their entries engender.

Beyond the social mischief land-use rules may cause, they undermine the efficiency advantages of the unregulated, competitive land-housing market. In later work, Mills (2002) groups various land-use barriers under the rubric of "urban density control," identifying the general impact irrespective of the precise regulatory tactic employed. Mills argues that competitive markets in housing services, neighborhood density, and the desirability of locations (proxied by commute distances from the urban center) should sort households efficiently according to their varying tastes. Excessive land regulation in exurban areas—driven by unreasonable fear of unwanted density—distort these markets and cause sprawl.

Private Bargaining as Substitute for Regulation

Before we turn to summarizing the empirical effects of land-use regulation on housing price, we should note the institution of private land-use regulation and enforcement.

An alternative to exogenous government regulation is a private covenant among neighbors. Fischel (1990, 1985) characterizes zoning as a reformation of private property rights. He distinguishes zoning from the private land covenants described above, and from arrangements in homeowner's associations (HOAs) in which each member specifically agrees, as a condition for entry, to be governed by a set of deed conditions and restrictions. By contrast, zoning systems involve government coercion and affect the fortunes of those who may not have explicitly agreed to the rules in advance. When disputes arise, individuals in HOAs must bargain with neighbors one-on-one or seek small-number political solutions before the HOA governing board. Market institutions may settle such disputes better than political, or even judicial ones, given that only markets can take any account of the interests of outside demanders as proxied by the interests of developers.

Numerous commentators have questioned whether local land-use regulation is preferable to private contractual arrangements among neighboring landowners. Static zoning restrictions constrain land development in predictable ways, but it is unlikely that fixed rules will efficiently resolve spillover problems in changing local economies. In an important early law review article, Ellickson (1973) pointed out zoning's shortcomings in this regard. He argued that a more flexible and responsive system of restrictive covenants augmented by liberalized nuisance law and carefully modulated administrative fines would offer efficiency advantages. Siegan (1972) famously pointed out that zoning-free Houston, Texas, adequately manages spillovers by adopting deed restrictions and establishing informal neighborhood-based expectations. Another example of this kind of governance by neighborly agreement is the written set of "covenants, conditions and restrictions" (CCRs) typically agreed to by purchasers of homes in common-interest developments (CIDs) as part of their membership in local HOAs (Gordon (2004); McKenzie (1994)). In this setting, regulation is made a self-implementing, endogenous system, in which conflicts are vetted and settled within the HOA under its operating rules. Were the

entirety of a town's housing stock composed of units with HOAs, it would be equivalent to substituting rule within such fragmented subdivisions for the aggregate governance system of the town's plans and ordinances.

However, this internal governance has its own costs. Spreyer (1989) showed that these covenants are costly, or politically difficult, to install where zoning is already in place or when neighborhoods are already developed. Drawn to Houston as a test-bed much as Siegan was before her, Spreyer sampled prices for single-family homes in areas of Houston that were (1) zoned, (2) governed by covenants, and (3) governed by neither zoning nor covenants. Spreyer found no significant difference between values in zoned and covenanted areas, but found both were significantly higher than values in areas lacking both.

Importantly, recent studies show that unwanted neighborhood effects reduce land values only marginally and disappear over small distances. Kenyon (1991) summarizes six hedonic studies of the effects of unwanted land uses, such as power plants and pollution sources on neighboring property values. Depressed property values are rarely as pronounced as feared, and economic effects dissipate quickly as a function of distance. Such "field effects" of spillovers are rarely identified in local political battles, where bandwagons form to oppose not just the specific project under consideration, but all future ones as well.

A Survey of Empirical Evidence

This section provides a survey of empirical evidence on land-use regulation and its effects on housing prices. The claim that zoning and growth control effectively raise housing prices, thereby shaping development and demographic patterns, is far from conclusively established in empirical research. This section will review studies, collecting them into useful categories for comparison and contextual synthesis.

Methodological Issues

A critically important feature of the literature is the generally weak and indirect measure of regulatory variables. Given the lack of uniform national standards for measurement of land regulation as adopted and variably enforced, generalizing findings from the literature as a whole is difficult, if not impossible, to accomplish in any satisfying fashion. The best studies are those that manage measurement uncertainty adeptly, such as by confining the analysis to a reasonable geographic scope. Those that abstract most strenuously from simple, palpable measures of regulation appear elegant and creative, but may end up trading off careful explanation for strained conclusions.

In a stylized setting of the problem, the researcher asks a set of local regulators to describe their land regimes. Given the wide variety of local enactments and enforcement patterns, a suitable method for summarizing regulatory behavior is not at all obvious. Some surveys err on the side of completeness, posing an exhaustive list of possible enactments and asking each respondent

which ones have been adopted, sometimes along with a Likard-style scale attempting to measure the importance of each enactment (e.g., Levine (1999)). These longer surveys often generate an undifferentiated set of dummy variables, and assigning weights in a summary measure is largely guesswork. Shorter survey instruments attempt to capture only those enactments deemed important beforehand, so that prior hunches about their relative significance then create possible selection bias in the results.

In a pure experimental sense, the *a priori* observation of legal restrictions would measure regulation in isolation, without regard for its observed impacts. Alternatively, an *a posteriori* approach would attempt to detect the effects of a regulatory framework based on outcomes such as the local authority's actual approval, rejection, and alteration of proposed residential construction projects. The latter approach is often frustrated by the developer's endogenous prior knowledge of the relative restrictiveness of a set of jurisdictions. The builder's savvy awareness of where new construction is welcome will influence where land is purchased and the number and size of new units to propose.

Malpezzi (1996) identifies a number of possible regulatory indicators, most featuring a mixture of these theoretical perspectives on measurement. Several studies utilize surveys of local planning officials, identifying the presence or absence, and sometimes the relative importance, of various land-use enactments (e.g., Levine (1999); Glickfeld and Levine (1992); AIP (1976)) and even rent control (e.g., HUD (1991); National Multi Housing Council (1982)). The problems of constructing summary indices aside, such surveys have the advantage of capturing an "on-the-books" state of local legal conditions at a particular time. At the same time, relying on such measures risks overestimating the stringency with which written enactments control local development decisions; without actual implementation, observed regulation may be largely symbolic. Another strategy employed in some early studies involves polling experts regarding their subjective assessments of the relative restrictiveness of an area's land-use controls (e.g., Segal and Srinivasan (1985)). Geophysical limits, such as the presence of water (Malpezzi (1996)), and ratios of vacant and buildable land by planning area (Pollakowski and Wachter (1990)), also have been employed. Surveys of regulatory effects (e.g., Linneman et al. (1990)) ask local officials to estimate, frequently with artificial Likard scales, such factors as approval rates, application-processing delays and approval rates.

Another key aspect in assessing models of regulation and housing price is an evaluation of the choice of covariates that may influence real estate markets independently of land-use restrictions. Several controls make repeated appearances in the literature. *Income* and *income change* directly affect aggregate home prices, since housing and housing service are normal goods in most circumstances and across most income ranges. Income and other *demand proxies*, such as population, demographic change, and density factors, provide additional ways to isolate price variation not directly related to land-use strictures. Variables attempting to capture *regional macroeconomic conditions*, such as those measuring trends in employment levels or general health of local business and commerce, are typically employed. *Capital costs*, as they vary by metropolitan area, may be tracked via proprietary data sources available through, for example,

Boeckh or Means. Median age of housing stock and state of home repair are alternative measures. Indicators of *municipal land-use patterns*, such as vacant-land proportions, presence of geophysical barriers or impediments, and proximity to mass transit corridors, are often included. Care must be taken to ensure that land-use features and regulatory constraints are not collinear. Finally, *variations in home quality* need to be tracked in order to control for how differences in size, age, maintenance, and amenities influence transaction prices. This is a key point: the more sophisticated the analysis of housing prices—a formidable empirical challenge on its own—the more credible the estimate of regulatory effect on prices become.

Monopoly Zoning Studies

One strand of empirical work attempts to evaluate the monopoly-zoning hypothesis directly. These studies posit that the more fragmented the governance structures of an urban area, the less monopoly power any one town will have due to entry-price competition from its neighbors. White (1975) and Hamilton (1978) theorized that larger suburban towns, like any market firm enjoying the prerogatives of concentrated supply, would be more able to exploit market power in pricing entry for housing and public-service bundles than smaller jurisdictions in more fragmented regions. In political terms, this version of land-supply behavior amounts to capture of regulatory decisionmaking by higher-value landowners seeking to ensure their property values by way of local protectionism. Hamilton's paper offered affirmative, but weak, evidence that less fragmented urban areas would be more prone to price discrimination driven by local land-use controls. He sampled median home prices in only 13 metropolitan areas, and his rudimentary measures of zoning controls were number of municipalities per capita and a dummy variable for areas having more than four local governments. Estimated in two separate equations, the coefficients on these proxies for monopoly regulatory power were negative as expected, but statistically insignificant.

In a challenge to Hamilton, Fischel (1980) cast early doubt on the postulated effect of regulatory power concentrations. Fischel essentially retested Hamilton's house-price models using a more precise measure of metropolitan fragmentation. In a home-price sample from the 1970 census for 10 large urbanized areas, Hamilton compiled more refined counts of local governments (e.g., townships and villages) having control over development. A dummy variable capturing Baltimore and Washington—the only areas in the sample with quite low fragmentation—had an insignificant coefficient, even having the wrong sign in one of the two specifications. Diluting the results even more, pairwise comparisons of the two relatively unified areas with all others in the sample yielded an abundance of insignificant results, again with mixed signs. Fischel's contrary findings in this regard represent an early example of the interesting, but, ultimately baffling, methodological variety in this literature.

Later work on monopoly regulation and land-price by Rose (1989) generates important innovations on measurement and estimation. Notably, Rose distinguishes between "natural" (i.e., geophysical) and "contrived" (i.e., regulatory) constraints on developable land, and his models credibly test their independent effects. Geographic variation are measured by the proportion of

an urbanized area's surface occupied by water; the calculation includes population density gradients, meant to proxy for the radial fall in bid-rents under the standard Alonso-Muth-Mills "flat city" price models. Rose uses three different land-price indicators; one measure is taken from Federal Housing Administration site-price data, the others from Urban Land Institute (ULI) data on raw and improved land. In addition to governments per capita, Rose constructs two concentration ratios measuring the proportion of a region's area contained within its four largest jurisdictions. (One of these ratios uses a denominator including the central city, while the other accounts for total area net of downtown.)

Sadly, these innovations fail to yield any robust proof of the monopoly zoning hypothesis. Rose's regulatory measures all have the expected sign, but only one of nine models results in a statistically significant coefficient. The study is slightly more persuasive on the price-elevating impacts of so-called "natural," geophysical constraints on development, both in terms of strength of result and proportion of price-variance explained. Later work by Hendershott and Thibideau (1990), probing how income influences aggregate constant-quality home prices and the extent they differ from regional median prices reported quarterly by the National Association of Realtors, uses Rose's concentration ratio as a control, finding no significant association with housing price.

More recently, Thorson (1996) advanced the cause somewhat. His examination of monopoly zoning uses decennial census data at the place level from 1970 through 1990 to analyze reported median home values. Unlike Rose, Thorson's more complex models include a multitude of housing and neighborhood quality controls, a number of which eluded Fischel's (1980) specifications (e.g., age, size, commuting distance, units/square mile, and energy prices). Across all three census surveys and varied specifications of the model, Thorson's concentration ratio is significantly related to increased home values. The analysis also captures a significantly greater proportion of the variation in home price than earlier authors.

Thorson's more robust findings lend credibility to claims that government concentration is associated with higher home prices, particularly in more recent census years. However, the monopoly zoning literature as a whole does not even attempt to evaluate the regulatory mechanisms by which this might occur. Such investigation requires detailed measures of actual local behavior, beyond simply mapping the physical arrangement of jurisdictions.

Early Surveys and Place-Specific Studies[10]

From the mid-1970s, significant litigation relating to the effects of zoning and growth control in places like Ramapo, New York; Mount Laurel, New Jersey; and Petaluma, California, led to heightened attention to these phenomena in urban economic and other literatures. Prior to that time, studies such as Crecine, Davis and Jackson (1967) and Rueter (1973)—denominated by Fischel (1990) as "zoning-does-not-matter" studies"—had not identified any systematic land-price effects of various local zoning regimes. This segment of the literature historically has questioned whether the market follows regulation or vice versa, contending at times that the lack

of confirmable impacts substantially weakened the case for zoning as a tool in the management of local externalities. This section will explore some of the studies published during the 1970s and 1980s. In the aggregate, this work questions, but fails to entirely nullify, the earlier empirical case against zoning. It remains possible that zoning and growth controls merely tend to verify, and reproduce, existing price differences in communities formed as households become sorted according to income, public service, and other dimensions.

Peterson (1974) sampled 1,500 single-family home sales in communities along Boston's circumferential highway, Route 128, during 1971. He found that increasing home-construction densities (from one house per acre, to four) made unbuilt land over 30 percent more valuable. A supplemental sample of 68 vacant-land sales similarly affected by varying density allowances produced nearly identical price differences. From the similarity between home and vacant land transactions, Peterson concluded zoning effects are largely capitalized into land values, affecting housing prices relatively little. He posited that net housing-price changes are a function of three different facets of "downzoning," that is, increases in minimum lot size (in his study, from one-quarter to one acre). First, large-lot regulation likely induces more costly homes, which in turn increases prices of neighboring lots awaiting construction. Second, larger lots ease per-acre demands on public services such as education. Third, such density eliminates three homes per acre. The net effect of these impacts, Peterson argued, would actually force long-run housing prices *downward*, so long as the net value of lost housing construction exceeded the sum of neighborhood amenities and tax savings.

Mark and Goldberg (1986) compiled single-family home sales data from 1957 to 1980 for two separate Vancouver neighborhoods, one affluent and one blue-collar. For each transaction, the authors observed a variety of housing quality features. At the parcel, level they also measured zoning characteristics, neighboring land uses, and history of zoning changes. Estimated in the aggregate and in separate annual regressions, their models could not confirm with any statistical reliability that zoning increased price, nonconforming uses reduced market value, or changes to less restrictive land controls increased it. Zoning impacts on price were sometimes positive, sometimes negative, and sometimes insignificant altogether.

