FINDING A PLACE TO CALL HOME: LAND USE REGULATION AND HOUSING AFFORDABILITY IN METROPOLITAN AMERICA

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ABSTRACT OF THE DISSERTATION

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The housing affordability literature has had much to say on the underlying trends and influences on housing affordability over time. However today there remain only a few studies that examine the influence of land-use regulation on housing affordability. Even more uncommon is a focus on the distributional impact of such regulation on housing affordability by race and income, and across space within metropolitan areas. Moreover, the models commonly used in the literature often omit important covariates and are at great risk of significant left-out variable bias. Utilizing a cross-sectional regression design analyzing existing Wharton Residential Land Use Regulation Survey data, land use regulation survey data developed by Pendall, Puentes, and Martin (2006), and 1980-2014 Decennial Census and American Community Survey data, this dissertation charts recent housing affordability trends and illuminates the impact of various kinds of exclusionary land use regulation on housing affordability by housing tenure, race, and income.

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CHAPTER 1: Introduction

Today housing issues continue to hold a privileged place near the top of urban policy agendas. The 2008 housing market crash thrust housing issues into the spotlight, as the specter of rising foreclosures and declining homeownership elicited strong policy responses through foreclosure prevention and neighborhood stabilization programs. With tremendous upheaval in the owner housing market, particularly for low-income households saddled with predatory mortgage loans, ensuring access to quality affordable housing became a more important priority.

The affordability of housing available to vulnerable and low-income households has historically been of great concern to policymakers, dating back to the ambitious public housing program of the New Deal, continuing through the anti-poverty activism of the Great Society, up to the present day. Tens of billions of dollars are spent by the federal government alone to ensure an adequate supply of affordable housing, particularly in metropolitan contexts where strong housing demand makes housing less affordable for low-income households. The provision of adequate and affordable housing for all Americans remains a major stated goal of federal policy. The National Housing Act of 1949 called for "…the realization as soon as feasible of the goal of a decent home and a suitable living environment for every American family, thus contributing to the development and redevelopment of communities and to the advancement of the growth, wealth, and security of the Nation" (National Housing Act of 1949). Over forty years later, the National Affordable Housing Act of 1990 affirmed "…the national goal that every American family be able to afford a decent home in a suitable environment" (National Affordable Housing Act of 1990).

Despite this tremendous commitment of focus and funding, housing affordability today remains very much a persistent challenge. Stone (2006) defines such affordability as "the challenge each household faces in balancing the cost of its actual or potential housing, on the one hand, and its nonhousing expenditures, on the other, within the constraints of its income" (p. 151). There is scant evidence that housing affordability improved for low-income households during the 1990s (Gyourko and Tracy, 1999), despite the tremendous economic expansion. A more recent study examining trends post-2000 found that housing affordability remains an ongoing challenge for poor households, with the supply of affordable rental housing now lagging far behind demand (Leopold et al., 2015). Since housing affordability typically represents a ratio of housing costs to income, housing affordability stress can potentially be felt at various places along the income distribution. However, a wide body of research has shown that falling housing affordability disproportionately impacts low-income renter households that have less ability to absorb sharp increases in housing costs (Linneman and Megbolugbe, 1992; Nelson, 1994; Neogi, 2012).

The most powerful influence on worsening housing affordability is land use regulation (Glaeser and Gyourko, 2002). Such regulation limits the potential uses of land by placing constraints on the number, type, and size of the structures that can be developed. It can therefore directly affect housing affordability by limiting both the volume and character of housing development allowed within a local jurisdiction by artificially constraining housing supply within an area relative to demand. Land use zoning is perhaps the most powerful tool of local land use regulation. Before formal zoning regulation emerged, local police powers and public nuisance laws provided ad-hoc limitations on land use to protect public health (Schilling and Linton, 2005). Zoning emerged in the early 20th Century as a more comprehensive way of achieving these and other public objectives. Seeking to regulate downtown high-rise development, New York City was the first to enact a formal zoning ordinance in 1916, initiating a movement that spread to counties and municipalities across the nation (Fischler, 1998). After several legal challenges, a 1926 US Supreme Court ruling validated the constitutionality of zoning regulation and states began to enact enabling legislation granting zoning authority to local jurisdictions (Platt, 2004). These jurisdictions started to develop zoning maps allowing only a single type of development within a zoned area. Over time, local communities developed more creative forms of zoning to guide and direct housing development within their borders.

A number of communities developed zoning ordinances to preserve the type of community they currently were or wanted to become. For example, some municipalities adopted mobile home bans to effectively exclude low-income households (Barewin, 1990). Others placed limits on the number of multi-family dwellings that could be constructed, or enacted zoning maps with few multi-family zones. These dwellings tend to be more affordable and accessible to low-income households. Municipalities developed “fiscal zoning”, zoning designed to attract wealthy net contributors to the cost of public services, that improve the property tax base (Pogodzinski, 1991). Such regulations were also enacted to preserve property values, a primary concern for suburban homeowners (Ihlanfeldt, 2004).

Some communities enacted measures to regulate and control the amount and pace of development occurring within their borders. For example, building permit moratoria were used to mitigate the strain on public services such as streets, sewerage, water, parks and public education (Platt, 2004). Others adopted zoning ordinances that allowed only single family homes as a means of controlling population density and consequently the strain on public services. Still others enacted minimum lot size requirements to control residential density (Becker, 1969). These and other density restrictions limit housing affordability by reducing available supply and limiting the number of housing units developable per acre. These restrictions also create a bias toward costly luxury housing with more square footage and large acreages. Such requirements promote development of large single family homes on large parcels of land instead of smaller homes or apartment housing on smaller parcels, which can systematically exclude middle class households (Platt, 2004). Yet some communities have attempted to offset these exclusionary effects by offering density bonuses. These bonuses allow developers that agree to provide a certain number of affordable housing units to exceed the maximum allowable density allowed in the zoning ordinance (Fox and Davis, 1975).

As zoning and land use regulation has evolved and taken many forms, in the aggregate it has produced a number of unintended consequences across metropolitan space. The power to control land use and zoning facilitated the proliferation of segmented communities with variable housing types, levels of quality, and affordability. Tiebout

(1956) famously noted that individuals choose from communities based on the menu of government services they provide, financed at different levels of taxation. However, this assumption of community choice does not hold when land use regulation restricts choices for lower income households to communities with a more affordable housing stock. A household could prefer to live in a particular community, but exclusionary zoning interferes with that choice by preventing development of market-driven affordable housing accessible to that household. Such zoning contributed to an exceptional level of exclusion-promoting sprawling metropolitan development, by fueling development of wealthy new homogeneous communities at the metropolitan fringe (Fischel, 1999).

The current metropolitan housing landscape is in large part the historical legacy of these local land use decisions and regulations. These regulations represent the attempt of community residents through their elected officials to control what type of development occurs in their community as well as when and where it occurs. What is allowed and not allowed in a community influences the character of the development that does occur and thus the population that accesses it. These can serve as mechanisms to promote and preserve community homogeneity, relative unanimity of housing and demographic character. Yet these local decisions, whether intentionally or unintentionally, heavily influence the housing choices of disadvantaged racial and income groups. They also indirectly affect the distribution of these groups across metropolitan space, by constraining their housing choices to particular areas.

Recent scholarship found evidence that these regulations have furthered a pattern of income segregation (Lens and Monkkonen, 2016) and racial segregation (Massey and

Rothwell, 2009) within metropolitan areas. Such regulations may reinforce a community's suburban or rural character, but can do so at the expense of pricing out certain racial, income, and housing tenure groups completely. These regulations influence the spatial relationships between these groups. Exclusionary land use regulations can create a development bias toward a particular type of housing which may not match the type of housing demanded by various racial, income, and housing tenure groups. In this case, there can be a shortage of affordable housing units as local governments seek to direct development activity toward more expensive types of housing. In the face of such a shortage, existing affordable housing units within an exclusionary community can be occupied by middle and high-income households seeking low housing cost burdens, which further limits the supply of housing available to low-income households. Yet the natural implication of this is that these policies might also affect the general housing affordability for groups whose low incomes severely limit housing choices. Such policies clearly impact excluded groups that want to live in exclusionary communities by constraining their housing choices to non-exclusionary communities. However, in those non-exclusionary communities that excluded groups can access, their housing market presence creates higher demand for existing affordable housing than would have occurred if there was affordable housing in exclusionary communities. This essentially makes housing less affordable for everyone in non-exclusionary communities, including those with no interest in moving to an exclusionary community. Making a set of communities within a metropolitan area inaccessible to disadvantaged groups can be expected to make the housing accessible and available to these groups more expensive. Platt (2004) noted that housing within "ghetto" neighborhoods is both dilapidated and costly, principally because there are no real alternatives for the residents of these neighborhoods. Although these areas may be the cheapest to live in within a metropolitan area, they are not necessarily affordable relative to the incomes of those that live there. Moreover, they might be cheaper still if there were viable alternatives available in other portions of the metropolitan area. In addition, systematic exclusion from areas where job and educational opportunities are greatest may obviate social mobility, employment, and income gains. This can perpetuate a cycle of intergenerational poverty by restricting the housing choices of low-income families to economically impoverished areas with poorly-functioning school systems (Sharkey, 2013).

Research Problem

Given the severity and persistence of the housing affordability problem, it has received generous attention from scholars, researchers, and policy analysts alike. Descriptive statistics remain the dominant analytic approach in the housing affordability literature, tracing changes in housing affordability over time for particular income, racial, age, housing tenure, and family groups (Belsky and Lambert, 2001; Goodman, 2001; Gyourko and Tracy, 1999; Lee, 2012; Nelson, 1994; Stone, 2010). A smaller subset of the literature is focused on regional variations in housing affordability (Nelson, 1994; Neogi, 2012; Pendall, 1995; Wolff, 2006).

However relatively few studies focus on the relationship between land use regulation and housing affordability. A number examine the impact of land use regulation on the related topic of housing prices (Glaeser and Gyourko, 2002; Glaeser and Ward, 2009; Green, 1999; Ihlanfeldt, 2007). Recent work by Neogi (2012) demonstrated the negative effects of general land use regulation on general housing affordability, both measured by an index. However imprecise operationalization remains a serious weakness of this literature to date. Most studies of land use regulation and home prices treat such regulation as an index variable and thus do not measure the impact of specific types of land use regulations. Ihlanfeldt (2007) noted “there is a need for better measurement of the restrictiveness of individual jurisdictions, since instrumental variable methods are a second-best alternative for dealing with measurement error, even when attractive instruments for restrictiveness are available” (22).

Today, the literature on land use regulation and housing affordability suffers from a number of significant gaps and limitations. First, there has been a lack of work examining the effect of specific types of land use regulation on housing affordability by housing tenure, income, and racial group and the change in housing affordability over time. A deeper understanding is needed of what types of land use regulation are especially harmful to housing affordability and what the consequences are for these groups. This would provide valuable information to land use policymakers on the distributional effects of specific regulations.

Second, unaddressed in the literature is the impact of suburban land use regulation on central city housing affordability. Still unknown are the indirect effects of suburban community land use decisions on housing affordability for their central city neighbors. Identifying this relationship would have particular importance for policy. It might inform more sophisticated suburban land use regulation and policies that do not impose harmful externalities on neighboring central cities.

Third, the existing literature has routinely omitted key covariates that likely influence both land use regulation and housing affordability. To accurately measure the effects of various types of land regulations on housing affordability, more comprehensive models are needed. These models should take into account individual household and metropolitan characteristics both cross-sectionally across metropolitan areas and over time. Adopting these more comprehensive models can inform the adoption of more sophisticated models in future studies, generating more precise estimates of land use regulation's causal effects on housing affordability.