Fischel (1990) uses Mark and Goldberg's paper to launch an overarching criticism that still beleaguers much of the literature to this day: few analysts recognize, or compensate for, the inherent endogeneity of observed land-uses and the regulations ostensibly dictating them. Counter to the intuitive causal story—of regulation regulating—tight zoning may instead be induced politically by the predilections of high-income households living in high-price homes. Econometric models that do not address this joint-determinacy issue are inherently suspect.

Thus, a portion of early research in this area questions if adoption of such regulations has any real effect on prices, development patterns, or growth rates. In their 1988 survey findings on California land-use practice, Glickfeld and Levine (1992) argue that regulation is local, while growth patterns are regionally determined. Their lag-time model suggests that regulatory adoption follows increased building permit activity. But nearby increases in demand cross

jurisdictional boundaries, and political compromise leads to the appearance of strict standards that are often considerably weaker in enforcement. The regulation itself has a price; variances and conditional use permits represent negotiated buy-outs of supposedly ironclad restrictions. The net effect of adopting development restrictions may ultimately be symbolic only, meant to appease NIMBY ("Not in My Backyard") and other constituencies, but generally lacking the will or ability to implement true growth management in the face of population pressures.

Landis (1992a) likewise questions if growth controls work. Using California data in a quasi-experimental setup, he compared seven growth-controlled towns with six similar towns without such controls. Only three of the seven controlled cities grew slower than their uncontrolled counterparts, and prices were not appreciably higher as a result. Landis could not find systematic differences in municipal debt levels or fiscal condition indicators. He suggests that either the regulation is symbolic or there is uncodified constraint activity going on in the control-group jurisdictions. Growth control measures are usually adopted in response to high growth rates during market booms, and these subside due to natural economic cycles.

Numerous other studies question how binding land-use enactments—and growth controls, in particular—are in practice. Warner and Molotch's (1992, 1995) surveys of several localities in Southern California confirm that growth continues unabated in cities adopting various growth control measures.

On the other side of the ledger, Segal and Srinivasan (1985) relied upon interviews with regional governmental staff to develop a measure of the proportions of regulated and unregulated developable land from 1975 to 1978. Fifty-one metropolitan areas were included in a model of housing supply and demand. Their results suggested that towns in which more than 20 percent of vacant land was regulated had significantly higher housing prices, by a factor of about six percent. An inter-metropolitan measurement problem arises, requiring that structural differences between housing sectors must be controlled. The authors recognize this challenge, but use precious few such variables. A growth restraint index (percent of land withdrawn from buildable supplies) was highly significant, alone capturing 40 percent of the variance in observed home-sales prices.

Similarly, Black and Hoben (1985) generated a scalar measure (running from +5 [most growth-oriented] to -5 [most growth restricted]) summarizing a ULI survey of local planning officials in 30 metropolitan areas. Their dependent variables comprised experts' estimates of average land values in single-family-zoned and unimproved acreage on the urban fringe. Their restrictiveness indicator was quite significantly associated with higher land prices as measured in 1980, less so for price increases observed from 1975 to 1980. An unpublished analysis based on an updated version of the ULI survey by Chambers and Diamond (1988) reported mixed results. Average project approval time was significantly and positively associated with higher land prices measured in 1985, but the same variable was negative and insignificant as a determinant of land prices measured just five years earlier.[11]

In a study of land prices across the country, Shilling, Sirmans and Guidry (1991) used state-level land-use and environmental data, compiled during the 1970s by the American Institute of Planners (AIP, 1976). Cities in states with stronger land controls were found to have slightly higher prices; the authors estimated the regulation/price elasticity to be about 0.16. The same authors (Guidry et al. (1991)) used expert-opinion data compiled by ULI; 11 experts in real estate ranked the land-use restrictiveness of 30 metropolitan areas on a 10-point scale. The authors found that average 1990 lot prices in the 15 least restrictive cities were just less than $24,000, while that sample's most restrictive cities averaged lot-prices over $50,000.

Much of the literature seems to establish that land-use regulation increases the price of existing housing while reducing the value of developable land. California studies prominently support this conclusion. For example, Schwartz and Zorn (1988) demonstrated that growth controls in the city of Davis, while not affecting the unit price of housing services, nevertheless increased the average amount of housing consumed, thereby increasing housing payments, on average, per household.

Dowall and Landis (1982) found that density controls in the San Francisco Bay Area were significantly associated with small increases in average residential land prices. Elliot's (1981) early study of building permit caps showed upward price effects in regions where numerous towns had enacted them; in areas where the control was adopted more sparsely, little effect was shown.

Frech and Lafferty (1984) analyzed the effect of a special program, the California Coastal Commission's restrictions on development in the coastal zone, and determined that withdrawal of developable land forced housing prices higher. Other California studies, like Wolch and Gabriel (1981), and two by Schwartz, Hansen, and Green (1984, 1981), use cross-jurisdictional comparisons to show that artificially restricting the pace of development has definite distributional impacts, namely, higher housing prices.

Land-use restrictions may raise housing prices in myriad ways. Levine (1999) provides a taxonomy of these effects in his work. The cost of housing construction can be increased by subdivision requirements, exactions, and other development regulations. Some growth control systems might place numerical limits on the number of permits granted, further restricting supply. The intent often is to encourage higher quality and more expensive housing by increasing its profitability. Finally, when demand for moderately priced units shifts to adjacent areas without such restrictions, prices may rise in those places when supply cannot quickly respond to the shock (Landis, 1992a).

More generally, restrictive land-use policies add to the costs of housing development by restricting land supply. Towns may impose exactions and other costly requirements as conditions for permit or subdivision approval; they also may create onerous application procedures. Delays in the permitting process can cause developers to incur added interest cost, taxes, inflation, and overhead expenses. Changes in the variety of residences available can slow competition among

various housing types. Indirectly, developers' failure to respond to demand quickly may cause an increase in price. Ultimately, these sources of friction in supply markets create barriers to entry for development firms and facilitate the setting of monopoly rents by existing providers (Dowall (1984)).

The net effect of density control on land prices may be indeterminate, however. When land is withdrawn from a developable base, restricted supply tends to increase the bid-price at which the market for such land will clear. But limiting density also makes raw land less valuable per acre as an input into new housing production (Morgan (1984)). These effects of density control run counter to each other, and the total impact of density restrictions on land prices is ambiguous.

The empirical literature on growth control, largely from California evidence, supports the case that supply effects dominate. In many studies, development restrictions are shown to increase price and bar the poor, thus exacerbating income segregation. Zorn, Hansen and Schwartz (1986) studied price effects in Davis, California. The analysis took into account the imperfect implementation of growth limits and the presence of inclusionary programs meant to counterbalance the policy's effect on the poor. Importantly, the authors also factored in the extent to which pre-existing homes increased in quality. Nonetheless, the study concluded that price increased an average of nine percent relative to the nearby suburbs of Sacramento, where growth controls had not been adopted.

Earlier studies focused on Petaluma, located north of San Francisco, which found its rural tranquility threatened by the Bay Area's suburban expansion in the early 1970s. In response to the sprawl creeping up the interstate highway, Petaluma adopted a pioneering growth control ordinance allowing only 500 building permits annually. Schwartz, Hansen and Green (1984) compared Petaluma to the relatively unregulated market in nearby Santa Rosa.[12] Low-priced, small-floor-area homes began to disappear after growth management was imposed, and the housing stock shifted generally away from units affordable to low- and moderate-income households. The transition occurred, the authors concluded, because of the way Petaluma chose to assign its limited building permits among competing applications. Its ordinance used a "beauty contest" point system that rewarded costly design amenities at the expense of moderate-income housing[13] (see also Schwartz (1982)).

In a study of 1,600 home sales in 64 Bay Area communities in 1979, Katz and Rosen (1987) found even more drastic price increases associated with growth controls (permit caps and outright moratoria). Homes in towns with such development restrictions were 17 to 38 percent more expensive than elsewhere. These authors' measurement of land-use regulation failed to account for differences in rules among towns in their sample. A single dummy variable identified the presence or absence of a growth management program. The authors' model did not address the likely endogeneity of regulation and housing market indicators, instead explaining:

> [D]ifferences in house prices could possibly be the "illusory" outcome of weakness in the statistical technique resulting from omitted variables, sample selectivity problems, or

> both. The positive price differential for houses in growth-controlled jurisdictions may reflect structural or neighborhood quality characteristics (not included in the model) that are correlated with the presence of formal growth controls. This is possible but not likely because the addition of extra quality controls as well as other characteristics on the subsample for which additional information was available did not tangibly alter the strength or direction of the results.

Importantly for the consideration of empirical work in the field, the modern view is that land-use choices are endogenous, meaning that one cannot estimate their effects (e.g., on prices, segregation, or neighborhood and housing quality), without accounting for the ways in which those effects themselves influence the land-use choices being studied. The preferable method is to account for the simultaneity of various influences in a more complete model (Colwell and Sirmans (1993)). Ideally, such a model would address:

> the particular ways in which a community restricts growth (the growth-control instrument), the interrelationship between the determinants of land values (the cross-elasticity between implicit markets), and the interrelationship between growth-control and nongrowth-control communities (the cross-price elasticity between implicit markets) (Knaap (1991:471)).[14]

In practice, however, the scarcity of data measuring each of these factors makes precise measurement problematic.

Portland's experimentation with metropolitan-level land regulation has provided an interesting natural experiment for housing price research. The "urban growth boundary" (UGB) drawn in the late 1970s between the fringe of the city's exurban areas and surrounding agricultural sectors has drawn particular attention. The twin goals of sprawl prevention and farmland preservation motivate this kind of growth management. Knaap (1985) identified two boundaries: (1) an outer ring drawn to contain all growth until 2000; and (2) an inner ring, with the area between the two demarcated as growth-controlled at local option if desired densities have not been reached in the urban core. Knaap sampled land prices on undeveloped single-family sites located in all three categories: inner city, between the lines, and outside the year-2000 UGB. Controlling for distance from the central city, Knaap's results showed significant land-price increments inside and outside the outer UGB. These results were replicated along the inner ring, but were most significant in the most affluent suburbs, perhaps because of the discretionary nature of that boundary. Knaap concluded the market perceived the constraint on development, and the explicit time-restrictions on development outside the exurban UGB, to be genuine and binding, with prices falling into line accordingly (see also Nelson (1988)).

More Recent Work on Price Effects of Zoning and Growth Management

Clever model design and data collection strategies can begin to meet the difficult challenge of good empirical work in this area, yielding results that, on balance, appear persuasive. A number of good examples provide in-depth analyses of localities within single metropolitan areas. A very thoughtful study by Pollakowski and Wachter (1990) sought to detect housing price effects within and across multiple jurisdictions in Montgomery County, Maryland (suburban Washington, DC). The authors generated a hedonically adjusted repeat-sales[15] housing-price time series, measured quarterly across 17 planning areas of the county. The authors constructed indices of restrictive land-use practices based upon proportions of developed and vacant land in various zoning categories. To these localized measures, the authors added two additional land-use regulatory measures. One was an index to capture the effects of regulations in one planning area on its neighbors, calculated as a ratio. The second was a growth-control ceiling imposed on each planning area by the county. The models also featured a sophisticated set of covariates, including commute times from a central-city hub, a gravity index of employment accessibility, and a construction cost index from standard cost-estimator services. In the model combining all three land-use regulatory measures, both the in-zone and adjacent restrictiveness measures added significantly to home prices over time. Importantly, the effects of the growth ceilings, local regulation, and spillover constraints were greater when considered in the aggregate than when measured independently of one another.[16]

Malpezzi (1996) developed a mixed set of land-use measures from the 1990 Wharton survey of planning and policy (see Linneman and Summers (1993, 1999)), which he combined with AIP state indicators and a rent-control variable from a ULI survey. Malpezzi's analysis of reported home values and contract rents in the 1990 Census showed a significant association between tighter land restrictions and higher home prices. Only the AIP index had a statistically significant effect on rents. Malpezzi estimated the premium paid for moving from a liberal to strictly regulated environment to be 17 percent for rents, but more that 50 percent for house values. Later, Malpezzi and his colleagues Chun and Green (1998) estimated a more complex, two-stage model based on an updated version of the same regulatory measures and PUMS microdata on rents and home values. For both dependent variables, the linear specifications show positive and significant results for the instrumental regulatory index, with coefficients ranging from 0.02 to 0.08. The effect of moving from less stringent to more stringent regulation is estimated to be a 13 to 26 percent increase in rents or a 32 to 46 percent increase in asset prices for the quadratic models, or 9 to 16 percent and 31 to 46 percent increases, respectively, for the linear models.

In a more recent sample of 37 Milwaukee suburbs, Green (1999) traced the effects of six land-use indicators: (1) the permitting of mobile homes; (2) minimum lot sizes in new subdivisions; (3) minimum frontage setbacks; (4) minimum street widths; (5) sidewalk requirements; and (6) curb and gutter requirements. On the former, a mobile-home prohibition increased home prices between 7.1 percent and 8.5 percent, while requiring an additional 10 feet of setback caused price increases of between 6.1 percent and 7.8 percent. Green also traced the effect of these land-use measures on housing affordability, finding both the permitting of mobile-homes

and the imposition of street-width minima to significantly reduce the proportion of homes then priced below $75,000.

In a study of post-war growth patterns in the United Kingdom, Simmie, Olsberg and Tunnell (1992) found that so-called "urban containment" policies tend to increase the long-run price of both buildable residential land and finished housing. The authors note that during slow economic times such land-use policies are not a true constraint, while during periods of growth, they may unwisely deflect job creation and housing investment to neighboring regions. The authors' focus was on regional and national open-space and agriculture reservations, such as the London Green Belt, the designation of travel-to-work areas (TTWAs), and environmental protection of "areas of outstanding natural beauty (AONBs). Based upon other work on Britain by Evans (1988) and Cheshire and Sheppard (1989)—the latter comparing growth-controlled Reading and growth-oriented Darlington—Simmie and his colleagues assert that the containment of growth has forced prices higher. Thus, they advocate reexamining the prevailing "garden-city" design assumptions underlying sprawl-containment policies, in favor of forward-thinking land-use planning that allows for changing technologies in construction and transportation.