Fourth, there has been little recent work examining changes in housing affordability by racial and income group since 1980. Still unknown is whether housing affordability has worsened more for blacks and Hispanics relative to whites and for low-income households relative to middle-income households over time. Gaining a better of understanding of these trends by racial and income group would allow for a more robust understanding of how housing affordability has changed over time, and for whom it has changed the most.

Research Questions and Hypotheses

In this dissertation, I analyze trends in racial, income, and housing tenure group housing affordability since 1980. I also estimate a cross-sectional tobit model of various types of exclusionary land use regulation on household housing affordability grouped by metropolitan area in 2005-09. In addition, I estimate difference models measuring the effect of specific types of exclusionary land use regulation on changes in housing affordability from 2005-09 to 2010-14. The purpose of this study is to advance the housing affordability literature by illuminating both long term and very recent trends in housing affordability, the effects of specific types of exclusionary land use regulation on housing affordability, and the distributional impacts of this relationship by race and income.

Based on the findings of previous studies, I would hypothesize that housing affordability since 1980 has varied across racial and income groups. African-Americans, Hispanics, and low-income households would be expected to have more severe and faster-growing problems with housing affordability given the relative dearth of quality, low-cost housing available during much of this period. Moreover, I would expect that exclusionary land use regulation would have additional effects on housing affordability beyond simply raising the cost of housing by placing constraints on supply expansion. It also might have the effect of pricing low-income groups out of exclusive, often suburban communities, which increases facilitates concentration of poverty and quality of life declines in communities where the affordable, often lower quality housing stock is more plentiful. Furthermore, it may reduce affordability by restricting access to affordable housing in metropolitan job centers, which are increasingly based in the suburbs, inhibiting employment and consequently income growth and mobility for low-income households. Given these hypotheses, I would expect the effects of exclusionary land use regulation on housing affordability to be stronger for blacks and Hispanics than non-Hispanic whites and greater for lower income than higher income groups.

Study Contributions/Importance to Field

Lack of housing affordability is a well-documented problem affecting the most vulnerable of households. Studies have generally found the lack of affordable housing to be a major contributor to economic hardship for low-income households and families (Bogdon and Can, 1997; Kutty, 2005; Stone, 2010). Severe and rising housing costs place a heavy burden on low-income households, crowding out available funds for essentials such as food, clothing, and health care (Chi and Laquatra, 1998). Consequently, it is important that there be a better understanding how government land use policy and regulation can affect housing affordability as a place-based phenomenon.

An enhanced understanding of the effects of specific types of land use regulation on housing affordability has natural implications for housing policy. Understanding and differentiating between the effects of different types of regulation on housing affordability is important in crafting appropriate local land use policies that do not exacerbate the situation. Moreover, a study of these effects can also make important contributions to the literature by gauging the importance and significance of particular types of land use regulation in influencing the availability of affordable housing. In addition, study findings would be important to the field of community development in that they identify the phenomena that either promote or inhibit development of quality housing options for low-income residents currently in highly distressed neighborhoods. Identifying the impact of exclusionary land use regulation on central city housing outcomes could explain much of the quality of life challenges faced by many central city neighborhoods. In sum, these results can advance the field by building a more complete understanding of how housing affordability is specifically affected by various types of land use regulation.

Scope of Study

In Chapter 2, I undertake a review of the relevant literature that lays out definitions, measures, and influences on housing affordability from previous scholarly work. This is followed by a theoretical framework that is used to operationalize key variables. Chapter 3 discusses the methods used including the dataset used, sample selection procedures, the model, and an overview of the selected analytic methods with their strengths and weaknesses. In Chapter 4, I present descriptive statistics results that provide a general overview of housing affordability trends by racial, housing tenure, and income group in the United States since 1980. This is followed by a spatial overview and discussion of within-metro variation in housing affordability in four metropolitan areas, each representing one of the four Census regions. Inferential results are then presented and discussed, including regression results on the impact of various types of land use regulation on housing affordability in metropolitan areas. Chapter 5 offers a final conclusion and some policy recommendations based on the empirical results. Chapter 6 discusses implications and directions for future research.

CHAPTER 2: Review of the Literature

Defining Housing Affordability

Decades of scholarship on housing affordability has produced a variety of ways to define the concept. The most commonly used metric of housing affordability for both academics and policymakers alike is the ratio of housing expenditures to income (Goodman, 2001; Hulchanski, 1995). Typically, a high housing cost burden is considered more than 30 percent of income, based on criteria developed by the Department of Housing and Urban Development for Section 8 housing voucher and certificate program eligibility (Bogdon and Can, 1997). However, there are a number of shortcomings to relying on this ratio. Goodman (2001) notes that quality of housing being offered and the "purchasing power" of a household's income in a particular housing market are not captured in simple cost to income ratios. Arguing from a strong positivist perspective, Hulchanski (1995) argues that housing affordability must not be measured through a value judgment on appropriate income-to-cost ratios but through a scientific process that ensures proper validity and reliability. There would be limits to the generalizability of statements about affordability based on these ratios. Hulchanski noted that although housing cost to income ratios can be useful as quantitative measures for certain types of analysis, they cannot be reliable measures of the ability to pay for housing or housing need.

Lerman and Reader (1987) point out that a straight 30 percent housing cost to income ratio fails to account for variations in the ability to secure a high quality of life under that cost burden. 30 percent of income spent on housing may be less of a burden for some households than others, therefore using a straight ratio of cost to income would overestimate the problem. Lerman and Reader proposed a quality-based measure based on HUD Section 8 criteria which only identifies individuals as housing cost distressed for which a 30 percent burden would constitute an obstacle to securing a decent standard of living. Indeed, some households might adopt a higher ratio of housing costs to income simply as a matter of preference for larger or more desirable housing relative to other household expenditures (Goodman, 2001, Kutty, 2005).

Stone (2010) makes a similar argument that conventional housing cost to income ratios fail to account for heterogeneity in household size and income level that imply different housing needs. He proposes a measure of “shelter poverty” that measures housing affordability along a sliding scale that accounts for variations in household composition. Stone calculates this measure as the difference between disposable income and the cost of meeting basic non-housing needs. By this metric, one-third of the nation would be considered “shelter-poor.” Stone argues families that pay less than 30 percent of income for housing may still be considered cost-burdened because they still do not have adequate residual income to meet non-housing needs. These needs might be more significant for families with larger households or many children. Similarly, Kutty (2005) recommends a housing-induced poverty rate measuring the degree to which housing costs push households below the poverty level. The rate is calculated as a condition when income after covering housing costs is insufficient to cover what she terms a “poverty basket of non-housing goods”, equivalent to about two-thirds of the federal poverty line.

Taking a similar approach to Kutty, Jewkes and Delgadillo (2010) argue that the most popular measures of housing affordability are not applicable to individual households, or indicative of a household's capacity to afford housing. Their recommended measures focus on measuring residual income accounting for geographic location, household size, transportation, and non-housing expenses. Thalmann (1999) noted that comparing incomes with average rents for "appropriate housing" by housing type fails to account for price differentials in "appropriate housing" generated by housing subsidies such as rent control, public housing, or Section 8 vouchers. Thalmann recommends two indicators, the first of which compares average rents to income and the second of which compares housing consumption with "appropriate consumption." These measures more precisely measure housing need net of price differentials.

Others argue housing affordability should be measured against an expectation of "reasonable" housing costs. Whitehead (1991) contends that analyses of housing needs and affordability should incorporate realistic expectations of how much households should be expected to pay for their homes. Measures of housing need and affordability should be based less on manifesting value-based social preferences for housing, but on addressing and correcting imperfections and inequities in the housing system (Whitehead, 1991).

Yet others scholars, such as Mullier and Maliene (2012), reject exclusive concentration on housing costs and incomes altogether. They propose a more qualitative, broad, and wide-encompassing definition that takes into account neighborhood quality of life as well as traditional measures of housing costs and incomes. Although such a definition may have validity at a local level, it is very difficult to measure nationally across multiple local contexts.

Alternative approaches to measuring housing affordability craft more pragmatic definitions. Bogdan and Can (1997) propose multiple measures of affordability that measure supply and demand factors. In addition to the share of income spent on housing, they propose measuring the number of available affordable housing units and the rental housing affordability mismatch ratio, a comparison of actual rents to those affordable to various income groups. They emphasize that since housing affordability is a market-driven phenomenon, it must be measured through various housing market measures.

Recognizing the weaknesses of its common housing affordability measures from the literature, the Department of Housing and Urban Development has recently attempted to craft better definitions of housing affordability with the Location Affordability Index, a composite measure housing and transportation costs relative to income for various household sizes, income levels, and commuting patterns.

Although many of these studies have offered valid critiques of cost-to-income ratio measures of housing affordability, such ratios still provide utility for tracking changes in housing affordability over time. More nuanced and sophisticated definitions require local data collection and that would prove impractical for a study tracking affordability across the entire nation and changes over time. For this reason, most housing affordability studies at larger geographic scales have continued to rely on cost-to-income ratios to assess both current conditions and trends over time (Belsky and

Lambert, 2001; Goodman, 2001; Gyourko and Tracy, 1999). Moreover, using these measures will facilitate comparison of my findings with the existing literature in the field.

Trends in Housing Affordability

Since the mid-20th century, housing affordability in America has undergone significant changes in line with a new national paradigm of suburb-driven metropolitan development and growth. As the nation emerged from World War II and embarked on a new age of growth and prosperity, concern developed over the nation's aging and low quality housing stock (Linneman and Megbolugbe, 1992). By the 1960s, concern had shifted to rapidly deteriorating urban neighborhoods defined by increasing concentration of poverty and racial segregation. This phenomenon was met with a large expansion of federal support for affordable housing continuing through the 1970s (Stone, 2010). A decline in real wages in the 1970s was accompanied by a shift toward higher quality housing and rising real home prices, making housing less affordable and creating a relative shortage of lower quality housing (Gyourko, 1998). Gyourko (1998) notes that changes in housing preferences were driven by a skewing of the income distribution to the right. By the 1980s, affordability had declined strongly for owner-occupied housing, while declining more modestly for renter households, disproportionately affecting poor households (Nelson, 1994). Yet at this time, there was an increase in rental-assisted households relative to the overall rental market (Goodman, 2001) to ameliorate this trend.

In the 1990s, the focus shifted to promoting housing affordability through a new neo-liberal paradigm of promoting individual home ownership and privatization (Linneman and Megbolugbe, 1992). Vast quantities of traditional public housing developments were demolished in favor of new suburban-style development through the federal government's HOPE VI program. Yet this housing often did not completely replace what was lost through demolition, resulting in a reduction in affordable units (Stone, 2010). A 2011 study found that HOPE VI had demolished almost 100,000 units of public housing, often producing mixed-income developments with criteria and restrictions that effectively excluded most original tenants (Keene and Geronimus, 2011). Multi-family housing development remained strong during the 1990s, consistent with growth in demand for this type of housing and the need to replace demolished multi-family housing (Goodman, 2001). Although mostly serving the needs of higher-income earners, this construction occurred at roughly all rent levels.

In the aggregate, housing affordability declined for low-income renters in the 1990s, as renters faced competition for affordable-rent units from higher-income households. Despite the low unemployment and strong economic growth of the decade, real incomes for low-skill workers did not increase substantially, while the quality of homes affordable to low-income households declined (Gyourko and Tracy, 1999). However, Malpezzi and Green (1996) did find evidence of housing quality improvement for low income households, with higher cost burdens. At the same time, development of land use and building regulations constrained the development of lower-cost, lower-quality housing to meet demand (Goodman, 2001).