Other authors have reached to the Far East as test beds for theories on land control's price effects. Malpezzi and Mayo (1997) calculate price and supply elasticities for Malaysia, Korea, and Thailand, finding that supply is more responsive to market signals in less regimented environments. Fu and Somerville (2001) develop a methodology for assessing how floor area ratios (FARs) distort builders' design choices, and then test their methodology on a sample of 1992-1993 land-lease data for redevelopment sites in Shanghai, China. The authors conclude that allowable intensity of land-use significantly affects price, as does neighboring population densities and related costs of resettling households displaced by the redevelopment projects under study.

Conclusions and Recommendations for Further Research

Tables 2 and 3 present a summary of the empirical work before and after 1990, as reviewed in this paper. As we have documented, despite many careful and thorough empirical analyses, it is not possible to draw firm general conclusions about the linkage between local regulations and housing prices. Many careful analyses report some effect of regulation on housing prices, but there are many exceptions. For example, the measurement of housing prices in aggregate studies is often crude, relying upon owner's estimates of house values from the decennial census, and quality adjustments are ad hoc as well. In microeconomic studies, house prices also are measured crudely.

But, perhaps the most important reason why empirical research is not definitive is the difficulty of measuring the regulatory environment facing households and builders in a satisfactory manner. As suggested in the section on Taxonomies of Land-Use Regulation of this paper, statutory regulations vary along a variety of dimensions, and the enforcement of these rules may vary systematically. As indicated in Table 2, there are important and unresolved issues of

measurement in characterizing local land-use regulation across jurisdictions. Thus, much of the research reported in Table 3 is based upon observing natural experiments provided by the regulatory environment of a single city, or perhaps a single neighborhood in a city.

Accordingly, we think the most promising strategy for improving our understanding of the economic effects of zoning and land-use restrictions would be to devote resources to measuring regulatory conditions systematically in a large cross-section of cities and metropolitan areas.

There are at least two precedents for measuring regulations through a broad cross-section survey of regulations and behavior. Glickfeld and Levine (1992) designed and implemented two successive surveys (Levine (1999)) of land-use restrictions and planners' proclivities in California. These surveys elicited high response rates, in part, through close collaboration between the authors, the League of California Cities, and the California State Association of Counties. The instrument from the earlier survey by these authors is included as Appendix A to this paper.

The Glickfeld and Levine survey reports detailed information on the revenues and expenditures of each jurisdiction in California, documenting the types and magnitudes of public revenues and the capital outlays and operating expenses made by governments. The survey also documents expenditures by category for each jurisdiction. The heart of Glickfeld and Levine's study, however, is a detailed set of questions posed to land-use officials about the importance of public incentives in fostering growth and another set of questions documenting the regulatory environment in each city. The survey has been used to analyze regional housing production (Levine (1999)), the regional distribution of single-family and multi-family housing (Glickfeld and Levine (1992)), residential segregation (Rosenthal (2000)), and changes in demographic conditions in California cities (Quigley, Raphael, and Rosenthal (2004)).

In another example, Linneman and his associates at Wharton (Buist (1990); Linneman, et al. (1991)) designed a survey that was administered across a broad cross-section of municipalities, with the cooperation of the International City Managers Association. The Wharton survey asked local officials their opinions about factors affecting the development process and the management of economic growth. Officials also were asked about the presence and magnitudes of impact fees and exactions. A companion set of questions was asked of county officials. The survey resulted in a profile of about 1,000 local jurisdictions and the counties in which they were situated.

This survey was used to analyze the patterns of decentralization in the United States (Linneman and Summers (1993, 1999)). Malpezzi (1996) generalized the determinants of a summary index of the detailed Wharton measures. This "Malpezzi Index" of land-use regulation was used to characterize the regulatory environment across U.S. metropolitan areas in 1999. This generalization has proven quite valuable in characterizing and comparing regulatory environments. For example, Malpezzi et al. (1998) used these measures to explore the determinants of variations in house prices across the metropolitan areas, and Greulich, et al.

(2004) used these measures to analyze the effects of immigration on housing prices. The original Wharton survey instrument is included as Appendix B to this paper.

The authors of this paper believe that a systematic update and extension of this work would have a high social and scientific payoff. Note that we are proposing a research program, not merely a measurement effort. As described by Malpezzi and his colleagues, and as is surely well known to the authors of these two comprehensive planning and regulatory surveys, there are many unresolved issues in the design of a survey instrument and the characterization of a regulatory environment that spans local governments in different states. But the wide variation in regulation that could be measured in a national survey would be invaluable in assessing the effects of these differences upon housing outcomes and prices in U.S. metropolitan areas.

In our view, a useful survey of local land use regulation would have four components. First, it would be a national survey with representation from stagnating, as well as growing, regions, and from large and small political jurisdictions. Second, it would sample metropolitan areas, as well as localities, to permit analysis of the interplay among political jurisdictions, and between localities and regional authorities. Third, it would measure the outcomes of regulatory process, as well as the statutes of their implementation at the local level. Fourth, it would sample builders and developers, as well as government officials, to establish, as far as possible, the linkage between regulation, its effects upon the quantity of housing, and its price.

Ideally, the lessons learned from developing a survey of regulation could be implemented in revising and extending the ways in which residential construction and building permits are reported through the U.S. Census Bureau. Currently, the Census requires annual reporting of residential building permits. (These are reported on form C-404, which is reproduced along with other construction-census instruments in Appendix C of this paper.) It may be that modest changes to these reporting requirements will provide a body of data that could be valuable in measuring the linkages between restrictive regulations, the enforcement of regulations, and the cost of housing across the United States.

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Endnotes

[1] This section draws, in part, upon materials compiled by Dwyer and Menell (1998).

[2] 239 U.S. 394 (1915).

[3] 272 U.S. 365 (1926).

[4] The trilogy of Mount Laurel decisions is *Southern Burlington County NAACP v. Township of Mount Laurel*, 67 N.J. 151, 336 A.2d 713, appeal dismissed and cert. denied, 423 U.S. 808 (1975) (referred to as "Mount Laurel I"); *Southern Burlington County NAACP v. Township of Mount Laurel*, 92 N.J. 158, 456 A.2d 390 (1983) ("Mount Laurel II"); and *Hills Dev. Co. v. Township of Bernards*, 103 N.J. 1, 510 A.2d 621 (1986) ("Mount Laurel III").

[5] Historically, urban containment was also intended to inferior public health conditions from migrating toward the suburbs (Simmie, Olsberg, and Tunnell (1992)).

[6] A review by Fischel (1992) opines that the stability and pervasiveness of fiscally driven land-use regulatory regimes is strong evidence of their overall efficiency. Studies showing strong upward pressures on home price due to land-use restrictiveness are entitled to a presumption of validity, under this view.

[7] Viewed in Coasean terms, zoning is not the only technique by which the fiscal externality can be incorporated into an efficient pricing mechanism. Instead of assigning the property right *ab initio* to the S residents, society can just as easily assign it in the first instance to the L residents desiring entrance. So long as Coasean bargaining requirements are fulfilled concerning the necessary transfers, the efficient level of L housing within S zones will still be attained (Fischel (1985)). Such a reassignment of initial property rights undergirds judicial efforts to undo zoning regimes deemed overly "exclusionary" (e.g., Kirp, Dwyer and Rosenthal (1995)).

[8] Some argue, however, that discriminatory fiscal policies alone, in the absence of land controls, segregate neighborhoods by income through the voluntary actions of individual households (Epple and Plant (1998)).

[9] Known as the "taxpayer revolt" initiative passed by the voters in 1978, California's famed Proposition 13 slashed property tax revenues by setting a one percent maximum tax rate, rolling back assessable values to 1975 levels, limiting tax-bill increases to two percent per year, and allowing reassessment only when property changes hands. Proposition 13 also required a two-thirds legislative vote for state tax increases.

[10] The discussion that follows makes use of an excellent survey of the early literature by Fischel (1990).

[11] Perceptions of real estate experts, such as those relied upon by Black and Hoben (1985) and Chambers and Diamond (1988) seem inherently remote and subjective. However, the relative merit of such indicators comes from careful comparison to the often clumsy attempt to translate more thorough, sophisticated surveys of regulatory behavior into useful summary indices.

[12] A prior Petaluma study by the same authors showed an average housing cost increase of eight percent over Santa Rosa due to the regulation (Schwartz, Hansen, and Green (1981)). The earlier paper also provides useful background on the federal legal challenge brought by the housing industry against Petaluma's growth control ordinance. The trial court in San Francisco held that the permit cap effectively prohibited entry by would-be residents of the town, thereby infringing on their constitutionally protected right to travel. The Ninth Circuit Court of Appeals reversed, holding that plaintiff builders and landowners lacked standing to raise the right to travel claim on behalf of outsiders (*Construction Industry Association v. City of Petaluma*, 375 F. Supp. 574 (N.D. Cal. 1974), *rev'd on other grounds*, 522 F.2d 897 (9th Cir. 1975), *cert. denied*, 424 U.S. 934 (1976)).

[13] The Petaluma Plan did assign positive "beauty contest" points for multi-family units, and this factor was deemed important by federal judges reviewing the scheme. Since the addition of symbolic inclusionary features helped Petaluma's growth control ordinance withstand constitutional muster, other

growth-restricting communities around the country used similar tactics (Fischel (1992:222); Ellickson (1981)).

[14] An even more ambitious approach is suggested by Navarro and Carson (1991) who add to the land-use analytical agenda the following list of collateral issues:

-- Degree of "spillover" effects into neighboring jurisdictions in the region
-- Degree of subsidization of growth by incumbents
-- Rates of development and population growth consistent with the city's ability to provide facilities and infrastructure
-- Extent of "doubling up"
-- Link between rate of job creation and population growth
-- Efficiency properties of various commercial and industrial growth controls
-- Target rate of job creation
-- Effect of differing rates of population growth on tax base and per capita income
-- Effectiveness of various affordable housing provisions.

[15] The repeat-sales housing price index adjusts for the quality-imbalance biases inherent in simple means and medians, given the infrequency of transactions and the shift in the composition of sales over time (Bailey, Muth, and Nourse (1963); see Redfearn and Rosenthal (2001)).

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[16] Additional evidence of interjurisdictional effects in the Washington, DC, metropolitan area may be found in work by Wachter and Cho (1991).

Table 2 **A Summary of the Empirical Literature Linking Land-Use Regulation and Housing Prices (pre-1990)**

Author(s)	Year	Geography covered	Regulatory Measure	Housing Price Measure	Other variables	Type of Model	Results	Comments	Classification for Paper
Adams, Milgram, Green and Mansfield	1968	Northeast Philadelphia, PA	Zoning (single family, apartment or row houses).	More than 1,000 sale transactions for undeveloped but zoned and subdivided lots 1945-62.			Sales prices for land zoned for single-family homes were lowerper acre than prices of land zoned for row houses or apartments.		
Downing	1970	Milwaukee, WI	Minimum lot sizes.	Undeveloped residential land values			Larger minimum lot sizes reduced the price per acre of land (permitted higher density increased land values).		
Downing	1973	Milwaukee, WI	Commercial zoning.	Land values			Land zoned for commercial uses was significantly more valuable than residentially zoned land.		
Peterson	1974			Housing values			Prospect of rezoning a residential property for commercial purposes can result in higher home values.	only mentioned in footnote	
Peterson	1974	Fairfax County, VA	Zoning (minmum lot size); also a sewer moratorium imposed in 1972.	Sale price of residentially zone parcels 1969-1973	Included interactions between zoning and other variables.	OLS	As distance from DC increased, the impact of zoning restrictions on price per acre decreased. Also, by 1973, sewer moratorium had an impact on lot values -- grandfathered, permissible sewer connection pushed lot value up higher, and decreased significance of other variables (including zoning).		
Hushak	1975	Urban-rural boundary, Columbus, OH	Commercial zoning	Land values			Land zoned for commercial uses was significantly more valuable than other classifications.		
Gleeson	1979	Brooklyn Park, MN	Growth management program.	Land values			Its 1963 growth management program depressed land values in restricted areas relative to unrestricted areas.		
Gabriel and Wolch	1980	50 San Francisco Bay Area jurisdictions, CA	Dummy variable indicating council attitudes toward growth.	1976 house values			Communities with pro-growth attitudes had house values $4,200 (8%) lower than in anti-growth communities.	(srd) obviously a criticism of many of these studies, but this one in particular struck me as not considering the endogeneity of "pro-growth attitudes"	
Janczyk and Constance	1980	Rancho Cucamonga, CA	Building moratoria.	Building activity			There was an anticipatory effect of increased building and a post-moratorium effect of a supply decrease, also a short-run redistribution of activity from moratorium area to nearby areas.	(Lillydahl and Singell) econometric problems with analysis including autocorrelation, simultaneous equation bias, specification error and partial use of forecasted rather than actual data	
Chicoine	1981	Will County, IL	Commercial zoning.				Supports proposition that land zoned for commercial uses is more valuable than other classifications.		

Table 2 **A Summary of the Empirical Literature Linking Land-Use Regulation and Housing Prices (pre-1990)**

Author(s)	Year	Geography covered	Regulatory Measure	Housing Price Measure	Other variables	Type of Model	Results	Comments	Classification for Paper
Elliot	1981	Selected California communities	Considered four types of growth control -- localities isolated in imposing regulations, localities surrounding by other growth-controlling localities, restrictions that controlled rate of growth and restrictions that controlled quality of growth.	Housing prices			Housing price increases were larger in localities surrounded by other regulating localities. The author concluded that house price increases in localities that regulate in largely unregulated markets cannot be distinguished from increases in localities that don't regulate. Also found that from 1969 to 1976, housing price increases were 35% higher in rate-controlled communities and 20% higher in quality-controlled communities than in no-control communities.		
Schwartz, Hansen, and Green	1981	Petaluma and Santa Rosa, CA	Petaluma Plan -- limited new residential permits to 500/year, rationed based on design features and developer-provided amenities and services to community	Standard-unit housing prices			After several years (plan put in place in 1972), housing prices in Petaluma had risen 8% above those of Santa Rosa (which had no growth controls, and formerly the same prices). Schwartz et al. also compared Petaluma to Rohnert Park and found no significant price increase differential, but did find that building permits increased sharply in Rohnert Park after growth control.		
Asabere and Colwell	1984	Champaign and Urbana, IL	Commercial zoning				Commercially zoned land had values 80% above average, residentially zoned land had values 50% below average.		
Schwartz, Hansen, and Green	1984	Petaluma, CA	Petaluma Plan -- limited new residential permits to 500/year, rationed based on design features and developer-provided amenities and services to community.				Fraction of affordable housing (small, low-priced homes) had dropped significantly below that of a control group (Santa Rosa).		
Black and Hoben	1985	30 MSAs	Index of restrictiveness from a ULI -- based on rankings by a panel of experts.	Two -- price of a standard quarter-acre suburban lot, zoned for single-family, and the price of unimproved acreage near developing fringe of metro area, suitable for single-family development (both obtained from ULI survey of local real estate experts).		OLS-stepwise regression	Index of restrictiveness accounted for a significant amount of variation in price of developable land (significance of index's impact on lot price was unreported).	because of impacts of greenbelt restrictions on "exurban" sites, studies using ULI land survey may understate effects of growth policies on metro fringe land prices	
Knapp	1985	Portland area, OR	Urban growth boundaries -- inner and outer (no growth outside outer until year 2000).	455 sales of undeveloped sites zoned for single-family homes, from inside and outside both boundaries.	Included a variable for distance from Portland CBD, also lot size zoning.		Land outside outer boundary sold for significantly less than land inside. The author found mixed results for inner boundary -- in affluent county, boundary was a constraint, but not in less affluent county; lot size zoning was only significant in affluent county regressions.		

Table 2 **A Summary of the Empirical Literature Linking Land-Use Regulation and Housing Prices (pre-1990)**

Author(s)	Year	Geography covered	Regulatory Measure	Housing Price Measure	Other variables	Type of Model	Results	Comments	Classification for Paper
Segal and Srinivasan	1985	51 large MSAs	Index of growth restrictions, including percent of developable suburban land withdrawn from market by growth controls -- obtained by surveying planners in each metro area	House prices			Index was highly significant, explaining about 40% of variation in housing prices. Also, areas that withdrew 20% of land from development had housing price inflation of 6% compared to unrestricted cities. Growth-restricted cities had price inflation of 17% compared to unrestricted. The effect was nonlinear -- cities that had larger percentages of land withdrawn had higher inflation rates.		
Vaillancourt and Monty	1985	Montreal suburban fringe, Quebec	Exclusive agricultural zoning imposed in 1978 (by provincial law).	1,200 sales of land from 1975-1981			Parcels subject to new zoning lost between 15-30% of value compared to similar unrestricted land.		
Chressanthis	1986	Lafayette and West Lafayette, IN	Zoning variables	House values, 1960-80			Zoning variables were stable determinants of housing values.		
Mark and Goldberg	1986	Two neighborhoods in Vancouver, BC; one affluent, one poorer	Three zoning-related measures -- zoning of the home itself, nearby land uses that might affect value of home, and whether a rezoning occurred during 1957-1980.	Sale price of single-family homes sold from 1957-1980	Age of home, number of rooms, lot size.	OLS; did separate regressions for the affluent and poorer neighborhoods, and separate regressions for each of the 23 years.	The effects of the zoning and land use variables are inconsistent over time (vary in sign, magnitude, significance).	(from Fischel) the authors take the three regulatory measures as exogenous to house price	**Little or no effect**
Nelson	1986	Salem, OR	Considered the effects of Salem's urban containment program.	Land prices			Urban land prices near the greenbelt boundary increased, and nearby rural land prices decreased.		
Schwartz, Zorn and Hansen	1986	Davis, CA and other Sacramento suburbs	Presence of growth controls --ceilings on number of building permits and requirements for developers who obtained permits to build affordable housing.	House prices			House prices in Davis grew more rapidly than those of control sample of other suburbs after growth controls put in place in Davis. The authors estimate that growth controls caused prices to be 9 percent higher in 1980 than they would have been without them. They also show that older housing (built before growth controls) had an increase in both price and quality.	For all the Schwartz studies -- Davis and Petaluma may be special cases -- Davis for its environmental amenities, Petalum for the fame of its growth controls -- which may have signalled exclusivity, and increased prices	
Katz and Rosen	1987	64 communities in San Francisco Bay Area, CA	Communities categorized by whether they had a growth control program -- building permit moratorium or binding rationing system -- in effect for at least one year during 1973-79	1600 single-family home sales in 1979			Houses in growth-controlled communities had sale prices around 20% higher than in the non-growth-controlled communities.	limitation -- only 175 of 1600 sales occurred in communities with growth control programs	

Table 2 **A Summary of the Empirical Literature Linking Land-Use Regulation and Housing Prices (pre-1990)**

Author(s)	Year	Geography covered	Regulatory Measure	Housing Price Measure	Other variables	Type of Model	Results	Comments	Classification for Paper
Chambers and Diamond	1988	30 MSAs - updated data from same sample as Black and Hoben.	Index of restrictiveness from a ULI -- based on rankings by a panel of experts, and delay time and general availability of zoned lots.	Two -- price of a standard quarter-acre suburban lot, zoned for single-family, and the price of unimproved acreage near developing fringe of metro area, suitable for single-family development (both obtained from ULI survey of local real estate experts).		OLS-stepwise regression	Mixed results, but authors conclude that delay and zoning did increase land prices.		
Nelson	1988	Portland area, OR	Urban growth boundaries -- inner and outer (no growth outside outer until year 2000).				Confirms Knapp's results; shows that greenbelt boundary resulted in high land values near Portland, low values in greenbelt, and high values farther out.		
White	1988	Ramapo, NY	Zoning regulations (minimum lot size).	200 sales of vacant lots zoned for residential use 1977-80	Included variables to separate subdivision-cost effect from zoning constraint effect.		Subdivision-cost effect accounted for one-quarter of difference in sale price for quarter-acre and one-acre lots, while zoning accounted for three-quarters of difference (one-acre lots sold for less per sq. ft.).	(Fischel) Ramapo had in effect a growth management program that limited growth by limiting capital improvements -- White's estimation should be considered lower bounds	
Cheshire and Sheppard	1989	Darlington and Reading, UK	Comparison of the two cities, Darlington being the least restrictive and Reading the most, based on planning applications, acceptances and appeals	Asking sale prices (from real estate agents) and sample survey of households	Hedonic price function, including variables for structural characteristics of housing, school districts, proximity to transportation and countryside amenities		House price to income ratio for four housing types was consistently higher in Reading than Darlington. Reading's policies area estimated to increase housing prices by 2.3 to 17.3 percent (depending on housing type and distance from city center), with the highest impact of policies on low-density dwellings close to city center (older units), and the lowest impact on higher density development far from center (newer units), which the authors attribute to developers ability to change housing type in response to restrictions.		
Rose	1989	MSAs	Index of potential monopoly in metro areas (e.g. # of local governments) - based on Hamilton (1978).	Developable land prices -- from ULI survey and FHA data	Included variables to account for existence of natural barriers to development.	OLS	About 10% of variation in intermetro land prices is accounted for by index of potential monopoly; natural barriers accounted for 30% of variation.		

Table 2 **A Summary of the Empirical Literature Linking Land-Use Regulation and Housing Prices (pre-1990)**

Author(s)	Year	Geography covered	Regulatory Measure	Housing Price Measure	Other variables	Type of Model	Results	Comments	Classification for Paper
Spreyer	1989	Houston, TX (which has no zoning) and nearby municipalities (which do)	Homes placed in one of three categories: zoned, unzoned but covenanted (mainly Houston properties), unzoned and uncovenanted.	House values for single family homes			Unzoned but covenanted (in Houston) had values not statistically different from properties in zoned cities, but properties that were unzoned and uncovenanted had values less than those in the other two categories. The authors suggests the results indicate that covenants are an alternative to zoning in relatively undeveloped areas where developers can acquire and impose covenants on large areas of land (i.e., there is a larger transaction cost for covenants in developed areas).	(Fischel) Spreyer only looks at single-family homes, so it's possible that in unzoned, uncovenanted areas, there are other uses which have higher values than the single-family homes	

Table 3 **A Summary of the Empirical Literature Linking Land-Use Regulation and Housing Prices (post-1989)**

Author(s)	Year	Geography covered	Regulatory Measure	Housing Price Measure	Other variables	Type of Model	Results	Comments	Classification for Paper
Cho	1990	10 magistral districts of Fairfax County, VA	Percent land vacant, zoning restrictiveness index, use restrictiveness index (ratio of land designated for residential use to that designated for commercial use), relative zoning restrictiveness of adjacent areas, relative use restrictiveness of adjacent areas.	Housing price indexes construction from transaction prices and structural characteristic data collected by the county	Real per capita income, distance to Federal Triangle, change of housing price index over two years, population density	OLS	Impact of vacant land measure was negative in sign but not significant; all four restrictiveness indexes had significant positive impacts on housing price, indicating an increase in housing prices due to both intradistrict restrictiveness and the spillover effects of nearby jursidictions.		
Pollakowski and Wachter	1990	17 planning areas that constitute Montgomery County, MD	Percent land vacant, development ceiling, zoning restrictiveness index of vacant and developed land, and relative restrictiveness of adjacent planning areas.	Longitudinal housing price indexes for the 17 planning areas	Real per capita income, distance to Federal Triangle, gravity employment index, real mortgage rate, and real construction cost index.	OLS	The index of vacant land and the development ceiling had negative, but not significant impacts on housing price. Restrictiveness index had a postive, significant impact (price elasticity: 0.275). Housing prices in districts adjacent to more restrictive districts were higher (price elasticity: 0.093). The authors interpret the results as a spillover effect of zoning, caused by scarcity in restrictive districts.		
Malpezzi	1996	MSAs	Two aggregated indices -- one composed of variables from the Wharton study, the other from AIP state regulatory variables.	Median contract rent and median house value from the 1990 Census	Natural geographic constraints, demographic variables, and a rent control dummy.	OLS	For rents, only the state regulatory index was significant (and positive), but for house values, both aggregated indices were significant. The impact (increase in rent/value) of moving from lightly to heavily regulated environment is estimated to be 17% for rents and 51% for house values.		
Mayo and Sheppard	1996	Malaysia, Thailand and Korea (country-level)	Comparison of the three countries which have varying levels of restrictiveness -- Korea is the most, Thailand, the least and Malaysia is intermediate	Housing price indexes for each country	Income, factor prices for housing production, and the price of other goods	OLS and autoregressive least squares to find price elasticity of supply for housing. Also use a recursive model to estimate the change in price over time.	Malaysia and Korea had low elasticities of supply, while Thailand had a high elasticity. Recursive model showed that while Korea and Thaliand were relatively stable over time, Malaysia had a high elasticity in the years immediately after adoption of more restrictive planning system, but over time the supply curve became less elastic.		
Thorson	1996	Ten urbanized areas in the northeast US	The zoning "concentration ratio" -- a measure of monopoly zoning -- which is the proportion of suburban land controlled by the four largest suburban governments (as presented in Fischel [1981])	Median housing value for each town with population over 10,000 (from US Census, years 1970, 1980, 1990), adjusted for regional differences in cost	A number of variables to reflect town characteristics, including population characteristics, competing land use prices, and amenities	OLS	Concentration ratio had a positive, significant impact on housing value.		

Table 3 **A Summary of the Empirical Literature Linking Land-Use Regulation and Housing Prices (post-1989)**

Author(s)	Year	Geography covered	Regulatory Measure	Housing Price Measure	Other variables	Type of Model	Results	Comments	Classification for Paper
Malpezzi and Mayo	1997	Malaysia, Thailand and Korea (country-level)	In a cost-benefit analysis of Malaysia its regulatory environment was considered-- strict land use and infrastructure standards (road size, set-back, community facilities requirements), approval procedures and requirements for construction of low-cost units. Malaysia was also compared with Thailand (less restrictive) and Korea (similar restrictiveness).	For the comparison of the three countries, real housing price indexes for each	Similar to Mayo and Sheppard (1996)	Cost-benefit model using present value analysis, and model similar to Mayo and Sheppard for the three country comparison.	The cost-benefit analysis indicates that interventions add about $4,000 (Malaysian) to developers' cost. The cross-country comparison indicates that Malaysia and Korea have inelastic housing supply curves, while Thailand has an elastic curve, similar to the US.	Not many details on analysis, but it seems similar or the same as Mayo and Sheppard.	
Malpezzi, Chun and Green	1998	MSAs	Two aggregated indices -- one composed of variables from the Wharton study, the other from AIP state regulatory variables; these are used in first stage of 2SLS.	Rent and house value variables determined by hedonic modeling of Census PUMS data	Natural geographic constraints, demographic variables, and a rent control dummy.	2SLS	For both dependent variables, the linear specifications show positive and significant results for the instrumental regulatory index, with coefficients ranging from 0.02 to 0.08. The effect of moving from less stringent to more stringent regulation is estimated to be a 13-26% increase in rents or a 32-46% increase in asset prices for the quadratic models, and 9-16% and 31-46% increases respectively for the linear models.		
Green	1999	Waukesha County, WI (consisting of 39 municipalities)	Six regulatory variables (zoning and permitting) constructed from Scheutz and White's 1992 study of land use controls in the county (municipal level)	Median housing price and median rent from 1990 Census (at census tract level)	Household demographic and economic information from 1990 Census (at census tract level)	OLS	Two of the regulation variables had a positive and significant impact on housing prices; not permitting mobile homes increased prices by about 7-8%, and an additional 10 feet of frontage required increased prices by about 6-8%. Only the subdivision requirement for curbs and gutters had a significant impact on rents, increasing them by about 10-12%. Both frontage requirements and mobile home permitting also had a positive, significant impact on the share of housing which was affordable.		