In more recent years, several studies identified a net decline in the number of subsidized and unsubsidized affordable housing units available to low-income families (Belsky and Lambert, 2001, Crowley, 2003). Belsky and Lambert (2001) observed a

30,000 drop in the number of Low Income Housing Tax Credits from 1993 to 1998. Yet the available supply of affordable housing was boosted by increases in the number of mobile homes (Collins, Crowe, and Carliner, 2002). The supply of housing affordable to low-income households has also been met through a "filtering-down" of existing housing as higher income groups "trade-up" to better housing (Belsky and Lambert, 2001). In fact, low-income households experienced a strong surge in home-buying during the 1990s, while the affordability of low-income housing declined due to limited available supply (Collins, Crowe, and Carliner, 2002). Much of this homebuying was fueled by an expansion of mortgage financing available to low-income households. Beginning in the mid-1990s, there was an explosion in sub-prime loans to low-income households with poor credit (Smith and Hevener, 2014). Moreover, federal housing finance corporations such as Fannie Mae and Freddie Mac promoted lending to low-income households to promote federal homeownership goals (Shlay, 2006). By guaranteeing payment in the event of default, these agencies also fueled a rise in low-income mortgage lending by backing and purchasing creatively designed, but riskier loans to low-income households.

By the early 2000s, there was a surge in new home construction and home prices, fueled by subprime lending, interest-only, and adjustable rate mortgages. (Joint Center for Housing Studies, 2007). This together with weak income growth during the period, contributed to a worsening affordability problem. After the 2008 housing market crash, there was a substantial increase in rental demand (even for higher income households) and consequently rising rents, which pushed the number of housing cost-burdened rental households to record highs (Joint Center for Housing Studies, 2016). Low-income renter households became exceptionally cost-burdened and burdens rose significantly for moderate income households as well (Joint Center for Housing Studies, 2016; Neogi, 2012). During this time, affordable housing barriers remained very significant in suburban areas, particularly in exurban areas well outside the central city (Belsky and Lambert, 2001). This resulted in a concentration of subsidized units in inner city and older suburban neighborhoods.

However beyond short term trends, there has been an overarching trend of faster gains in housing costs than income for low-income groups over the long-term (Belsky and Lambert, 2001; Neogi, 2012). On the upper end of the income-distribution, there has been no significant change in housing affordability over the long-term, as real income gains have generally tracked home prices (Gyourko and Linneman, 1993).

Influences on Housing Affordability

Over time, studies have identified a number of potential influences impacting these trends. Generally, as housing affordability can be measured as a ratio of housing cost to income, these influences are related to one or both of these (Goodman, 2001). Because of this method of measurement, changes in household income from the economic cycle can be expected to generate changes in housing affordability (O'Neill et al., 2008; Stone, 2010).

Generally, housing affordability pressures disproportionately burden households at the lower end of the income distribution (Linneman and Megbolugbe, 1992; Nelson, 1994; Stone, 2010). This occurs because their lower incomes provide little room to absorb demand-generated increases in housing costs or deal with owner costs inflation from maintenance, repairs, utilities taxes, and mortgage interest rates. Influences on place-based housing affordability can therefore often be tied to relative concentrations of groups that are low-income and disproportionately affected by housing affordability pressures.

Demographic changes and changes in the income distribution can strongly affect housing affordability (Bramley, 1994). Relative concentration of racial and gender groups can have a strong influence on local housing affordability, even beyond the effects of mortgage payments and rents (Lee, 2012). African-Americans in particular tend to experience heavier housing cost burdens relative to whites and Hispanics, burdens which result in extraordinary economic hardships (Mimura, 2008). There is also evidence that Asian-American households experience disproportionate housing cost burdens relative to other groups (Chi and Laquatra, 1998). Minority groups and immigrants tend to be strongly represented amongst renters (Sirmans and Macpherson, 2003), a group which generally has higher housing cost burdens (Lee, 2012). Immigrant groups show wide variation in housing cost burden based on their country of origin (McConnell and Akresh, 2010), with undocumented immigrants experiencing disproportionately high burdens relative to legal immigrants (McConnell, 2013). Therefore, to the extent that places remain centers for immigrants and minorities with higher housing cost burdens, they could expect lower levels of housing affordability. In-migration from such disadvantaged groups may produce increases in population density, which strongly affects housing affordability, particularly at the metropolitan area level (Wolff, 2006).

Social phenomena affecting disadvantaged groups, such as housing discrimination and segregation, can influence housing affordability by constraining the housing choices of disadvantaged racial and economic groups to economically distressed neighborhoods (Briggs, 2005). In response to such pressures, tenant organizing can influence affordability by influencing the quality or quantity of affordable housing offered (Stone, 2010).

In addition to racial and immigrant concentrations, metropolitan concentrations of key age groups, particularly baby-boomers, impacts housing affordability through housing demand (Case and Mayer, 1996). Senior households are less likely to be burdened by housing costs than non-senior households (Chi and Laquatra, 1998; Kutty, 2005), largely on account of their higher likelihood of owning their homes free and clear. Moreover, household differences influence housing affordability. Household size and the presence of children affects housing affordability (Lee, 2012). Household with three or more children, particularly those headed by single mothers and minorities, generally have a higher risk of excessive housing costs relative to income (Chi and Laquatra, 1998).

Previous housing tenure, whether a home occupant has ever been an owner or renter, is another influence on affordability, as renters that had earlier been home-owners have generally lower cost burdens than other renters (Lee, 2012). Renters are disproportionately represented at the lower end of the income distribution and generally have much lower incomes than homeowners (Goodman, 2001). This means that lack of housing affordability tends to be stronger for renters than homeowners (Lee, 2012). Lack of home-buying and credit knowledge serves as a major impediment to homeownership

(Sirmans and Macpherson, 2003), characteristics which are heavily represented in disadvantaged groups. Moreover, housing affordability is a function of a household's tenure choice, in that renter households can choose to save to purchase a house and limit their disposable income temporarily, while others deliberately choose homeownership that may be costly on an income basis but contribute to housing wealth (Bourassa, 1996).

A subset of the literature has paid particular attention to unique regional influences on housing affordability. Evidence exists that housing affordability in high home-price metropolitan areas along the East and West Coasts of the United States is affected less by construction costs and more by zoning and other forms of land use regulation (Glaeser and Gyourko, 2002). Region and location specific phenomena heavily influence the degree to which housing costs contribute to poverty (Kutty, 2005). Kutty found that homeowners close to the poverty level in Northeastern cities were more likely to fall into housing-induced poverty than those in Western cities. Kutty also concluded that suburban households in the Northeast, West, and Midwest as well as urban households in Northeastern cities were more likely to fall into housing induced poverty than those in Western cities. Regional location plays a key role in determining differences in housing affordability by metropolitan area (Wolff, 2006). Housing affordability generally tends to be lowest in the West and particularly in the metropolitan areas of the West, South, and Northeast (Neogi, 2012; Wolff, 2006). Metropolitan areas in the South Central sub-region tend to have higher levels of affordability, while metropolitan areas in Florida, California and New York have the highest burdens (Wolff, 2006). The West and the South contain higher shares of affordable housing relative to other regions, the latter or which is defined by a strong concentration of mobile homes (Collins, Crowe, and Carliner, 2002).

Ample evidence exists that housing costs strongly impact local affordability. As one might expect, such costs more strongly influence owner-occupied housing affordability than renter affordability (Lee, 2012), although increases in these can be passed on to renters indirectly through higher rents. Cost pressures can translate into higher levels of transience and housing instability (Crowley, 2003). Upper and middle income households often face housing cost pressures as well, although this is often the result of improvements in tastes for home amenities and the expectation of home value appreciation (Linneman and Megbolugbe, 1992). From the perspective of an individual household, housing affordability can be affected by cost levels in housing-related costs such as mortgage interest rates, rent, utilities, maintenance and repair costs, transportation, and other housing-related costs (O'Neill et al., 2008).

The supply of available housing affordability to low-income households partly influences the degree to which a place experiences a lack of housing affordability (Linneman and Megbolugbe, 1992). Housing supply available to such households might include traditional public housing, Section 8 voucher housing, and privately-financed affordable housing supported by the Low Income Housing Tax Credit, each supported by a form of government subsidy. However, the insufficiency of rent subsidies offered through such programs contributes to a lack of adequate housing for the poor and higher levels of housing affordability stress (Stone, 2010). Non-profit housing forms as another component of supply, particularly as a response to area poverty and housing cost burden

(Walker, 1993). Such housing may be supplied in response to high levels of housing demand reflected in high home prices, particularly burdensome for low-income segments of the population.

However, there is evidence that cost changes in the factor inputs of housing supply have contributed to greater affordability. Supply costs for the factors that produce housing actually grew less than inflation from 1985 to 1999, making homes relatively more affordable in real terms (Goodman, 2001). Ample evidence exists that home prices are most strongly affected by the actual physical costs of construction (Glaeser and Gyourko, 2002).

Geography also plays a role in constraining or expanding the amount of housing development within a particular land area (Maher, 1994), which can lead to changes in affordability through sharp changes in housing demand relative to limited supply. These geographic limitations can also limit the elasticity of housing supply in metropolitan housing markets (Saiz, 2010).

Demand-side factors related to the desirability of a local place play a critical role as well. For example, home prices are influenced by the value of the land upon which housing structures sit. DiPasquale and Wilson (1994) argue that home prices are a function of agricultural value, structural value, infrastructure value, present location value, and future location value. These values are centered around land demand from potential alternatives uses of the property, its location in a desirable urban area or area with the prospect of becoming a desirable area, and around the actual construction cost of the home itself. Demand driven by land and housing speculation can make property less affordable (Stone, 2010).

Other factors are related to demand for housing structures themselves or *housing market demand*. Nelson, Pendall, Dawkins, and Knaap (2002) found housing market demand to be the primary determinant of housing prices. Areas experiencing strong in-migration and population growth are like to see higher levels of housing demand and therefore less housing affordability (Goodman, 2001). The opposite can be expected for areas experiencing population loss and out-migration. For this reason, housing prices and rents are generally higher in metropolitan areas relative to rural areas, a function of both higher housing demand and tighter, more rigorously enforced land use regulations (Kutty, 2005).

Government policy plays a critical role in stimulating housing demand. Government programs that subsidize affordable housing also have an effect on housing demand by increasing local demand for rental housing (Goodman, 2001). Government policy also stimulates housing demand through the mortgage interest income tax deduction, which effectively subsidizes owner-occupied housing (Goodman, 2001). Given the nature of who is able to own and maintain such housing and who benefits the most given their marginal federal income tax rate, the deduction disproportionately benefits higher-income households. School quality can also affect housing affordability by generating a price premium for homes in neighborhoods with good schools, while increasing property taxes. Upwardly-mobile families in poor neighborhoods with poorly performing schools leave for suburban areas with better schools, making suburban housing less affordable (Belsky and Lambert, 2001). Educational attainment levels such as high school and college graduation rates also influence housing affordability (Lee, 2012; Wolff, 2006). Moreover, housing affordability is affected by levels of property taxation and property tax relief programs (Goodman, 2001; Stone, 2010). Yet perhaps the most powerful lever of government policy on housing affordability is land use regulation.

Land Use Regulation and Housing Affordability

Decades of research has produced numerous theories on the true influences of land use regulation on housing supply and housing prices. Some scholars have found that land use regulation does not artificially constrain the supply of housing producing higher home prices and rents than otherwise would have appeared. For example, Appelbaum and Gilderbloom (1983) found that housing markets with large concentrations of new rental housing do not have lower rent levels, challenging the idea that a lifting of regulation-driven supply constraints would translate directly into lower rents. Others have seen evidence that housing regulation in general increases rents and reduces homeownership rates (Malpezzi, 1996). Malpezzi and Green (1996) found that land use regulation has distributional consequences particularly for those at the bottom end of the housing market. They argue the lower end of the housing market is distorted by land use regulation, requiring subsidies to ameliorate their harmful effects. However, Coleman, LaCour-Little and Vandell (2008) found evidence that land use regulation only affects home prices in the highest tercile of the highest market, without significant effects on the bottom segment. The true effects of such regulation on housing affordability for low-income homeowners is still very much up for debate.