Table 3 **A Summary of the Empirical Literature Linking Land-Use Regulation and Housing Prices (post-1989)**

Author(s)	Year	Geography covered	Regulatory Measure	Housing Price Measure	Other variables	Type of Model	Results	Comments	Classification for Paper
Monk and Whitehead	1999	Three districts outside London, UK	Comparison of the three districts which have varying levels of restrictiveness -- Fenland has little restriction, while both North Hertfordshire and South Cambridgeshire have significant restriction.	Land prices, housing production, and house prices		Comparative statics	Land prices were higher in the most constrained areas, but the change in prices was similar between the least restrictive (Fenland) and the less restrictive of the constrained cases (South Cambridgeshire). All saw increases in housing prices which don't seem to be affected by the level of constraint.		
Mayer and Somerville	2000	44 MSAs	Three: number of months for subdivision approval, number of growth management techniques (in MSA), and whether use development fees are imposed (all from the Wharton Urban Decentralization Project)	Supply measure -- the quarterly number of number single family building permits	Quarterly changes in house prices (from repeat sale price index, including lags for 5 periods); change in real prime rate; time trend for each city; and 1980 population	Four types -- OLS, GLS, PCSE and IV quasi-differential	Regulation has a consistently negative effect on steady-state level of construction, with housing starts estimated to be up to 45% lower in cities with more regulation. While delays in the approval process and number of management techniques both had negative, significant impacts, development fees did not show a significant effect. Modeling the dynamic effects indicates that more highly regulated MSAs have price elasticities that are more than 20% lower than in less regulated cities.		
Phillips and Goodstein	2000	37 MSAs and PMSAs	Number of municipalities (proxy for regulation as per Ozanne and Thibodeau [1985]); and regulatory index as constructed by Malpezzi (1996). Also considered impact of Portland, OR's UGB by giving it the highest index value in some of the regressions.	Median housing price (1996)	Population, median income, unemployment rate, construction cost index	OLS	Regulation index has a positive, significant effect, and there is weak evidence that the UGB has increased median housing prices, but impact is low (less than $10,000 per unit).	"speculative movement in land price" from Downs2002	
Downs	2002	86 major MSAs (including Portland, OR)	Dummy variable for Portland's Urban Growth Boundary (UGB) which was put into place in 1979.	Two measures were considered: NAR series and a Freddie Mac price index for repeat sales	City and population characteristics	Multiple regression analysis for five time periods between 1990 and 2000. The dependent variable was the percent increase in housing price during that period.	From 1994-2000 and 1996-2000, the UGB did not have a significant impact on the change in housing prices, but from 1990-2000, 1990-94 and 1990-96, the effect was positive and statistically significant. Downs interprets this to mean that the UGB alone doesn't increase housing prices, but the UGB combined with factors stimulating demand for housing (e.g. an increase in population or income) can increase prices.	Downs notes that this could be the result of unique traits of Portland that are caught up in the UGB variable. He tries to control for this by running the regressions with the dummy set to 1 for each of the other areas, and found in the early periods that none of the other metro areas had a significant coefficient.	

Table 3 **A Summary of the Empirical Literature Linking Land-Use Regulation and Housing Prices (post-1989)**

Author(s)	Year	Geography covered	Regulatory Measure	Housing Price Measure	Other variables	Type of Model	Results	Comments	Classification for Paper
Malpezzi	2002	MSAs	Two aggregated indices -- one composed of variables from the Wharton study, the other from AIP state regulatory variables.	Rent and house value variables determined by hedonic modeling of Census PUMS data; and 2000 NAR median existing house sale price (for more recent data)	Same as Malpezzi, Chun and Green, but also included "high-tech locational quotient" in the second stage regression	2SLS as in Malpezzi, Chun and Green	Regulation has a positive, significant impact when using two different measures of housing prices - the hedonic index constructed in MCG, and the 2000 NAR median existing house sale price (coefficients of 0.085 and 0.068, respectively).		
Gyourko and Glaeser	2003	Central cities of 45 MSAs	From the Wharton Land Use Control Survey -- measure is an index (ranging from 1-5, where 1 is a short period) indicating the average length of time between an application for rezoning and the issuance of a building permit.	Share of the city's housing stock priced more than 40 percent above the cost of new construction (constructed from the American Housing Survey data and RS Means estimation of construction cost)	Population growth and median income	OLS	An increase in the index by one indicates 15% more of the stock priced at more than 40% above the cost of new construction. When controlling for population growth and median income, the relationship is still positive and significant, though the impact has a lower magnitude. The authors also consider the impact of the zoning measure on the implicit zoning tax (as calculated by the authors using AHS data), and find a significant positive result, indicating a nearly $7 per square foot increase in this measure for each increase in the index of one.		

California Cities
Work Together

League of California Cities
1400 K STREET • SACRAMENTO, CA 95814 • (916) 444-5790

Sacramento, CA.
November, 1988

TO: City Managers (City Clerks in Non-Manager Cities)

RE: **SURVEY ON LOCAL GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES**

The League of California Cities is sending this survey on local growth control and growth management measures to all cities in the state. The results will provide a database that describes the scope and nature of growth control and growth management measures being undertaken in local jurisdictions in California. This data base will be used to assist individual cities now considering growth control and growth management measures by providing information on the types and impacts of such measures. This information will also be considered by the League's Growth Control Task Force in developing policies on growth control and growth management. In addition, we anticipate that the next legislative session will be focused on growth control and growth management restrictions.

This survey asks for information on all growth control or growth management measures undertaken in your jurisdiction, whether adopted as an ordinance by the city council or through the initiative ballot process. While people may have different definitions of growth control and growth management measures, for the purposes of this questionnaire such measures are those that control the rate, intensity, type and distribution of development in the jurisdiction.

We would like you to identify measures that are applicable citywide, or have an impact on the entire jurisdiction even though it may be limited to a particular geographical area. Advisory measures, short-term restrictions (such as a zoning moratorium to prepare a community plan), single site or project restrictions which do not have a jurisdictionwide effect, or measures which are no longer in effect should be excluded.

Only one survey per jurisdiction should be completed. Please have the staff person who is the most knowledgeable on the purpose, content and impacts of your city's growth control and growth management measures complete this survey. In many jurisdictions, the Planning Director would probably be the appropriate person.

Please fill out and return this survey even if you do not currently have any growth control or growth management measures. It is extremely important that every jurisdiction respond to this survey. We apologize for the length of this survey, but please respond to all of the questions. Please return this survey as soon as possible, but no later than December 30.

Thank you for your assistance. The results of this survey should be available in February, 1989.

LEAGUE OF CALIFORNIA CITIES
SURVEY ON GROWTH CONTROL

RETURN BY DECEMBER 30.

GENERAL INFORMATION

1. NAME OF JURISDICTION: _____

2. NAME OF RESPONDENT: _____

3. TITLE OF RESPONDENT: _____

4. POPULATION: not coded;replaced with standardized data

5. GEOGRAPHIC LOCATION: not coded; replaced with standardized data

   Check one of the following:

   a._____ Northern Coastal
   b._____ Northern Foothill/Mountain
   c._____ Northern Inland
   d._____ Northern Desert
   e._____ Central Coastal
   f._____ Central Foothill/Mountain
   g._____ Central Inland
   h._____ Central Desert
   i._____ Southern Coastal
   j._____ Southern Foothill/Mountain
   k._____ Southern Inland
   l._____ Southern Desert

6. DEVELOPMENT CHARACTER

   Check one of the following that describes the character of your city:

   a._____ Urban/Suburban
   b._____ Rural

7. GROWTH DEMAND

   Check one of the following that best fits your city:

   a._____ There is a strong market demand for housing development in our jurisdiction.

   b._____ There is a strong market demand for commercial and industrial development in our jurisdiction.

   c._____ Both a. and b..

   d._____ There is a lack of a strong demand for growth in our jurisdiction.

   e._____ Other (Please Explain)_____

   _____.

8. PLANNING DOCUMENT STATUS

Please check below all applicable statements regarding the status of your city's required planning documents.

a._____ Our general plan is complete (i.e., includes all state mandated elements).
Please note year of adoption:_____

b._____ We are currently in the process of updating our general plan.

c._____ We are currently in the process of updating one or more state mandated general plan elements.

not coded d._____ Our general plan is incomplete or over 10 years old.

e._____ We have asked for or received a general plan extension from the State Office of Planning and Research.

f._____ We have adopted a general plan growth management element or are currently developing such an element.

not coded g._____ Our housing element is complete and finally adopted.
Please note year of adoption:_____.

not coded h._____ We only have a draft housing element.

not coded i. According to the State Department of Housing, Community Development (HCD), our adopted housing element has been deemed:

(1)_____ In compliance. (2)_____ Out of compliance.

(3)_____ Obsolete (4)_____ No determination/unknown.

not coded j. According to HCD, our draft housing element has been deemed:

(1)_____ In compliance. (2)_____ Out of compliance.

(3)_____ Obsolete. (4)_____ No determination/unknown.

- -

II. RESIDENTIAL GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

9. POPULATION GROWTH LIMITATIONS

Does your city have a measure* which establishes a population growth limit or restricts the level of population growth for a given time frame (i.e., annual basis)?

**"Measure" includes initiatives adopted by the voters or regulatory ordinances adopted by the city council. It excludes resolutions or other policy statements.*

a._____ YES b._____ NO

If YES, adopted by (1)_____ initiative or (2)_____ ordinance.
(3)_____ year enacted.

10. HOUSING PERMIT LIMITATIONS

Does your city have a measure which restricts the total number of permitted residential building permits in a given time frame (i.e., annual basis) for:

a._____ YES b._____ NO

If YES, applies to (1)_____ single family or (2)_____ multiple family or (3)_____ both

If YES, total # of permitted units:(4) _____ per (5)_____.

If YES, adopted by (6)_____ initiative or (7)_____ ordinance.
(8)_____ year enacted.

11. HOUSING INFRASTRUCTURE REQUIREMENTS

Does your city have a measure which specifically requires adequate service levels (i.e., road capacity/traffic congestion) or service capacity (i.e., water, sewers, etc.) prior to or as a condition of approval of a residential development?

a. _____ YES b. _____ NO

If YES, adopted by (1)_____ initiative or (2)_____ ordinance.
(3)_____ year enacted.

12. HOUSING DENSITY AND LOCATIONAL RESTRICTIONS

Does your city have a measure which did any of the following (check all applicable responses):

a._____ Reduced the permitted residential density by general plan amendment or rezoning.

Applicable to: (1)_____ Entire City or (2)_____ Part of City
Adopted by: (3)_____ initiative or (4)_____ ordinance.
Year enacted: (5)_____.

b._____ Requires voter approval to increase residential densities.

Applicable to: (1)_____ Entire City or (2)_____ Part of City
Adopted by: (3)_____ initiative or (4)_____ ordinance.
Year enacted: (5)_____.

c._____ Requires super majority council vote to increase residential densities.

Applicable to: (1)_____ Entire City or (2)_____ Part of City
Adopted by: (3)_____ initiative or (4)_____ ordinance.
Year enacted: (5)_____.

d._____ Redesignated or rezoned land previously designated for residential development to agriculture or open space (i.e., hillside or ridge preservation).

Adopted by: (1)_____ initiative or (2)_____ ordinance.
(3) _____ year enacted.

IF YOU ANSWERED YES TO QUESTIONS 9, 10, OR 11, OR CHECKED A RESPONSE TO QUESTION 12, PLEASE ANSWER THE FOLLOWING QUESTIONS 13 - 15. IF YOU ANSWERED NO OR DID NOT CHECK A RESPONSE TO QUESTIONS 9-12, GO TO QUESTION 16.

13. PURPOSES OF RESIDENTIAL GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

Please check all of the applicable purposes for all of your city's residential growth control or growth management measures as listed below:

a._____ Air Quality
b._____ Water Quality
c._____ Agricultural Land Preservation
d._____ Open Space/Ridgeline Preservation
e._____ Limitation of Urban Sprawl
f._____ Preservation of Sensitive Environmental Areas
g._____ Reduction in Traffic Congestion
h._____ Sewer Capacity Limitations
i._____ Water Quantity Limitations
j._____ Rapid Population/Housing Growth
k._____ Quantity of High Density Housing Developments
l._____ Quantity of Low Income Housing Developments
m._____ Quality of Life Preservation
n._____ Other: (please specify)_____
o._____ Information not available
p._____ Not applicable - no residential growth control or growth management measures

14. IMPACTS OF RESIDENTIAL GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

Please check all of the applicable impacts of all of your city's residential growth control or growth management measures as listed below:

a._____ Increase in housing costs above inflation rates.
b._____ Reduction in the historical level of new housing development.
c._____ Increase in average commute distances.
d._____ Increase in traffic levels/congestion.
e._____ Decrease in projected traffic levels/congestion.
f._____ Reduction in projected population levels.
g._____ Other. (Please specify):_____
_____
h._____ Information not available.

15. LOW-MODERATE INCOME HOUSING EXEMPTIONS

Does your city exempt low and/or moderate income housing units (i.e., affordable to families with an income of 120% or less of the median) from application of your residential growth control/growth management measures?

a.______ YES. b.______ NO. c.______ Not applicable - no residential growth control or growth management measures.

16. LOW-MODERATE INCOME HOUSING INCENTIVES

Does your city provide any incentives (i.e., density bonus, financial subsidies, etc.) for construction of low and/or moderate income housing units?

a.______ YES. b.______ NO.