Land Use Regulation and Segregation

Recent research has shown that land use regulation has implications on the spatial distribution of households by income. Lens and Monkkonen (2016) examined the relationship between land use regulation and income segregation across a sample of 95 large cities. They found that density regulations are linked to segregation of high and middle income households into particular neighborhoods, promoting what they term a "concentration of affluence". Because of this, they also tend to produce higher levels of overall income segregation in metropolitan areas. However, Lens and Monkkonen found no evidence that such regulations promote segregation of low-income households into particular neighborhoods. Yet they noted more state control over regulation was related to *lower* income segregation, perhaps signaling a tendency for this regulation to mitigate the impact of exclusionary local zoning. There is also evidence that some types of land use regulation can affect racial segregation. Massey and Rothwell (2009) assembled a sample of 49 large metropolitan areas and using OLS and IV regression analysis found that anti-density zoning policies effectively increase segregation for African-American households by constraining the growth of available affordable housing supply in predominantly-white areas. However, a general land use regulation index variable showed no effect on segregation. Pendall (2000), utilizing a land use regulation survey of municipalities in the 25 largest metropolitan areas, found that low-density zoning reduces rental housing and thus the number of black and Hispanic residents in a community, while building permit caps had the effect of limiting Hispanic residents. Pendall's study also showed urban growth boundaries, adequate public facilities ordinances, and construction moratoria had more limited effects on racial composition.

Land Use Regulation and Housing Supply

Stringent land use regulation can also have implications on housing production and the elasticity of the housing supply in metropolitan housing markets. Glaeser, Gyourko, and Saks (2005a) found that new housing construction had fallen and prices risen in only a small number of communities, affected mainly by land use regulation that makes large-scale development difficult. They also noted that an increase in the ability of residents to block new projects, difficulty in bribing regulators, changes in home amenity preferences, judicial tastes, and increasing incomes all explain a broad 30-year increase in housing prices. Raphael (2010) showed that housing production is slower in states with more stringent land use regulation than states with more liberal regimes. Indeed, Rothwell (2009) found evidence that anti-density regulation specifically constrains the growth of housing supply, with a one standard deviation increase in regulation accounting for a 2.5 percent reduction in supply. Examining the impact of land use regulation in metropolitan Boston, Glaeser, Schuetz, and Ward (2006) showed that minimum lot size requirements increase housing prices and reduce affordable housing's share of the housing stock. A subsequent Boston study by Glaeser and Ward (2009) showed that minimum lot size requirements and similar regulations reduce new construction activity while increasing prices when demographics and density are not controlled. When these are controlled for, Glaeser and Ward found that minimum lot size lost statistical significance, suggesting that when area characteristics are held constant, minimum lot size requirements exert no detectable impacts on housing prices. A more recent study by Turner, Haughwout, and van der Klaauw (2014) found that residential minimum lot sizes increase land values, which should in theory increase home prices.

Glaeser, Gyourko, and Saks (2005b) in examining housing development in Manhattan found evidence that land use regulation constrains housing supply, which in the face of rising demand creates upward pressure on housing prices. Similarly, Saiz (2010) noted that regulatory constraints on housing limits limit the elasticity of housing supply in metropolitan housing markets. Ihlanfeldt (2007) argued that housing supply is restricted in communities with heavy land use regulation, but demand is higher only where there are more community choices for homebuyers by which they can express preferences for regulation. He notes that when potential homebuyers have a limited choice of communities for single family homes, they will bear the larger share of land use regulation-driven increases in development costs. Conversely when there are many choices, the land use regulation cost burden shifts to the selling property owner. Therefore, the effects of land use regulation on housing costs for homebuyers will be greater in metropolitan areas with fewer municipalities than those with many, because there will be less variety in municipal land use regulation within the area. Growth management policies can also indirectly affect housing affordability by constraining the supply of housing relative to population, however when deployed to mitigate the effects of exclusionary zoning, it can expand housing options for low income households (Nelson, Pendall, Dawkins, and Knaap, 2002). A recent literature review paper by Ikeda and Hamilton (2015) found that most studies on the topic show that land use regulations do indeed constrain housing supply growth and raise housing costs, disproportionately burdening low-income households.

Land Use Regulation and Housing Quality

A wide body of research has found that land-use regulation often shifts housing production toward higher quality housing more affordable to high-income households and away from more affordable housing. Ihlanfeldt (2007) found that land use regulation has the effect of increasing the size of new construction homes, reducing the affordability of single family homes. However, whether the homebuyer or the buyer bears the brunt of the cost is a function of how many competing jurisdictions there are in the housing market. Ganong and Shoag (2013) noted that housing supply constraints in high-productivity areas make housing expensive to low-skilled workers. They also found that more stringent regulations increase the positive effect of income differentials between areas on housing prices, while impeding migration to high productivity areas, undermining wage equality across the nation. Similarly, Hsieh and Moretti (2015) found that constraints to housing supply from land use regulation in high-productivity cities such as New York, San Jose, and San Francisco stems the supply of labor to these cities and negatively impacts national economic growth. Green (1999) noted that such regulations have much larger effects on housing affordable to lower income households, while finding that mobile home bans and frontage requirements in particular tend to drive up housing prices. Municipalities in the Northeast and West embedded in fragmented metropolitan areas typically implement land-use regulations that require large-lot zoning to control growth, protect open space, and conserve natural resources (Pendall, 1995). Such regulations encourage the construction of large, expensive homes on such lots and constrain development of smaller, more affordable units. Moreover, this reduces the availability of rental housing as such zoning practices encourage the development of single family housing as opposed to multi-family, townhome, or apartment housing (Pendall, 1995).

Land Use Regulation and Home Prices

Constraints on the expansion of housing supply have natural implications on home prices within a metropolitan housing market. Quigley and Rosenthal (2005) in a comprehensive survey of the literature on land use and housing prices, found that most studies generally find a link between land use regulation and higher housing prices. Development caps, density limits, urban growth boundaries, and permit processing delays have each been linked to higher housing prices. Ihlanfeldt’s (2004) literature review paper on suburban exclusionary land use regulation found strong evidence that growth controls and characteristics zoning heavily impact housing costs, while the evidence on land-use zoning is much less definitive. Evidence also exists that that the housing supply is more elastic with regard to price signals where there is limited density regulation (Rothwell, 2009). Miller and Peng (2006) found evidence that home prices in metropolitan areas with constrained housing supply are more vulnerable and receptive to housing market shocks.

There is a wide body of studies examining the relationship between exclusionary land use regulation and home prices, many of which were completed within the last 20 years. Green (1999) gauged the impact of land use regulation in Waukesha County, Wisconsin, a Milwaukee suburb, using 1990 Census and 1993 zoning survey data on the County’s 39 municipalities. He examined 160 census tracts, performing OLS regressions to assess the impact of land use regulation (i.e. minimum lot size requirements, minimum setback requirements, etc.) on tract-level housing tenure, home prices, rents, and owner housing costing less than $75,000. Green found that regulations have strong impacts on home prices, but smaller effects on rents. He noted that there is a nonlinear relationship between land use regulation and home prices, with the effects diminishing significantly for housing affordable to high-income households. However, Green's study was limited to suburban Milwaukee with limited generalizability and also did not examine housing affordability, only home prices and rents.

Glaeser and Gyourko (2002) examined zoning strictness in 26 metropolitan areas using 1989 and 1999 American Housing Survey data to study the relationship between construction costs and housing prices. By utilizing a hedonic regression model, they measured the extent to which there was a "zoning tax" on housing, finding that strict land use regulation is related to high housing prices where they occur. However the study did not account for the potential endogeneity of land use regulation and was not designed to estimate impacts on rents or housing affordability– housing costs in relation to income.

Ihlanfeldt (2007) used OLS and instrumental variables regression to examine the relationship between a land use regulation restrictiveness index and home prices, vacant land prices, and new housing construction size. He studied a sample of 105 Florida zoning jurisdictions using sales prices from county property tax roll data, parcel identification maps, 2000 Decennial Census data, and a 2001 Florida State University land use regulation survey administered to local planning officials. He found that land use regulation has significant positive effects on home and vacant land prices and new housing construction size. Unlike much previous work, this study accounted for the potential endogeneity of land use regulation by using instrumental variables. However, it was limited by its exclusive focus on Florida municipalities and land and home prices, with no examination of rents or housing affordability.

Glaeser and Ward (2009) examined the impact of minimum lot sizes and other forms of land use regulation on home sales prices and building permits in 187 metropolitan Boston municipalities. Utilizing OLS and panel regression using 2000 Decennial Census and data from a 2004 local housing regulation survey, they found evidence that land use regulation does increase home prices. They also concluded that minimum lot sizes are the most significant barrier to new construction. Like Ihlanfeldt's study, impacts on rents and housing affordability were outside the scope of the analysis.

More recently, Neogi (2012) examined the relationship between land use regulation and housing affordability, a notable change from the oft-studied link to home prices. Neogi utilized 1980, 1990, 2000 Public Use Microdata Sample data and constructed an affordability index by matching renter households along the income distribution to corresponding housing rents in the rent distribution. He also used land use regulation indices computed from six land use regulation surveys administered at different periods of time from 1975 to 1990 and an American Institute of Planners survey administered in 1976. With this data, he assembled a sample of 177 metropolitan areas for 1980 through 1990 and 184 areas for 1990 through 2000. He then employed a series of cross-sectional, difference, and panel regression models to identify the relationship between land use regulation and renter housing affordability. He found that zoning and building regulation reduces housing affordability by constraining employment growth in sectors likely to employ low-skilled workers, while attracting high-skilled workers drawn to higher quality, more expensive housing. However, Neogi's study was limited by the use of very old land use regulation surveys, an exclusive focus on renter affordability, and measurement of land use regulation as an index, as opposed to specific measures.

Conclusion

The literature on land use regulation and housing prices has revealed countless ways such regulation can constrain the supply of housing, raise home prices, limit housing choices, and promote racial and income segregation. However, one consistent limitation of each of these studies is a lack of focus on the relationship between specific forms of land use regulation and housing affordability for owners and renters. Despite the tremendous breadth of inquiry in the area, much remains unknown about the particular effects of such regulation on levels and trends in housing affordability. Also unknown are the distributional effects of land use on housing affordability by income and racial group and between cities and suburbs. This study examines the impact of specific types of land use regulation on housing cost burdens by these various dimensions.

CHAPTER 3: Research Methods

Data

For this study I use data from the US Census Bureau's 1980, 1990, and 2000 Decennial Census files and American Community Survey (ACS) 5-Year Estimates for 2005-2009 and 2010-2014, which serve as estimates for 2007 and 2012. ACS 1-Year Estimates are also used where appropriate to present statistics for large geographies. In addition, I use the corresponding Public Use Microdata Sample (PUMS) data for these surveys from the University of Minnesota's Integrated Public Use Microdata Series (Ruggles, Genadek, Grover, and Sobek, 2015) to generate estimates on housing affordability by race and income and generate household data that form the basis for the inferential analysis. The PUMS includes household level data on a wide array of demographic, economic, housing, and housing cost characteristics including gross rent, monthly owner costs, and household income. For variables measured at the person-level, the head of household's characteristics are used for each household. Households reporting zero or negative income are recoded as having 100 percent of income consumed by housing costs, as they essentially have no residual income. These include 23,443 households or 0.84 percent of the sample. In addition, households where housing costs compose more than 100 percent of income are also recoded as having 100 percent of income consumed by housing costs, since at this level there is no available household income to cover these excess housing costs.