If YES, please specify: ____

____.

- -

III. COMMERCIAL AND/OR INDUSTRIAL GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

17. SQUARE FOOTAGE LIMITATIONS

Does your city have a measure that restricts the amount of square footage that can be built within a given time frame for:

a. Commercial (i.e., retail and office): (1)______ YES (2)______ NO

If YES, applicable to: (3) ______ Entire City or (4)______ Part of City
If YES, adopted by: (5)______ initiative or (6)______ ordinance
(7) ______ year enacted.

b. Industrial (light industrial/warehouse): (1)_____ YES (2)_____ NO

If YES, applicable to: (3) ______ Entire City or (4)______ Part of City.
If YES, adopted by: (5) ______ initiative or (6) ______ ordinance
(7) _____ year enacted.

18. COMMERCIAL/INDUSTRIAL INFRASTRUCTURE REQUIREMENTS

Does your city have a measure that specifically requires adequate service levels (i.e., road capacity/traffic congestion) or service capacity (i.e., water, sewer, etc.) prior to or as a condition of approval of commercial and/or industrial development?

a.______ YES b.______ NO

If YES, adopted by: (1)______ initiative or (2)______ ordinance
(3)______ year enacted.

19. COMMERCIAL/INDUSTRIAL LOCATIONAL RESTRICTIONS

Does your city have a measure which redesignated or rezoned land previously designated for commercial and/or industrial development?

a._____ YES b._____ NO

If YES, applicable to: (1) ____ Entire City or (2) ____ Part of City.
If YES, adopted by: (3)_____ initiative or (4)_____ ordinance
(5)_____ year enacted.
If YES, redesignated to: (6)_____ residential (7)_____ agriculture
(8)_____ other, Specify:_____

20. COMMERCIAL BUILDING HEIGHT LIMITATIONS

Does your city have a measure adopted within the last 5 years, which restricts the permitted height of commercial/office buildings?

a._____ YES b._____ NO

If YES, applicable to: (1)___ Entire City or (2)___ Part of City.

If YES, adopted by: (3)_____ initiative or (4)_____ ordinance
(4)_____ year enacted.

IF YOU ANSWERED YES TO QUESTIONS 17, 18, 19 OR 20, PLEASE ANSWER THE FOLLOWING QUESTIONS 21 - 22. IF YOU ANSWERED NO, GO TO QUESTION 23.

21. PURPOSES OF COMMERCIAL AND/OR INDUSTRIAL GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

Please check all of the applicable purposes for all of your city's commercial/industrial growth control or growth management measures as listed below:

a._____ Air Quality Preservation
b._____ Water Quality Preservation
c._____ Agricultural Land Preservation
d._____ Open Space Preservation
e._____ Limitation of Urban Sprawl
f._____ Preservation of Sensitive Environmental Areas
g._____ Reduction in Traffic Congestion
h._____ Sewer Capacity Limitation
i._____ Water Quantity Limitation
j._____ Quality of Life Preservation
k._____ Other (please specify):_____
l._____ Information Not Available
m._____ Not applicable -- no commercial/industrial growth control or growth management measures.

22. IMPACTS OF COMMERCIAL/INDUSTRIAL GROWTH AND GROWTH MANAGEMENT MEASURES

Please check below all of the applicable impacts of all of your city's commercial/industrial growth control or growth management measures as listed below:

a.______ Increase in the average commute distance
b.______ Increase in traffic levels/congestion
c.______ Decrease in projected traffic levels/congestion
d.______ Reduction in the historical level of new commercial/industrial development.
e.______ Loss of projected new commercial, office or industrial developments/employers
f.______ Reduction in projected employment levels
g.______ Reductions in projected sales tax revenues
h.______ Reductions in projected property tax revenues
i.______ Increase in the historical level of residential development
j.______ Other (please specify):______________________________
k.______ Information not available
l.______ Not applicable -- no commercial/industrial growth control or growth management measures

23. JOBS/HOUSING BALANCE

Has your city enacted a policy or ordinance which specifies a desired or required ratio of the number of housing units per the number of jobs within a given area or within the entire city?

a.______ YES b.______ NO

If YES, what is that ratio or percentage:______________________

24. JOBS/HOUSING LINKAGE

Has your city enacted an ordinance to require commercial/industrial developers to pay in-lieu fees for housing development or to construct housing units as a condition of development approval?

a.______ YES b.______ NO

- -

IV. OTHER GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

25. URBAN LIMIT LINE/GREENBELT

Has your city established an urban limit line or greenbelt, other than the boundaries of your city, beyond which residential, commercial and/or industrial development is not currently permitted?

a.________ YES b.________ NO

If YES, adopted by: (1)_____ initiative or (2)_____ ordinance.
(3)_____ year enacted.

26. OTHER MEASURES

Does your city have other existing or pending measures which fall under the definition of growth control or growth management which are not covered under the prior questions?

a.________ YES b.________ NO

If YES, please describe: (1)_____

If YES, adopted by: (2)_____ initiative or (3)_____ ordinance or (4)_____ pending and (5)_____ year enacted.

- -

V. MONITORING AND EVALUATION OF GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

27. MONITORING BENEFITS AND IMPACTS

Has your city established a program for monitoring or measuring the benefits and impacts of your growth control or growth management measures?

a._____ YES b._____ NO

28. EVALUATING BENEFITS AND IMPACTS

Have any studies been conducted by the city or any other public or private agency or group to analyze the benefits and impacts of your growth control or growth management measures?

a._____ YES b._____ NO c._____ Don't Know

If YES, please list the titles and authors of these studies below:

_____

_____

_____

- -

VI. GENERAL COMMENTS

29. Please use the space below to write any comments on growth control and growth management measures which were not included in the prior questions or any comments you may have on this survey.

_____

_____

_____

_____

_____

Please return this survey by **December 30** to:

League of California Cities
Attn: Sheryl Patterson
1400 K Street, 4th Floor
Sacramento, CA 95814

GROWTH.leg

WHARTON URBAN DECENTRALIZATION PROJECT

(with the cooperation of the International City Managers Association)

* * * * * * * *

DEVELOPMENT REGULATION SURVEY QUESTIONNAIRE

I. JURISDICTION

Name of Jurisdiction _____ Zip Code _____

1. Type of Jurisdiction:
   [ ] City
   [ ] County
   [ ] Township
   [ ] Town, Village, or Borough
   [ ] Other _____

2. Size of Jurisdiction: _____ Square miles

3. Population

   a) Current Population Estimate _____

   b) Annual Population Growth Rate

   Past 5 years _____ % per year

   Projected next 5 years _____ % per year

II. DEVELOPMENT POLICIES

The following questions concern public policies and actions that affect the supply of land for single-family detached housing. Please give us the benefit of your opinion.

4. What is the main building code utilized by your community?

Building Officials and Code Administrators (BOCA)	[ ]
Southern Building Code (SBCCI)	[ ]
Uniform Building Code (UBC/ICBO)	[ ]
Council of American Building Officials (CABO)	[ ]
Other	[ ]

5. Please rate the importance of the following factors, on a scale of 1 to 5, to the development process in your community. (1 = not at all important to 5 = very important)

	Not Important 1	2	3	4	Very Important 5	Not Sure
Population Growth	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Population density	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Adequate infrastructure	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Land costs	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Regulation	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Development standards	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Comprehensive planning	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Tax rates	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Quality of life	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Other specify	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

6. On a scale of 1 to 5, please rate the effectiveness of each of the following growth management techniques in controlling growth in your community. (1 = not effective to 5 = very effective).

	Not Important 1	2	3	4	Very Important 5	Not Sure
Adequate facilities	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Ordinances	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Building permits	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Population limits	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Exactions/Impact fees	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Urban service boundary	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Farm protection	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Zoning ordinance	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Other specify	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

7. How did the time to obtain a routine single-family project approval (zoning and subdivision) change during the period from 1983 to 1988?

Shortened considerably	Shortened somewhat	No change	Increased somewhat	Increased considerably	No opinion
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

8. What is the typical amount of time between application for rezoning and issuance of a building permit for the development of:

	Less than fifty single-family units	Fifty or more single-family units	Office building of under 100,000 square ft.
Less than 3 mons.	[ ]	[ ]	[ ]
3 to 6 months	[ ]	[ ]	[ ]
7 to 12 months	[ ]	[ ]	[ ]
13 to 24 months	[ ]	[ ]	[ ]
More than 24 months	[ ]	[ ]	[ ]

9. What is the typical amount of time between application for subdivision approval and the issuance of a building permit (assume proper zoning already in place) for the development of:

	Less than fifty single-family units	Fifty or more single-family units	Office building of under 100,000 square ft.
Less than 3 mons.	[ ]	[ ]	[ ]
3 to 6 months	[ ]	[ ]	[ ]
7 to 12 months	[ ]	[ ]	[ ]
13 to 24 months	[ ]	[ ]	[ ]
More than 24 months	[ ]	[ ]	[ ]

10. How does the acreage of land zoned for the following land uses compare to demand?

	Far more than demanded	More than demanded	About right	Less than demanded	Far less than demanded	No opinion/ not sure
Single Family	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Multi/Family	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Commercial	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Industrial	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

11. How does the current availability of land zoned for the following single-family residential lot sizes compare to demand?

	Far more than demanded	More than demanded	About right	Less than demanded	Far less than demanded	No opinion/ not sure
Less than 4,000 sq. ft.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
4,000 - 8,000 sq.ft.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
8,000 - 10,000 sq. ft.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
10,000 - 20,000 sq. ft.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Over 20,000 sq. ft.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

12. How many single-family lots have been approved for development (with full services) for each of the following lot sizes during the past 12 months? If zero, please indicate "0".

	Number of Lots
Less than 4,000 sq. ft.	_____
4,000 - 8,000 sq. ft.	_____
8,000 - 10,000 sq. ft.	_____
10,000 - 20,000 sq. ft.	_____
Over 20,000 sq.ft.	_____

13. How many acres of land have been approved for development (with full services) for each of the following land uses during the last 12 months? If zero, please indicate "0".

	Acreage
Multi-family	_____
Office	_____
Retail	_____
Industrial	_____

14. Approximately what percentage of applications for zoning changes were approved in your community during the past 12 months?

[ ] 100-90% [ ] 89-60% [ ] 59-30% [ ] 29-10% [ ] 10-0%

15. How has the provision of roads and sewers kept pace with growth needs?

Much more than needed	Slightly more than needed	About right	Less than needed	Far less than needed	No opinion/ not sure
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

16. For a typical 2,000 - 3,000 sq. ft. single family home (for example, with 3 bedrooms and 2 baths), please indicate which fees/exactions are imposed in your area and associated characteristics:

	Amount (dollar or set-aside acreage)	Unit of impact (e.g. per sq. ft.)	Assessed at the time of: Zoning	Sub-division	Permit	Paid at the time of: Zoning	Sub-division	Permit
Schools	___	_____	___	___	___	___	___	___
Parks	___	_____	___	___	___	___	___	___
Sewer	___	_____	___	___	___	___	___	___
Fire Houses	___	_____	___	___	___	___	___	___
Libraries	___	_____	___	___	___	___	___	___
Community Centers	___	_____	___	___	___	___	___	___
Others	___	_____	___	___	___	___	___	___

We do not use fees/exactions _____

17. Which of the following techniques does your community use to regulate the conversion of land from agricultural/open space to residential, commercial or industrial use?

[ ] Agricultural Land Conversion Tax
[ ] Transfer of Development Rights
[ ] Land Banking
[ ] Real Estate Transfer Tax
[ ] Urban Development Boundaries
[ ] Water/Sewer provision Staging Plan
[ ] Historic Preservation Requirements
[ ] Other

18. In your community, how prevalent are the following modes of introducing growth management policies?

	Very prevalent	Somewhat prevalent	Not prevalent	Not sure/do not know
Citizen referendum	[ ]	[ ]	[ ]	[ ]
Legislative action by the municipality	[ ]	[ ]	[ ]	[ ]
Legislative action by the county	[ ]	[ ]	[ ]	[ ]
Legislative action by the state	[ ]	[ ]	[ ]	[ ]
Administrative action by public authorities	[ ]	[ ]	[ ]	[ ]

19. How much has the cost of lot development, including subdivision, increased from 1983-1988?

[ ] None [ ]1-9% [ ] 10-19% [ ] 20-29%
[ ] 30-39% [ ] 40-49% [ ] 50% or more

20. How would you describe your jurisdiction?

[ ] High growth area
[ ] Medium growth area
[ ] Slow growth area
[ ] No growth area

21. In your opinion, how do living conditions in this community compare to five years ago?

[ ] Better [ ] Worse
[ ] About the same [ ] Not sure/do not know

22. In your opinion, who should pay for roads, sewers, and schools when a new residential development is built?

[ ] Developers [ ] All residents in the city
[ ] Users [ ] New residents
[ ] Share between developers and new residents

23. Name_____

24. Title_____

25. Organization_____

26. Status: [1] Public
[2] Private
[3] Non Profit

27. Address_____

28. Telephone_____

29. How long have you worked or lived in the community?
_____ years.

30. Check this box if you would like to receive a copy of the results of this survey. [ ]

THANK YOU

November 1989

WHARTON URBAN DECENTRALIZATION PROJECT

SURVEY OF COUNTY GOVERNMENTS

I. GENERAL INFORMATION

1. Name of County: _____

2. State: _____

3. Size of County: _____ square miles

4. Size of population: _____

5. Number of municipal governments (cities, towns, boroughs, villages, or townships) in county: _____

   Number of school districts in county: _____

   Number of special districts in county: _____

   Number of cities in county with population > 100,000 : _____

6. How would you describe your county? Please check one.

   [ ] High growth area [ ] Medium growth area
   [ ] Slow growth area [ ] No growth area

II. FINANCIAL POLICY AND ADMINISTRATION STRUCTURE

7. TAXATION

   (a) Which governments have the authority to impose a property tax in the county? Please check each that do.

   [ ] County [ ] Municipalities [ ] Special Districts [ ] School Districts

   (b) What is the **effective** county tax rate for each of following types of property? (effective rate = statutory rate x average assessment ratio)

Residential	_____ %	answers should be ≤ 10%
Commercial	_____ %	answers should be ≤ 10%
Industrial	_____ %	answers should be ≤ 10%

8. IMPACT FEES AND EXACTIONS (set-aside requirements)

(a) Which of the following levels of government impose impact fees or exactions on new residential developments, for each type of service indicated? Please check each government unit that assesses an impact fee.