The Decennial Census was historically administered as a "short-form" questionnaire distributed to and collected from most households and a more detailed "long-form" questionnaire focusing on specific socioeconomic questions randomly administered to one in six households (U.S. Census Bureau, 2015). Yet in recent years, the American Community Survey has come to replace the long form of the Decennial Census, with regular 1 and 5-Year estimates released every year. American Community Survey data are generated by samples from housing units and group quarters facilities contained in the Census Bureau's Master Address File. This File represents the Census Bureau's central database of addressed collected over multiple decennial censuses, which the Bureau maintains and updates regularly. Utilizing this database, the Census Bureau samples from all 3,143 counties and county equivalents in the United States using a telephone interview, mail survey, or in-person interview each year (U.S. Census Bureau, 2014). The Census Bureau utilizes a two-stage sampling procedure, first employing a stratified sampling technique during which block groups are assigned to sample strata, sampling rates are calculated, and samples are selected. In the second stage, non-responding addresses are sampled for what the Census Bureau calls "Computer Assisted Personal Interviewing" to reduce non-response bias.

The American Community Survey has a number of well-documented shortcomings. It differs from the Decennial Census in that it is a survey on smaller, stratified samples of the population designed to estimate characteristics in the population, rather than an actual count of population and housing. This means that its estimates carry much higher sampling error than the Decennial Census. This is a particular concern for small geographies for which margins of error are quite wide due to limited sample size. Yet this study's use of metropolitan areas, geographies of large population, should mitigate this risk. Despite the American Community Survey's shortcomings, it represents one of the best and most reliable data sources for population characteristic and housing data due to its rigorous sampling methodology and comprehensive geographic reach.

Land Use Regulation Surveys

I use the components of the Wharton Residential Land Use Regulation Index (WRLURI) as the primary source of measurement for various types of land use regulation. A survey was administered nationwide in 2005 to 6,896 local building officials on an International City/County Management Association mailing list by researchers at the University of Pennsylvania's Wharton School of Business. The response rate was approximately 38 percent (Gyourko, Saiz, and Summers, 2008). The results were then summarized into a composite index of land use regulation by local jurisdiction. The Wharton survey has a number of benefits for this study. It is the most recent of many other available zoning datasets and offers data on a large number of metropolitan areas, almost 300. It also includes data on a very large sample of municipalities (2,611 in all 50 states) and is by far the most comprehensive of available zoning datasets. There are eleven component sub-indices measuring many dimensions of land use restrictions together.[1] The Wharton dataset also contains responses on specific types of zoning regulations, allowing for the impacts of specific regulations to be measured.[2] Finally, sampling weights are available that allow for state and metropolitan estimates to be generated.

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[1]The components of these indices are described in Table 26 in the Appendix. Descriptive statistics are presented in Table 27 of the Appendix

[2]Descriptive statistics for these individual measures are found in Table 29 of the Appendix.

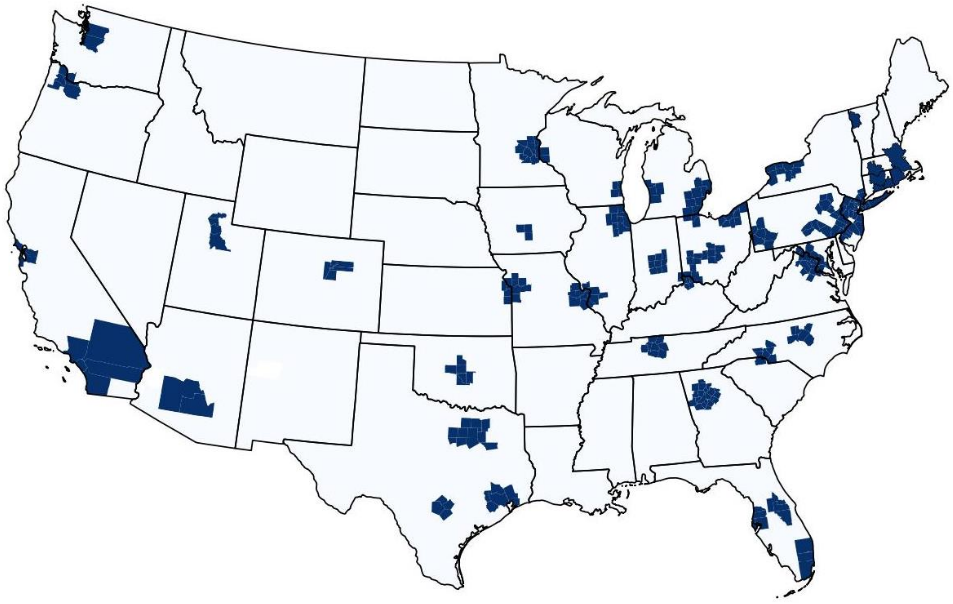
Despite these virtues, there are a number of shortcomings to the Wharton survey. For example, the survey is more focused on development outcomes that may result from policies rather than specific policies per se. It also lacks direct relevance to specific statutory restrictions. In addition, the survey does not include much information on local regulatory environments, only very high level assessments based on survey respondent judgment. Finally, the survey offers cross-sectional rather than longitudinal data, which eliminates the possibility of examining the effect of changes in land use regulation on housing affordability over time. Because of these limitations, the land use regulation dataset developed by Pendall, Puentes, and Martin (2006) is used as a robustness check against the Wharton results.

The Pendall survey was administered in 2003. A questionnaire was mailed to incorporated municipalities, townships, or counties with over 10,000 population and in the 50 largest metropolitan areas, and a 62 percent response rate was achieved (Pendall, Puentes, and Martin, 2006).

Sample Selection

The sample used in this study includes PUMS households within those metropolitan areas for which there are at least eight responding towns on the Wharton survey, providing a minimum sample of municipalities per metropolitan area. This produces households within 65 metropolitan areas for analysis. Metropolitan area definitions are those defined in June 1995 by the US Office and Management and Budget, corresponding to those used in the Wharton survey. These metropolitan areas are shown on the following map.

Figure 1 - Metropolitan Areas Within Sample



Metropolitan areas themselves are used as the unit of analysis for the difference and city/suburb regressions, as longitudinal data by household are not available from the PUMS. Metropolitan areas are suitable as the unit of analysis for this type of study because they function as distinct and relatively independent labor and housing markets. They also work well because they offer a compact geography across which residents travel for commerce (Chakravorty, Koo, and Lall, 2003). The phenomena that affect housing affordability are therefore most likely to be strongly manifested at this level. For this reason, much of the literature focuses on these areas as distinctive units of study (Bunting, Walks, and Filion, 2004; Case and Meyer, 1996; Neogi, 2012; Wolff, 2006). The sample size includes 65 metropolitan areas that existed in 1995. There are 2,792,715 households within the 65 metropolitan areas in the 2005-2009 PUMS household sample, which allows for a very large sample size.

I also generate Pendall land use regulation estimates for those metropolitan areas sampled from the Wharton survey. Since the Pendall dataset does not offer a sufficient municipal sample to cover all 65 Wharton metros, estimates are produced for 51 of these metropolitan areas. 48 of these metros have Pendall estimates from at least nine constituent municipal jurisdictions. Metropolitan Raleigh-Durham-Chapel Hill, NC, New Haven-Meriden CT, and San Antonio, TX have seven, six, and four jurisdictions respectively. However, Raleigh-Durham-Chapel Hill contains the large jurisdiction of Cary (2005 population: 107,353), New Haven-Meriden includes both central cities of New Haven and Meriden, and San Antonio includes the city of San Antonio, which composes a sizable portion of the metropolitan area (72 percent of the metro population in 2005). Since the Pendall dataset does not include sample selection weights, weights are computed from the same logit model used by Gyourko, Saiz, and Summers (2008) on the universe of counties and municipalities with land use regulation authority.[3]

As metropolitan area boundaries have expanded over time with urbanization, consistently-bounded metropolitan areas are used based on counties that were included in metropolitan areas in the 1995 definitions. This provides a consistent geography for the analysis which reduces the risk of measurement error. The one disadvantage of this approach is that it cannot take into account the expansion of housing markets into peripheral areas of the metropolitan region as they expand over time. However, this is outweighed by the fact that the period of analysis (2005 to 2014) relatively is narrow, meaning metropolitan expansion should have been limited. Moreover, the period of

[3]Logit regression results are presented in Table 17 in the Appendix.

analysis is recent enough such that patterns of rapid metropolitan growth and expansion would have largely matured.

Method of Analysis

Studies of land use regulation and home prices have typically been met with a number of methodological challenges. Quigley and Rosenthal (2005) noted a number of shortcomings throughout the literature. These include failing to deal with the endogeneity of regulation and home prices, not taking into account regulatory and policy making complexity, the inadequacy of land use regulation surveys, the often poor measurement of land use constraints and home price changes, and the use of inadequate and unsophisticated housing price indices. This study attempts to address these challenges through the use of instrumental variables and several measures of both exclusionary land use regulation and housing affordability. In addition, in contrast to past research, this study examines impacts on housing affordability at an individual household level, rather than just an area index of affordability. This allows for an assessment of the effects of such regulation on individual households' housing affordability.

To illuminate long term trends in housing affordability stress by group, descriptive statistics are first presented showing changes in housing affordability by racial and income quartile from 1980 through 2014. Income quartiles are based on the national income distribution. Income limits for each quartile can be found in Table 17 in the Appendix. Statistics are calculated from the Public Use Microdata Sample from the Decennial Censuses and American Community Survey with household sampling weights applied to generate estimates representative of the national population. In addition to showing levels of housing affordability over time, the analysis focuses on differences and rates of change in housing affordability by racial and income group. One notable and distinctive event during this period was the 2008 collapse in the housing market and the severe recession that ensued. This exogenous shock represents a unique opportunity to examine how housing affordability stress is affected by such a shock. In addition, one-way analysis of variance tests are performed to determine if there are significant racial and income group differences in average levels of housing affordability and in the average 10-year change in housing affordability stress from 1980 to 2010-14. To demonstrate these trends spatially, I generate maps showing variations in housing affordability stress by race and income quartile in 2014. For these maps, I measure housing affordability stress as the percentage of owner households with monthly housing costs of over 30 percent of income. For renter households I measure it as the percentage of renter households with gross rent costs (with utilities) of over 30 percent of income. These maps illuminate the spatial dimensions of housing affordability stress for different race and income groups. In addition, I examine housing affordability stress in detail at the Public Use Microdata Area level in four metropolitan areas, New York, Los Angeles, Chicago, and Miami, focusing on variations between the central city and suburban jurisdictions. These metros represent each of the four Census regions and also represent places where housing cost burdens tend to be particularly high within their regions.

The second half of the study consists of an inferential analysis on a sample of metropolitan areas. For the inferential analysis, I apply a tobit regression of housing affordability on land use regulation in 2005-09 utilizing households grouped by metropolitan area as the unit of analysis. Tobit regression is appropriate here because a significant proportion of households report either negative income or housing costs in excess of income, requiring an approach that can accurately model a housing cost ratio censored at 100 percent for owners and renters at the upper end and at zero for renters at the lower end. The distribution of the owner and renter cost to income ratios are shown by the following figures.

Figure 2 – Owner Cost to Income Ratio Distr.

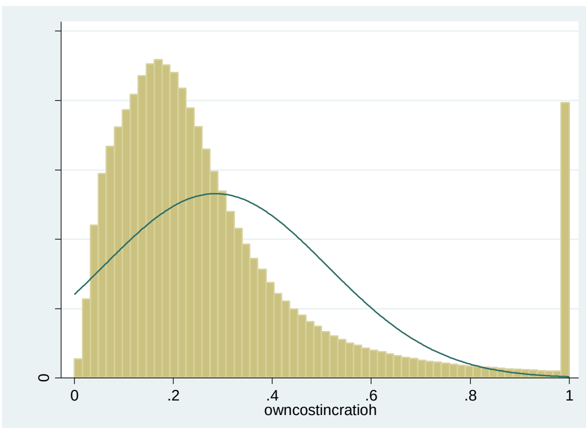
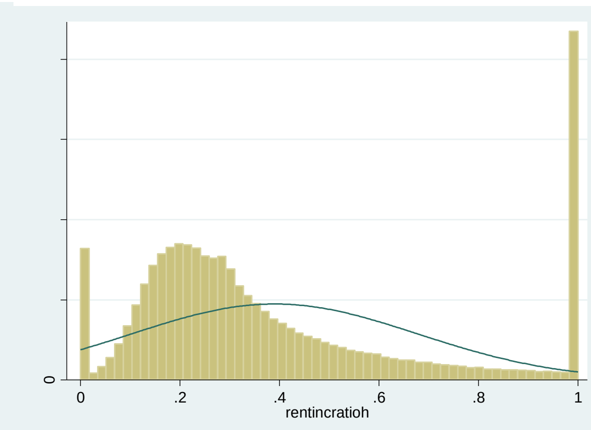


Figure 3 – Renter Cost to Income Ratio Distr.



To control for groupwise heteroscedasticity, metropolitan area-clustered standard errors are utilized using Stata's vce (cluster) option. Within the regressions, distinctions are made for racial groups, including non-Hispanic whites, blacks, and Hispanics. To further investigate links between land use regulation and cost burdens, metropolitan-area regressions are run using the percentage of households with housing cost burdens in excess of 30 percent of income by tenure as the dependent variable. These regressions are presented by income quartile, including low income households (1st – 25th percentile or 1st quartile), moderate income households (26th – 50th percentile or 2nd quartile) middle income households (51st to 75th percentile or 3rd quartile), and high-income households

(76th to 100th percentile or 4th quartile). Quartiles are determined at the metropolitan area level, controlling for regional differences in the income distribution.

In addition, difference models that model the impact of land use regulation on the change in housing affordability stress between 2005-09 and 2010-14 are estimated, utilizing metropolitan areas as the unit of analysis. Finally, a city/suburb OLS regression is estimated utilizing central city housing affordability (percentage of households with housing costs greater than 30 percent of income) as the dependent variable and corresponding suburban land use regulation variables as the main independent variable of interest. This tests whether land use regulations in suburban jurisdictions generally have an impact on housing affordability stress within central cities, an open question in the literature. I generate the suburban land use regulation variables by calculating the sample selection-weighted response means of all non-central city jurisdictions captured in the Wharton survey by metropolitan area. Central cities are defined as those identified by the Census Bureau in the 1995 metropolitan area definitions.

An instrumental variables procedure is used to instrument the land use regulation measures to deal with the potentially endogenous relationship between such regulations and housing affordability, well documented in the literature (Ihlanfeldt, 2007; Quigley and Rosenthal, 2005). Following Rothwell and Massey (2010) and Lens and Monkkonen (2016), I instrument the land use regulation measures by historical population density (at least 30 years prior), decennial change in population density, and year of statehood for the state that makes up the majority of the metropolitan area by population. These function as good instruments because they are often related to incidences of certain types of land use regulation. This is because such regulations are often first implemented at key historical stages of an area's population growth and development. For example, population density at times representing the various peaks of suburban development would likely show a relationship to land use regulations governing housing density and housing type. Because they are historical measures, they should not show a connection to current housing affordability.

In addition, I adopt a dummy variable instrument indicating whether the metropolitan area borders a major coastline (for example, ocean, sea, great lake, bay, or gulf), following Hilber and Robert-Nicoud (2013). Such metropolitan areas have natural constraints on metropolitan expansion, which is often related to regulations governing the density and pace of housing development. In addition, the number of governments with zoning powers and the number of these governments per 100 square miles are used. In sum, these variables proved strong exogenous predictors of various land use regulation measures in preliminary testing. These instruments function well because they capture the degree to which the number of local governments contribute to heterogeneity in municipal land use regulation across metropolitan space. Since the number of governments is tied to historical metropolitan development patterns, they should not be related to present day housing affordability. The actual instruments used in particular regressions vary by the specific land use regulation of interest, as some have stronger relationships with certain regulations than others. As a check, a Sargan and Basmann chi-square tests of overidentifying restrictions are performed to determine if the instruments are valid for each regression.

To reduce the risk of coefficient bias, careful attention must be paid to the core assumptions of the model. Amongst these are the standard least squares assumptions of homoscedastic residuals. In the course of analysis, I perform checks for heteroscedasticity within the metropolitan area and central city models, with fitting of robust standard errors if it is present. Variance inflation factors were calculated to examine the model for multicollinearity, after which some variables were combined or removed to reduce such collinearly. Finally, I examine scatterplots of the covariates on the housing affordability stress measures to identify any potential extreme outliers and identify the correct functional form for the independent variables within the model.

Conceptualizing Housing Affordability

Since this study focuses on levels of housing affordability stress at high levels of geography and changes in affordability over time, it is not necessary to devise specific, more narrowly tailored measures of housing affordability. A more intensive analysis of housing affordability in a particular metropolitan area or city might suggest a different approach that takes into account the specific burdens experienced by specific household types and sizes and the unique housing needs of such households relative to supply. Indeed, a definition of housing affordability used for program eligibility criteria should account for local housing needs by household size and type and more precisely measure the burden of housing costs relative to the ability to secure a decent standard of living in a local context. Yet since this analysis examines the impact of land use regulation on housing affordability stress both cross-sectionally and over time across multiple diverse housing markets, a simple ratio should be appropriate for these solely *analytic* purposes.

It is important to note that the main dependent variable of interest in the study for the difference and city/suburb regressions is not housing affordability generally, but housing affordability *stress.* This focuses narrowly on changes in the proportion of the population that experiences a high burden of housing costs relative to income, defined as over 30 percent. In addition, this threshold works well in that it reflects the oft used and widely cited stress criterion of over 30 percent. Since the focus of these regressions is housing affordability across geographic areas (rather than across individual households), here it is more appropriate to examine the proportion of households that can be considered housing cost-burdened. The percentage cost-burdened is an indicator of the degree to which metropolitan housing is excessively expensive relative to area incomes. Using a "stress" based dependent variable allows one to determine contributions to a general imbalance between housing costs and incomes across metropolitan areas. An additional measure of general metropolitan housing affordability, the median home value to median household income ratio, is used as well.

Theoretical Framework

Past research has established a number of complex causal links between various socio-economic phenomena and housing affordability. For this study I adopt a theoretical framework which reflects this complex web of causality to design a proper framework for modeling the relationship between land use regulation and housing affordability, as shown by the following chart.

Figure 2 - Theoretical Framework: Major Influences on Housing Affordability

The literature shows that area housing affordability is affected at the most fundamental level by area income, housing prices, and other housing costs. Housing costs include owner costs such as maintenance, insurance, HOA fees, and utility costs but also property taxes. These costs are influenced indirectly by tax deduction and relief programs which reduce property taxes for some homeowners.

Housing prices are influenced by mortgage interest rates that determine the cost of borrowing for prospective homeowners, but also by housing supply and housing demand. These two important factors are affected by a host of other phenomena. Housing demand within a community is impacted by the desirability of that community as a place to live. This can be reflected by the presence of parks, shops, restaurants, attractive public spaces, low levels of crime, and other attractive area amenities. These amenities are in turn driven by land use regulation, which through zoning, dictates the kinds of development that is allowable in an area. A particularly important area amenity, school quality, also affects housing demand. Areas with high-quality schools are more attractive places of residence for families with children.

Area income also affects housing demand. Higher-income areas tend to have households with higher housing consumption preferences. Income has an additional effect on demand through school quality. Higher-income areas have more resources to attract quality teachers and maintain lower class sizes. They also produce better school outcomes through socialization. Students benefit from peers with well-educated, higher-income parents and school climates more conducive to learning. Tax deductions such as the federal mortgage interest tax deduction have the effect of increasing demand for housing through an implicit government subsidy. Population growth (or decline), which can be affected by availability and growth of job opportunities, also impacts housing demand.

In addition to land use regulation, public housing programs are another example of how government policy influences housing demand. Public housing and Section 8 vouchers affect demand by expanding the number of households in the housing market through direct subsidies. Another major influence on demand is tenure choice. An area preference for owner housing increases demand for owner-occupied housing. This tenure preference is in turn impacted by the demographics of the community. For example, single-person households are more likely to choose rental housing than other household types. Income is another influence on tenure. Higher income households are more likely to be homeowners. Housing supply also influences tenure. A general area preference for rental housing would be associated with an increase in rental housing units relative to owner units in the long run. In addition to these influences, tenure choice is affected itself by housing affordability. The relative unaffordability of owner housing by type and quality can dictate preferences for rental housing.

Housing supply is another critical determinant of housing prices and thus a major influence on housing affordability. The character of the housing supply is determined by the nature of the amenities within the housing stock (housing quality). This is in turn influenced by the demographic profile of the area (for example race, age, gender, family structure, class, and native status) which dictate particular housing preferences. However, housing quality is also somewhat influenced by land use regulation, as set back and minimum lot size requirements often create a bias toward larger, more luxurious homes. In addition, land use regulation directly affects housing supply by constraining the number and type of new housing units developed. Physical geographic limits, such as the presence of bodies of water, mountains, or other natural barriers that limit developable land area, also restrict the expansion of housing supply. Housing programs, both government and non-profit, affect supply by subsidizing the development of new housing units. This occurs through project-based Section 8 vouchers, Low Income Housing Tax Credits (LIHTC), and the development of affordable housing through community development corporations. Housing demand itself also influences housing supply in the long-run, as new housing units are developed in response to demand.

In addition to housing costs, supply, and demand, housing affordability is affected directly by income, the financial means by which to cover housing costs. While influencing housing quality, school quality, and housing affordability directly, income also influences educational attainment. Children in higher income households are more likely to graduate from high school and college. Educational attainment in turn positively affects employment which influences income; an intergenerational loop of positive causality.

There are also some instances of a loop of causality between housing affordability and its contributory influences. For instance, an area that has low housing affordability will essentially price out demographic groups with low incomes (such as racial and ethnic minorities), preserving the current demographic profile. Area demographics in turn influence housing affordability through various indirect means such as housing quality, employment, and tenure choice. Housing affordability also affects housing programs because low affordability increases the likelihood of public and non-profit policy responses to provide affordable housing.

A number of factors impacting housing affordability directly impact land use regulation as well. Land use regulation is influenced by housing discrimination, since communities with a desire to exclude low-income households are more likely to enact exclusionary zoning ordinances. Housing discrimination can also affect the demographic profile of an area, another indirect contributor to housing affordability, by producing communities segregated by race. Geographic limits affect land use regulation by increasing the likelihood of growth management and open space conservation policies.

Land use regulation is also impacted directly by area demographics, as communities with a certain demographic profile (for example upper middle-class families with children) are likely to enact ordinances to exclude outsiders and maintain that profile. These demographic profiles are in turn influenced by historical land use regulation which encourages development of a housing stock affordable and attractive to certain demographic groups.

In conclusion, based on this framework, land use regulation is expected to influence housing affordability most directly through its constraining effect on the housing supply. Yet it is also expected to generate an indirect effect through its impact on housing quality and therefore supply and prices. It would manifest another indirect effect through its effect on community quality of life through zoning, which affects housing demand and prices. Yet land use regulation is itself affected by housing affordability, meaning it is indirectly linked to other phenomena influencing housing affordability as well. The complex relationships and pathways by which land use regulation affects housing affordability requires a robust model with a wide array of control variables operationalizing key theoretical concepts.