SCHOOLS:	[ ] County	[ ] Municipalities	[ ] School Districts
PARKS:	[ ] County	[ ] Municipalities	[ ] Special Districts
LIBRARIES/ COMMUNITY CENTERS:	[ ] County	[ ] Municipalities	[ ] Special Districts
PUBLIC SAFETY:	[ ] County	[ ] Municipalities	[ ] Special Districts
WATER:	[ ] County	[ ] Municipalities	[ ] Special Districts
SEWER:	[ ] County	[ ] Municipalities	[ ] Special Districts
ROADS:	[ ] County	[ ] Municipalities	[ ] Special Districts
OTHERS:	[ ] County	[ ] Municipalities	[ ] Special Districts

(b) Please answer this question for only those services financed by impact fees/exactions charged by the county. If there are no county impact fees, then please go on to question 9. Do not include permit fees.

Consider a new development consisting of 100 single family homes (approximately 3 bedrooms, 2 baths, 2500 square feet, half acre lot, 1 car garage). What impact fees or exactions are typically applied? Please fill in 0 if no fees or set asides are required. If dollar fees are substitutable for acreage set-asides, list only the $ amount.

	$ AMOUNT PER UNIT	ACREAGE SET ASIDE PER UNIT
Schools:	_____	_____
Parks:	_____	_____
Libraries/ Community Centers:	_____	_____
Public Safety:	_____	_____
Water:	_____	_____
Sewer:	_____	_____
Roads:	_____	_____
Others:	_____	_____

9. Debt Structure

(a) General obligation bonds are issued by:

[ ] County
[ ] Special Districts
[ ] Municipalities
[ ] School Districts

(b) Revenue bonds (pledged against user charges) are issued by:

[ ] County
[ ] Special Districts
[ ] Municipalities
[ ] School Districts

10. User Fees

(a) Which levels of government impose user charges? Check all relevant levels.

[ ] County
[ ] Special Districts
[ ] Municipalities
[ ] School Districts

(b) For those user charges utilized by the county, list the item and unit of impact. (Ex. item: Toll roads charge = $.10 per mile)

Item 1: _____ charge = _____
Item 2: _____ charge = _____
Item 3: _____ charge = _____
Item 4: _____ charge = _____

11. To what extent is the financial and production organization of your county influenced by the following factors? On a scale of 1 to 5 (5 = highest grade), please check a number for each factor.

	[1]	[2]	[3]	[4]	[5]
Desire to approximate most cost effective structure	___	___	___	___	___
Desire to mitigate service inequities within county	___	___	___	___	___
Desire to have maximal autonomy by local communities	___	___	___	___	___
Adherence to historical custom	___	___	___	___	___

12. In choosing the county's mix of taxes, fees, debt, user charges and the like, do you consider the relation between your choice and the choices of nearby counties?

[ ] Yes [ ] No

Please comment:

13. In your opinion, do municipalities within your county and across other counties "compete" for jobs and high income residents by their choice of financing and service provision:

[ ] Yes [ ] No

We would appreciate any elaboration you might make on this point.

14. To what extent do the following characteristics of municipalities influence whether or not they arrange for public services through the county, produce the service in conjunction with other municipalities, or produce the services themselves? (5=highest grade)

	[1]	[2]	[3]	[4]	[5]
Population size	___	___	___	___	___
Average household income	___	___	___	___	___
Access to grants-in-aid	___	___	___	___	___
Desire for autonomy	___	___	___	___	___
Ability to privatize	___	___	___	___	___

III. LAND USE REGULATIONS AND ADMINISTRATION

15. ZONING

(a) Please check the statement below which best describes your county.

[ ] Only the county exercises zoning authority.
[ ] Only municipalities exercise zoning.
[ ] The county zones unincorporated areas only and municipalities exercise separate zoning authority.
[ ] The county zones for some municipalities while other municipalities decide their own zoning.

(b) If your county exercises zoning authority, please check each type of zoning used.

[ ] density restrictions [ ] minimum lot size requirements [ ] allowable use zoning

16. BUILDING PERMITS

(a) What statement below best describes your county? Please check one.

[ ] Only the county issues building permits.
[ ] Only municipalities issue building permits.
[ ] The county and some (or all) municipalities separately issue building permits.

(b) Please rate the degree to which the following factors influence whether a residential, commercial, or industrial project is awarded a county permit. (1 = not important, 5 = very important). Please check one number for each.

	[1]	[2]	[3]	[4]	[5]
Quality of building standards	___	___	___	___	___
Traffic impact	___	___	___	___	___
Environmental impact	___	___	___	___	___
Population impact	___	___	___	___	___
Preservation of residential character	___	___	___	___	___

17. LAND CONVERSION

Which of the following techniques does your county use to regulate the conversion of land from agriculture or open space to residential, industrial, or commercial use? Please check all techniques used.

[ ] Agriculture Land Conversion Tax
[ ] Transfer of Development Rights
[ ] Land Banking
[ ] Real Estate Transfer Tax
[ ] Urban Development Boundaries
[ ] Water/Sewer Provision Staging Plan
[ ] Historic Preservation Requirements
[ ] Others _____ (Please specify)

IV. ADDRESS INFORMATION

Name: _____

Title: _____

Organization: _____

Street/box: _____

City: _____ State: _____ Zip: _____

Telephone: _____

THANK YOU !

DUE DATE:

OMB No. 0607-0094: Approval Expires 02/29/2004

FORM **C-404**
(5-24-2002)

REPORT OF PRIVATELY-OWNED RESIDENTIAL BUILDING OR ZONING PERMITS ISSUED

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

Please read instructions on the back of this form. For further assistance, call **1–800–845–8244 or email us at mcd@census.gov**

Please mail OR fax this form to:

U.S. Census Bureau
1201 East 10th Street
Jeffersonville, IN 47132–0001
Fax: 1–800–438–8040

1. PERIOD IN WHICH PERMITS WERE ISSUED –

(Please correct any errors in name, address, and ZIP Code)

2. GEOGRAPHIC COVERAGE

If your building permit system had a coverage change, please mark (X) in appropriate box, provide an explanation in Section 6, then continue completing the form in Section 3.

051 ☐ Permits no longer required
052 ☐ Permit office has merged with another permit jurisdiction
053 ☐ Permit office has split into two or more jurisdictions
054 ☐ Permit office is now responsible for additional land outside of its original boundaries

3. NEW RESIDENTIAL BUILDINGS

a. If no new residential permits were issued during this period, mark an (X) in the box and proceed to Section 4 → ☐ 100

Type of structure (1)	Item No. (2)	Number of Buildings (3)	Number of Housing units (4)	Valuation of construction *(Omit cents)* (5)
b. Single-family houses, attached and detached *[Exclude manufactured (mobile) homes.]*	101			
c. Two-unit buildings	103			
d. Three- and four-unit buildings	104			
e. Five-or-more unit buildings	105			
f. TOTAL – *Sum of 101–105*	109			

4. ADDITIONS, ALTERATIONS AND RENOVATIONS TO RESIDENTIAL STRUCTURES

Item No. (1)	Number of permits (2)	Valuation of construction *(Omit cents)* (3)
434		

5. INDIVIDUAL RESIDENTIAL PERMITS AUTHORIZING CONSTRUCTION VALUED AT $500,000 OR MORE
(If more space is needed, please attach a separate sheet.)

Description (1)	Name and address of owner or builder (2)	Buildings (3)	Housing units (4)	Valuation of construction (5)
a. Kind of building 110 _____ Site address 111 _____				
b. Kind of building 120 _____ Site address 121 _____				

6. COMMENTS *(Continue on a separate sheet)*
600

7. PERSON TO CONTACT REGARDING THIS REPORT →

a. Name 700

b. Telephone 710 — Area code | Number

c. Fax 720 — Area code | Number

d. E-mail address 730

e. Internet web address 740

See instructions on reverse side.

INSTRUCTIONS FOR COMPLETING FORM C-404, "REPORT OF PRIVATELY-OWNED RESIDENTIAL BUILDING OR ZONING PERMITS ISSUED"

GENERAL INSTRUCTIONS FOR EACH SECTION

1. **PERIOD PERMITS WERE ISSUED –** Include all privately-owned residential permits which were authorized during the **month** or **year** shown.

2. **GEOGRAPHIC COVERAGE**

051 **Discontinue –** A building permit is no longer a requirement in your geographic coverage area.

052 **Merger –** Permit office has stopped issuing permits because it has merged with another permit-issuing jurisdiction. That new office has taken over the responsibility of issuing building permits for your office.

053 **Split –** Your permit office no longer covers a particular jurisdiction because that area now issues its own building permits.

054 **Annexed land area –** Permit office is now responsible for additional land outside of its original boundaries.

3. **NEW RESIDENTIAL BUILDINGS –** Summarize information for number of buildings, number of housing units, and valuation of construction as shown on the building or zoning permit. Enter the valuation as shown on the permit. If no valuation is listed, enter your best estimated value.

   Item 101 – Single-family houses, attached and detached – Include all new privately-owned attached and detached single-family houses. Include attached single-family houses known commonly as townhouses or row houses where (1) each unit is separated from adjoining units by a wall that extends from ground to roof, (2) no unit is above or below another unit, and (3) each unit has separate heating and separate utility meters.

   Item 103 – Two-unit buildings – Include all new privately-owned residential buildings that only contain 2 housing units, and do not meet the definition of attached single-family as shown under Item 101. All units must be stacked or share common utilities.

   Item 104 – Three and four-unit buildings – Include all new privately-owned residential buildings that only contain 3 or 4 housing units, and do not meet the definition of attached single-family as shown under Item 101. All units must be stacked or share common utilities.

   Item 105 – Five or more unit buildings – Include all new privately-owned residential buildings that only contain 5 or more housing units, and do not meet the definition of attached single-family as shown under Item 101. All units must be stacked or share common utilities.

   Item 109 – Total – Sum of the data reported in Items 101 through 105, (101+103+104+105) for housing units, and valuation of construction. **Do not** total buildings.

4. **ITEM 434 – ADDITIONS, ALTERATIONS, AND RENOVATIONS –** Summarize information for number of permits and valuation as shown on the building permit for all additions, alterations and renovations to residential properties. Enter the valuation as shown on the permit. If no valuation is listed, enter your best estimated value.

   Also include residential permits for property outside residential structure, such as sheds, fences, decks and pools and replacements, such as reroofing, residing, and new windows.

   Exclude repairs that only keep the property in ordinary working condition.

5. **INDIVIDUAL RESIDENTIAL PERMITS AUTHORIZING CONSTRUCTION VALUED AT $500,000 OR MORE –** Please enter data in this section for individual permits valued at $500,000 or more included in Sections 3 and 4 above. If more than two such permits were issued, attach a separate sheet.

6. **COMMENTS –** Enter any explanations from Section 2, miscellaneous notes or questions. Include any revisions to data entered on previous forms.

7. **CONTACT INFORMATION –** Please fill in any blank areas or make any corrections to information already entered in these fields. Enter the Internet web address for your permit office, if applicable.

INSTRUCTIONS FOR CLASSIFYING RESIDENTIAL BUILDINGS

RESIDENTIAL BUILDINGS

Residential buildings are buildings containing one or more housing units. **A housing unit is a house, an apartment, a group of rooms or a single room intended for occupancy as separate living quarters.** Separate living quarters are those in which the occupants live separately from any other individuals in the building and which have a direct access from the outside of the building or through a common hall.

PERMITS TO INCLUDE

- **privately-owned residential buildings**, which include all residential buildings owned by a private company or an individual during the period of construction
- housing for the elderly, such as assisted living facilities, that do not have 24-hour skilled nursing care
- "turnkey" housing, which is housing that will be sold to a local public housing authority when completed
- all housing built by nonprofit organizations
- buildings manufactured partially off-site and transported and assembled at the construction site, such as prefabricated, paneled, pre-cut, sectional and modular (these do not include "mobile-HUD inspected" homes)
- foundation and interior finishing permits only when issued separately and a valuation of construction is shown (Include data on the proper line item depending on the number of housing units in the intended superstructure. Enter zero for the buildings and units in Items 101–105. Enter number of permits issued for additions and alterations to residential buildings in Item 434.)
- additions and alterations to residential buildings and on property outside residential structures
- major replacements, such as roof, siding, doors, and windows

PERMITS TO EXCLUDE

- publicly-owned buildings
- **manufactured (mobile-HUD inspected) homes** including related foundations and pads
- group quarters, such as dormitories, jails, nursing homes, etc.
- hotels/motels
- landscaping
- nonresidential buildings, other than structures on residential property such as sheds and garages which are included in Item 434.
- demolitions
- moved or relocated buildings
- maintenance and repair, which are expenses to keep a property in ordinary working condition
- farm buildings, such as silos, barns, etc.

MISCELLANEOUS CLASSIFICATION INSTRUCTIONS

- Enter a building in only one category. If you cannot determine a category, please call our staff on 1–800–845–8244.
- If a building has mixed residential and nonresidential use, enter the housing units based on the residential portion of the building. Please estimate the valuation based on the residential portion of the building only.
- Classify all buildings that are being totally re-built on an existing foundation as new construction.
- Type of ownership (e.g. condominium, cooperative, timeshare, etc.) is **NOT** considered when classifying a building.

OMB No. 0607-0110: Approval Expires 07/31/2003

FORM **SOC-QI/SF.1**
(7-21-2000)

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

SURVEY OF HOUSING STARTS, SALES, AND COMPLETIONS
(SINGLE-FAMILY BUILDINGS)

TO BE COMPLETED BY CENSUS FIELD REPRESENTATIVE

Address or location of building							Builder/Owner	PSU
							Project name (if any)	Place code
Building permit number	Permit issued	Month	Day	Year	Block	Lot	Serving post office, State, ZIP Code	RO

TO BE COMPLETED BY RESPONDENT

START
Has excavation started for the footings or foundation of this house?
1 ☐ Yes 2 ☐ No – *Go to DETACH_ATTACH*

START_DATE — Month / Year
When was this house started?

EX_COMP — Month / Year
When do you expect to complete this house?

COMPLETED
Is this house completed or occupied?
1 ☐ Yes 2 ☐ No – *Go to DETACH_ATTACH*

COMP_DATE — Month / Year
When was this house completed or occupied?

DETACH_ATTACH
Is this house –
1 ☐ Detached? – *Go to MANUFAC*
2 ☐ Attached as part of a group of two or more row or townhouses?

IF_ATTACHED
Is each house separated by a ground-to-roof wall with a separate heating system and with individual meters for public utilities such as water and sewer, electricity, gas, and with no other units above or below?
1 ☐ Yes 2 ☐ No

MANUFAC
Is this house –
1 ☐ **Modular?**
Finished 3-dimensional sections of the complete dwelling, built in a factory, are transported to the site to be joined together on a permanent foundation.
2 ☐ **Panelized?**
Shipped from the factory as a package of wall panels, roof trusses, and other components that are assembled on site. May include all materials required to finish the house as a complete package.
3 ☐ **Precut?**
A package of lumber or timber (logs), precut to exact size, length, and quantity, to be assembled on site. Package may also include plumbing, wiring, and/or heating system elements.
4 ☐ **Site-built?**
Built on site. Can include SOME factory components such as roof and floor trusses, wall panels, door frames, etc.

FIN_SQFT — Square feet
What is the square foot area of completely finished floor space, including space in basement and attic with finished walls, floors, and ceilings?

INT_EXT
Is the square footage based on interior or exterior dimensions?
1 ☐ Interior
2 ☐ Exterior

FOUNDATIONS
What type of foundation does this house have?
1 ☐ Full or partial basement – *Go to FIN_BSMT*
2 ☐ Crawl space
3 ☐ Slab
20 ☐ None of the above – *Specify* _____
} *Go to LOT_SIZE*

FIN_BSMT
Is part or all of this basement finished?
1 ☐ Yes 2 ☐ No – *Go to LOT_SIZE*

BSMT_SQFT — Square feet
What is the square foot area of the finished part of the basement?

LOT_SIZE
What is the size of the individual lot on which this house is being built?
_____

BEDROOMS — Number
How many bedrooms are in this house?

FULL_BATH — Number
How many full bathrooms are in this house?

HALF_BATH — Number
How many half bathrooms are in this house?

STORIES
How many stories, **NOT INCLUDING** the basement, are in this house?
1 ☐ One
2 ☐ Two (including 1 1/2 stories)
3 ☐ Three or more (including 2 1/2 stories)
4 ☐ Split-level

EX_WALL1
What exterior wall material covers **most** of this house?
1 ☐ Wood or wood products (including masonite or T111)
2 ☐ Brick or brick veneer
3 ☐ Aluminum siding (not covered with vinyl)
4 ☐ Concrete stucco (such as Shotcrete)
5 ☐ Vinyl siding (including vinyl-covered aluminum)
6 ☐ Concrete block (including cinder, cement or building blocks)
7 ☐ Stone, rock, or other stone materials
8 ☐ Fiber cement siding (such as Hardiplank and Hardiboard)
20 ☐ None of the above – *Specify* _____

EX_WALL2
Is there any secondary exterior wall material, not including trim, shutters and woodwork around openings?
1 ☐ Yes
2 ☐ No – *Go to PARKING*

EX_WALL3
What secondary type of wall material is used?
Mark ONE box only.
1 ☐ Wood or wood products (including masonite or T111)
2 ☐ Brick or brick veneer
3 ☐ Aluminum siding (not covered with vinyl)
4 ☐ Concrete stucco (such as Shotcrete)
5 ☐ Vinyl siding (including vinyl-covered aluminum)
6 ☐ Concrete block (including cinder, cement or building blocks)
7 ☐ Stone, rock, or other stone materials
8 ☐ Fiber cement siding (such as Hardiplank and Hardiboard)
20 ☐ None of the above – *Specify* _____

PARKING
What type of parking does this house have?
Mark ONE box only.
1 ☐ Garage for 1 car
2 ☐ Garage for 2 cars
3 ☐ Garage for 3 or more cars
4 ☐ Carport
5 ☐ Other off-street parking (including a driveway with no garage or carport)
6 ☐ None of the above

FIREPLACES — Number
How many working fireplaces are in this house?

DECK
Does this house have any decks? (floored areas **without** a roof, not sitting directly on the ground; typically made of wood)
1 ☐ Yes
2 ☐ No

PLEASE CONTINUE ON REVERSE SIDE.

PATIO

Does this house have any patios? – (floored areas with **or** without a roof, sitting **directly** on the ground. – *Do not include small concrete pads at entryways.)*

1 ☐ Yes
2 ☐ No

PORCH

Does this house have any porches? (floored areas **with** a roof, enclosed or open, not sitting directly on the ground. – *Do not include small covered entryways.)*

1 ☐ Yes
2 ☐ No

HEAT_SOURCE

What energy source will be used **most** for heating this house?

1 ☐ Electricity
2 ☐ Natural gas (from underground pipes)
3 ☐ Bottled gas (including propane or tank gas)
4 ☐ Oil (including heating oil or kerosene)
5 ☐ Wood (including pellets)
6 ☐ Solar
7 ☐ Coal
8 ☐ No heat
20 ☐ None of the above –*Specify* _____

HEAT_SYSTEM

What heating system will be used **most** in this house?

1 ☐ Heat pump, air source (including reverse-cycle air conditioners)
2 ☐ Heat pump, ground source (including closed-loop geothermal systems)
3 ☐ Forced-air furnace **without** heat pump
4 ☐ Hot water or steam (including hydronic systems)
5 ☐ Electric baseboard (including heat strips, wall panels, radiant heat)
6 ☐ Fireplace with insert
7 ☐ Stove that burns coal or wood
8 ☐ Non-portable room heater that burns liquid fuel and is connected to a flue, vent, or chimney to remove smoke/fumes
9 ☐ Passive solar system that uses a "thermal storage wall," "sunspace," or "solar greenhouse"
20 ☐ None of the above – *Specify* _____

AIR_COND

Does this house have central air-conditioning?

1 ☐ Yes
2 ☐ No

SALES_CATEGORY

Is this house being built –

1 ☐ for sale, or is it already sold? - *Go to CONDO*
2 ☐ for the owner by a single general contractor on the owner's land? – *Go to CONTRACT_PRICE*
3 ☐ on the owner's land entirely by the owner, or by the owner acting as general contractor?
4 ☐ for rent?

} *Go to FINANCING*

CONTRACT_PRICE

What is the contract price for this house?

$ _____ – *Go to FINANCING*

CONDO

Is this house part of a condominium project?

1 ☐ Yes
2 ☐ No

DEPOSIT

Was a deposit taken or a sales agreement signed for this house?

1 ☐ Yes
2 ☐ No – *Go to INTEND_PRICE*
3 ☐ This is a MODEL home – *Go to INTEND_PRICE*

DEPOSIT_DATE

When was the deposit taken or sales agreement signed?

Month	Year

SALES_PRICE

What is the sales price?

$ _____

CLOSING_COSTS

Does the sales price include or exclude closing costs?

1 ☐ Includes
2 ☐ Excludes

LOT_VALUE

What is the value of the individual lot (including improvements such as grading, paving, installation of utilities, etc.)?

$ _____ – *Go to FINANCING*

INTEND_PRICE

What will the sales price be?

$ _____ – *Leave FINANCING blank*

FINANCING

What type of financing was or will be arranged, or will the house be paid for entirely with cash?

1 ☐ Conventional
2 ☐ FHA
3 ☐ VA
4 ☐ Farmer's Home
5 ☐ Pay cash
6 ☐ Habitat for Humanity
7 ☐ Loan from an individual
8 ☐ State or local government mortgage-backed bonds
20 ☐ None of the above – *Specify* _____

Your Census Representative

NOTES

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OMB No. 0607-0110: Approval Expires 07/31/2003

FORM **SOC-QI/MF.1**
(7-18-2000)

SURVEY OF HOUSING STARTS AND COMPLETIONS
(Multiunit Buildings)

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

TO BE COMPLETED BY CENSUS FIELD REPRESENTATIVE

Builder/Owner	Project name (if any)	Serving post office, State, ZIP Code	PSU	
			Place code	
			RO	

	1	2	3	4
Address and identification of building				
Building permit number				

TO BE COMPLETED BY RESPONDENT

	1	2	3	4
START Has excavation started for the footings or foundation of this building?	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*
START_DATE When was this building started?	Month | Year	Month | Year	Month | Year	Month | Year
EX_COMP When do you expect at least half the units to be available for occupancy?	Month | Year	Month | Year	Month | Year	Month | Year
COMPLETED Are at least half of the units in this building available for occupancy?	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*
COMP_DATE When were half of the units in this building available for occupancy?	Month | Year	Month | Year	Month | Year	Month | Year
UNITS_A How many housing units are in this building?	Units	Units	Units	Units
FLOORS_A How many floors are in this building, excluding the basement unless it will contain two or more units?				
ATTACHED_A *(For buildings with 3 floors or less)* Are any of the units attached side-by-side, with no other units above or below?	1 ☐ Yes – *Continue* 2 ☐ No – *Go to BEDROOMS_A*	1 ☐ Yes – *Continue* 2 ☐ No – *Go to BEDROOMS_A*	1 ☐ Yes – *Continue* 2 ☐ No – *Go to BEDROOMS_A*	1 ☐ Yes – *Continue* 2 ☐ No – *Go to BEDROOMS_A*
HOW_MANY How many?	Units	Units	Units	Units
IF_ATTACH_A Is each unit separated by a ground-to-roof wall with a separate heating system, and with individual meters for public utilities such as water/sewer, electricity, gas, etc.?	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No
BEDROOMS_A How many units will have – no separate bedrooms (efficiency)?	Efficiency	Efficiency	Efficiency	Efficiency
one bedroom?	1 bedroom	1 bedroom	1 bedroom	1 bedroom
two bedrooms?	2 bedrooms	2 bedrooms	2 bedrooms	2 bedrooms
three bedrooms or more?	3+ bedrooms	3+ bedrooms	3+ bedrooms	3+ bedrooms
BATHS_A How many units will have – one bathroom?	1 bath	1 bath	1 bath	1 bath
one and a half bathrooms?	1 1/2 baths	1 1/2 baths	1 1/2 baths	1 1/2 baths
two bathrooms or more?	2+ baths	2+ baths	2+ baths	2+ baths

one and a half bathrooms?	1 1/2 baths	1 1/2 baths	1 1/2 baths	1 1/2 baths
two bathrooms or more?	2+ baths	2+ baths	2+ baths	2+ baths
FIN_SQFT_A What is the total square foot area of all floors in this building, excluding unfinished basements, laundry or boiler rooms, garage space, etc.?	Square feet	Square feet	Square feet	Square feet
MANUFAC_A Is this building – **1–Modular?** Finished 3-dimensional sections of the complete dwelling, built in a factory, are transported to the site to be joined together on a permanent foundation. **2–Panelized?** Shipped from the factory as a package of wall panels, roof trusses, and other components that are assembled on site. May include all materials required to finish the house as a complete package. **3–Site-built?** Built on site. Can include SOME factory components such as roof and floor trusses, wall panels, door frames, etc.	1 ☐ Modular 2 ☐ Panelized 3 ☐ Site-built	1 ☐ Modular 2 ☐ Panelized 3 ☐ Site-built	1 ☐ Modular 2 ☐ Panelized 3 ☐ Site-built	1 ☐ Modular 2 ☐ Panelized 3 ☐ Site-built
AIR_COND_A Does this building have air-conditioning?	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No
HEAT_SRC_A What principal energy source will be used for heating this building?	1 ☐ Electricity 2 ☐ Gas (including propane, natural, bottled, tank, or butane gas) 4 ☐ Oil (including heating oil or kerosene) 8 ☐ No heat provided 20 ☐ None of the above – *Specify* _______________ *Go to FPLACE_A*	1 ☐ Electricity 2 ☐ Gas (including propane, natural, bottled, tank, or butane gas) 4 ☐ Oil (including heating oil or kerosene) 8 ☐ No heat provided 20 ☐ None of the above – *Specify* _______________ *Go to FPLACE_A*	1 ☐ Electricity 2 ☐ Gas (including propane, natural, bottled, tank, or butane gas) 4 ☐ Oil (including heating oil or kerosene) 8 ☐ No heat provided 20 ☐ None of the above – *Specify* _______________ *Go to FPLACE_A*	1 ☐ Electricity 2 ☐ Gas (including propane, natural, bottled, tank, or butane gas) 4 ☐ Oil (including heating oil or kerosene) 8 ☐ No heat provided 20 ☐ None of the above – *Specify* _______________ *Go to FPLACE_A*
HEAT_PUMP_A Will this building have any heat pumps?	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No
FPLACE_A How many units in this building have a built-in fireplace with a flue?	Units	Units	Units	Units
PARKING_A Are there parking spaces in or under the building?	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No
OWNERSHIP_A Are the units in this building – **1**–For rent? **2**–For sale as condominiums or cooperatives? **3**–For sale, not as condominiums or cooperatives?	1 ☐ For rent 2 ☐ For sale as condominiums or cooperatives 3 ☐ For sale, not as condominiums or cooperatives	1 ☐ For rent 2 ☐ For sale as condominiums or cooperatives 3 ☐ For sale, not as condominiums or cooperatives	1 ☐ For rent 2 ☐ For sale as condominiums or cooperatives 3 ☐ For sale, not as condominiums or cooperatives	1 ☐ For rent 2 ☐ For sale as condominiums or cooperatives 3 ☐ For sale, not as condominiums or cooperatives
OTHER_BLDGS Have other permits been taken out previously for residential buildings in this project? 1 ☐ Yes – Approximately when did this last occur? → Month | Year 2 ☐ No	NOTES		Your Census Representative	

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