Variables and Model

The proposed model of housing affordability attempts to operationalize the key influences on housing affordability from the theoretical framework, informed by the literature. Additional covariates are also included that are typically captured in studies of land use regulation and house prices. The analysis utilizes four primary dependent variables. For the household level models these include the ratio of owner costs to income for owner households and the ratio of gross rent to income for renter households. In the metropolitan area models, I utilize the proportion of owner-occupied households paying more than 30 percent of income toward the cost of housing and the same measure for rental households. As these constitute two completely different markets for housing, it is typical to consider owner and rental housing affordability separately (Kutty, 2005). Yet there are important interactions between the rental and owner housing markets in that local demand for owner occupied housing tends to be accompanied by strong demand for rental housing (Goodman, 2001). Therefore for this reason, each regression contains the same group of covariates.

The following outlines the hypothesized relationship between owner-occupied and rental housing affordability and the key variables influencing them from the housing affordability literature for household *i* (level model) nested within metropolitan area *j:*

$$\mathrm{Y}_{ij} = \mathbf{x}_{ij}\boldsymbol{\beta} + \mathbf{z}_{j}\boldsymbol{\alpha} + \varepsilon_{ij}$$

In the case of the difference and city/suburb models, the relationship for metropolitan areas (or central cities) would be:

$$\mathrm{Y}_{j} = \mathbf{z}_{j}\boldsymbol{\alpha} + \varepsilon_{j}$$

α_0 is the intercept term and ε is the error term. Y_{ij} is the measure of housing affordability, defined as the ratio of annual owner costs or annual gross rent to household income for households. For metropolitan areas and central cities, Y_{j} is defined as the percentage of rental or owner-occupied households with a housing cost burden exceeding 30 percent of their income. Moreover, for metropolitan areas, I use various home price to household income ratios (value to income ratios) as a dependent variable to identify impacts on general housing affordability. This includes the ratio of the median of the first quartile of home values by metropolitan area to the median of the first quartile of household incomes by metropolitan area, the corresponding ratio of the second to the second, and so on. This measures the relative affordability of the housing stock at various points on metropolitan income distributions, which controls for the fact individual household housing cost to income ratios will be influenced by household housing consumption preferences. In addition to a cross-sectional model, I estimate longitudinal models that measure the effect of land use regulation on the change in housing affordability stress.

$\mathbf{x}_{ij}$ is a vector of household characteristics including African American-headed household, Hispanic-headed household, single-family home, home built before 1960, and number of rooms. $\boldsymbol{\beta}$ is a vector of household level coefficients. $\boldsymbol{\alpha}$ is a vector of coefficients for each metro or central city and ε_{ij} is the error term for household *i* with respect to metro *j*. ε_j is the error term for metro or central city *j* in the metropolitan area and central city regressions. $\mathbf{z}_j$ is a vector of metropolitan area characteristics including population, education, property taxes, the rental share of housing, geography, and land use regulation.

I measure *Population* by population and population density for metropolitan areas.. Metropolitan areas with higher concentrations of disadvantaged or generally low-income demographic groups are more likely to have higher levels of household housing cost burden. I measure *Education* by educational attainment levels through bachelor's degree attainment. I measure *Property Taxes* indirectly by the ratio of property taxes to home value for households and the ratio of median property taxes to median home value for metropolitan areas. *Rental Share* is measured by rental units' proportion of all housing units for metropolitan areas. *Geography* consists of metropolitan area measures of the percentage of total area taken up by water as well as dummy variables for regions, a multi-state metro, and a metro that includes at least one mountain range.

Finally, *Land Use Regulation* is measured by metropolitan area estimates of land use regulation measures in the Wharton and Pendall surveys. The Wharton survey includes nine subindices that capture political and judicial interference, approval delay, approval difficulty, community opposition, supply and density restriction, open space, and developer exaction requirements. There are two primary variables of interest which form the hypothesized basis for metropolitan housing affordability. One of these is the Wharton Density Restrictions Index, which measures density restrictions in the form of minimum lot size requirements. The authors of the Wharton survey converted survey responses to a dummy variable with a value of one if a municipality as a minimum lot size requirement anywhere in its jurisdiction and a value of zero if it has no such requirements or less restrictive requirements. I operationalize the Index by including all of its components individually in the model, to determine which, if any, have the strongest effects on housing affordability. Moreover, I include measures of density restrictions through the Density Restriction Importance Index, a composite of Wharton variables measuring the importance of single family and multi-family density restrictions to regulating development. A factor analysis showed that single and multi-family density restrictions were highly correlated and together formed a density restriction dimension emergent from the data.[4]

Supply restriction regulations are measured as separate variables in the model. Some of these components were combined into index variables after a factor analysis found they were highly correlated and related to common dimensions of regulation. Single family construction and building permit limits were combined into a Single Family Development Limit Index, while multi-family dwelling limits and building permit limits were combined into a single Multi-Family Development Limit Index.

From the Pendall survey, I include individual measures that relate to exclusionary regulation. This includes whether a new development moratorium is in place, whether a there is a residential pace restriction, whether a mobile home ban is in effect, whether a rezone is required for rezoning to multi-family, whether there is a density bonus or other inclusionary housing incentive offered, and the maximum residential density.[5] A factor analysis showed that the latter three variables were connected to a common “density restriction” dimension.[6] In addition, three other relevant variables from the Pendall dataset were examined as controls for the exclusionary variables of interest. These include whether there is an urban growth boundary in place, whether there is an urban limit line, whether there is a sprawl containment tool in place. As a factor analysis found

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[4]Full results of this factor analysis can be found in Table 19 through Table 24 in the Appendix.
[5]Measured as a categorical variable ranging from 1 to 5, from less than four dwellings per acre to over 30 dwellings per acre. Descriptive statistics for these variables are presented in Table 29 in the Appendix.
[6]For full factor analysis results, see Table 19 through Table 24 in the Appendix.

that the first three variables were linked to a growth management dimension, these variables were standardized and combined into the Growth Management Index[7]

An additional set of variables, including married couple and single parent household concentration, number of housing units, median home value, the percentage of housing with over 3 bedrooms, and the number of housing units per capita were considered but excluded from the model due to collinearity with other variables in the model, failure to add explanatory power, or joint insignificance. Other variables outlined in the theoretical framework affect housing affordability, however are not expected to mediate the relationship between land use regulation and housing affordability. For this reason, they have not been included in the model. Moreover, other variables such as additional measures of employment, age group, household size, and physical housing characteristics were excluded from the model for the sake of parsimony. Those variables retained in the model are those controls typically employed in similar studies.

Strengths

This study's design is uniquely suited to make causal inferences on the impact of land use regulation on housing affordability. The use of instrumental variables mitigates potential endogeneity problems, while the estimation of both cross-sectional and difference models show effects across both space and time. The use of multiple measures of housing affordability as dependent variables serves as a robustness check for study findings. Use of the Wharton Index components allows for a focus on the effects of

[7]See Table 29 in the Appendix for descriptive statistics for the Pendall Indices.

specific types of regulation on housing affordability, unlike the many studies focused on land use regulation generally. The inclusion of new, theoretically relevant covariates within the models allows for the impact of land use regulation on housing affordability to be more precisely estimated. Finally, the descriptive analysis provides a solid empirical basis for interpreting the inferential analysis results.

Limitations

This study is ill-suited to measuring the impact of land use regulation on qualitative dimensions of housing affordability that may derive from unique housing needs, locally contextual phenomena, and direct human experiences with housing problems. In addition, the study cannot examine variables that might be related to housing affordability and land use regulation but are not measured in Census surveys, such as discrimination. Furthermore, the lack of temporal variation in the land use regulation measures means that no inferences can be made about the impact of a change in land use regulation on the change in housing affordability. There are also limits to generalizability as land use data is only available for a subset of the most populous metropolitan areas.

Threats to Validity

Although the design of this study addresses many possible threats to validity, a number of additional threats are worthy of serious examination. As the study measures a number of economic phenomena, the possibility of endogeneity remains a real threat to internal validity. For example, persistently low housing affordability may engender a local government policy response through land use and zoning ordinances. This would be a case of reverse causality, where housing affordability affects land use regulation and not the other way around. For example, areas that have inclusionary incentives generally have lower housing affordability not because such incentives reduce affordability, but because lower affordability requires such incentives to ameliorate the problem. Similarly, jurisdictions with high allowable densities do not have low affordability because such allowable densities produce higher housing cost burdens, but because areas with high population density and low affordability generally permit higher allowable densities.

In other cases, endogeneity arises from omitted variable bias. For example, area racial or class bias is likely to affect land use regulation by promoting exclusionary zoning, but also housing affordability by a higher incidence of housing discrimination. It is possible that exclusionary land use regulation and housing discrimination are motivated by racial or class bias, which would make both regulation and discrimination indicators of such bias. A lack of a measure of racial or class bias in the model may bias the coefficients on the land use regulation measures. Since bias is expected to be positively correlated with both land use regulation and housing affordability, it is expected that the coefficients on the land use regulation measures would be positively biased. In other cases, there may be additional omitted variables that simultaneously affect land use regulation and housing affordability. Because of these problems, this study attempts to deal with this threat through the use of instrumental variables. When statistical tests reveal the presence of endogeneity (from either reverse causality or omitted variable bias), conclusions are only made from results also supported by instrumental variables regression.

Operationalization error remains a very real threat in that the variables selected, measured in Census surveys, may be improper measures of the fundamental concepts underlying housing affordability. Land use regulation may also be improperly operationalized by the Wharton and survey responses. Such improper operationalization can generate measurement error. This study addresses this problem by using multiple measures of housing affordability, while testing the robustness of findings by also using alternative land use regulation measures from the Pendall, Puentes, and Martin (2006) dataset.

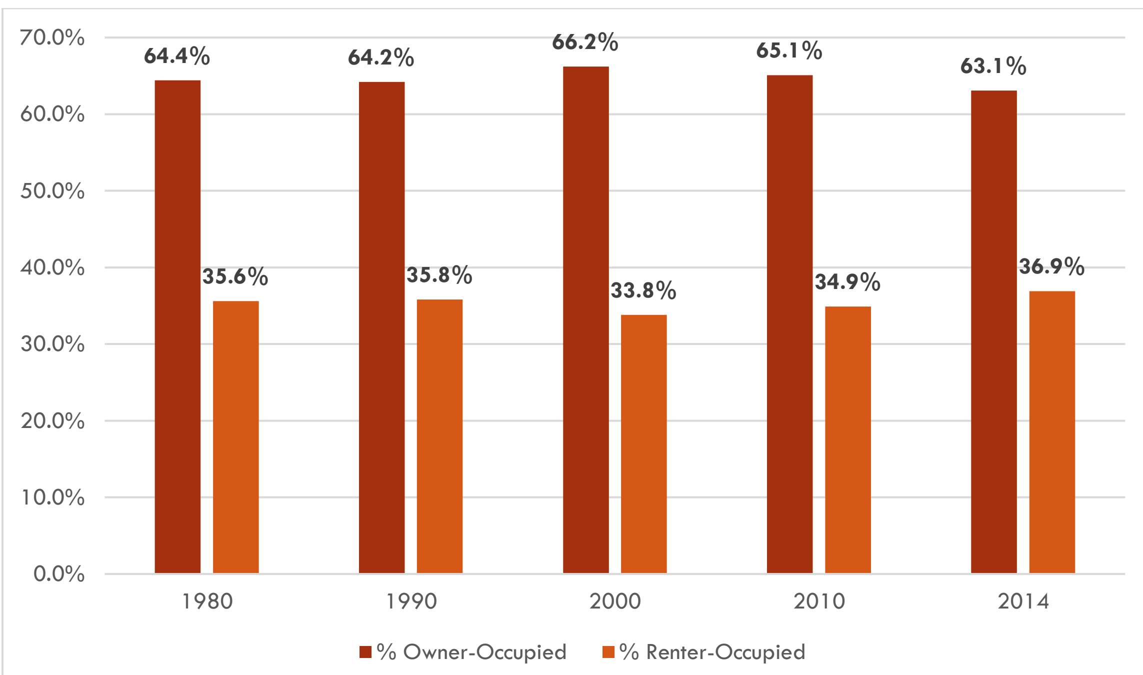
In addition to such threats to internal validity, a number of threats to external validity exist as well. Using a limited sample of metropolitan areas as units of analysis for the difference and city/suburb models reduces generalizability to all metropolitan areas and other geographies, without legitimate application to cities, states, or even nation-states. Moreover, the limited focus on 2007-2012 limits claims about the effects of land use regulation on housing affordability over the long term. Yet despite these limitations, this study will offer useful knowledge that will improve understanding of the effects of land use regulation on housing affordability and housing affordability change.

CHAPTER 4: Research Findings

Housing Affordability Over Time

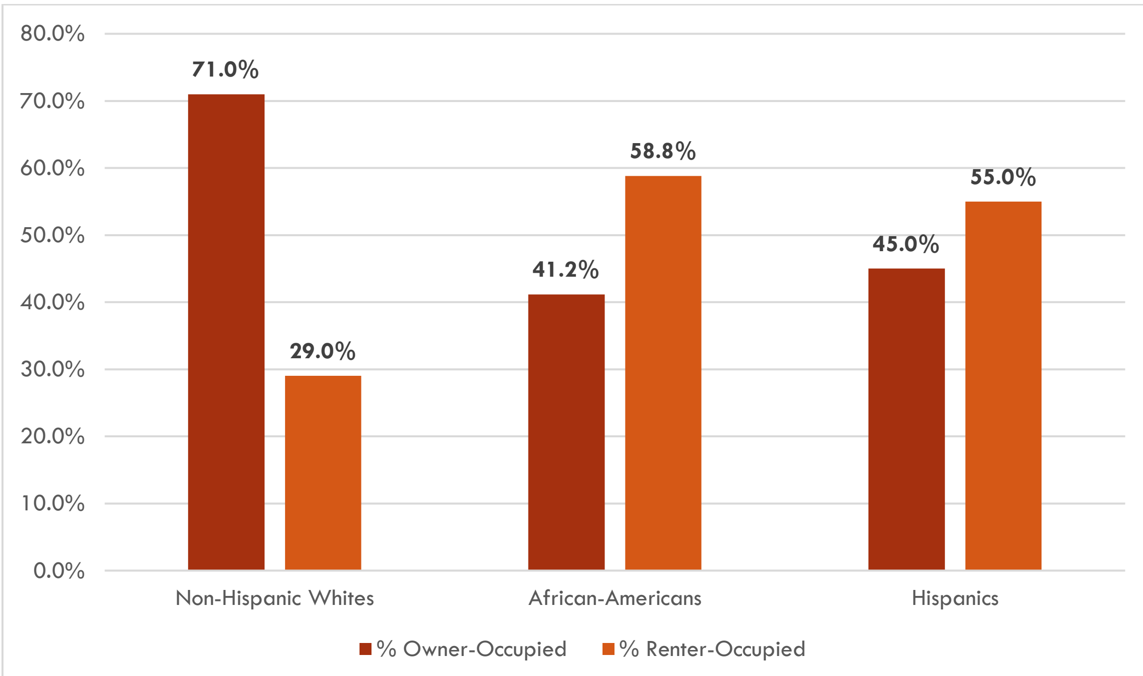
This section presents results on housing affordability from 1980 to 2014 by housing tenure, racial, and income group. The distribution of owners and renters has not been consistent over time. The homeownership rate remained nearly flat at just over 64 percent from 1980 to 1990, it increased 3.1 percent from 1990 to 2000. Homeownership continued to slowly increase through 2006. After 2006, it began a gradual and consistent decline continuing through 2014. Owner-occupied housing accounted for approximately 63.1 percent of occupied housing in 2014.

Figure 3 - Housing Tenure, 1980 – 2014



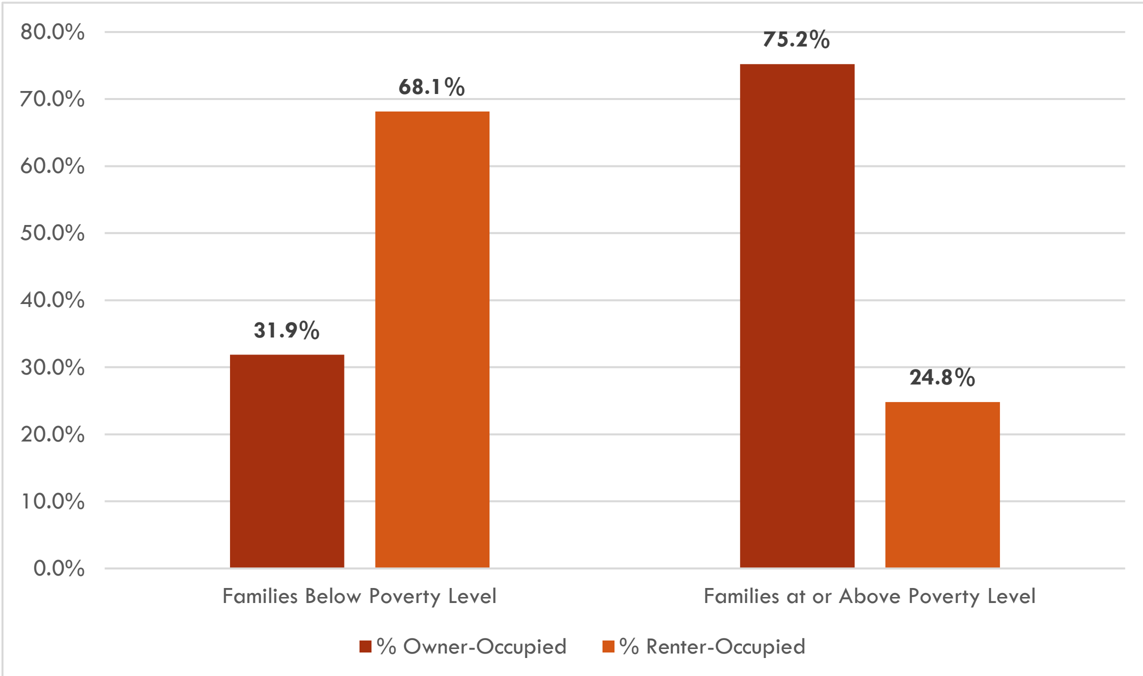
Non-Hispanic white households are much more likely to be homeowners than African-Americans and Hispanics. African-American households have a 30 percentage point homeownership gap with non-Hispanic whites. Hispanic households have a 26 percentage point gap with whites.

Figure 4 - Housing Tenure by Racial Group, 2014



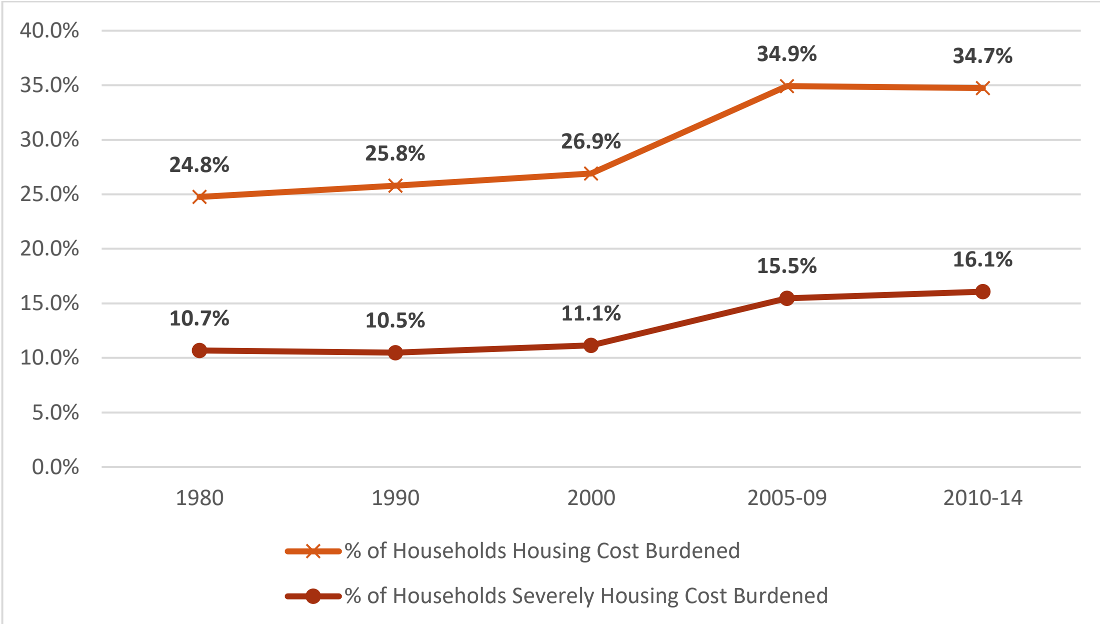
Families below the poverty level are substantially less likely to be homeowners than those at or above it. There is 43 percentage point homeownership gap between families above and below the poverty line.

Figure 5 – Family Housing Tenure by Poverty Status, 2014



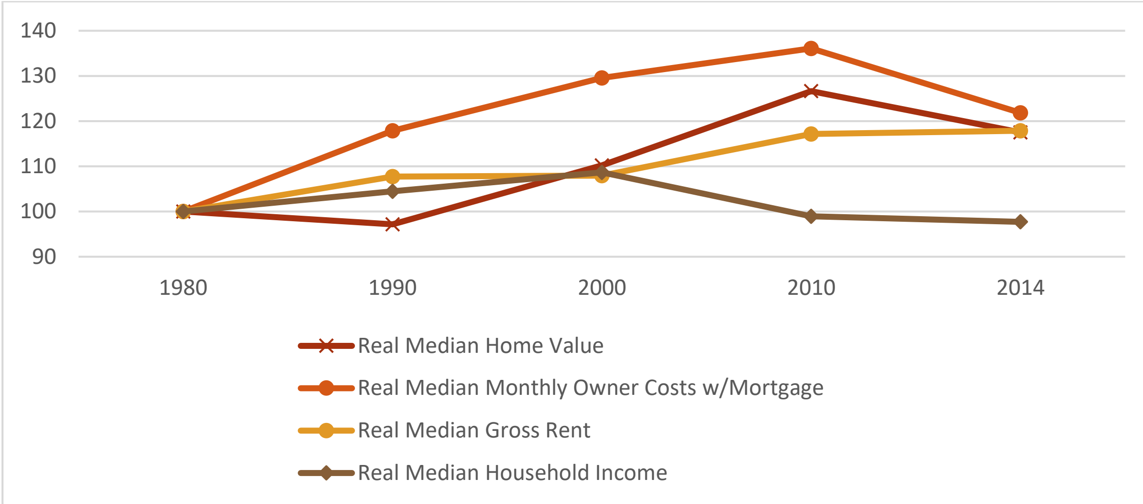
From 1980 to 2000, the proportion of households that are housing cost burdened (owner costs or rent over 30 percent of income) grew from 24.8 percent in 1980 to 26.9 percent in 2000, a rather significant 8.5 percent increase in the proportion. Housing affordability stress has become a much greater challenge since 2000. The proportion of housing cost-burdened households jumped over seven percentage points from 2000 to 2005-09. Likewise, the proportion of *severely* cost burdened households (housing costs over 50 percent of income) remained stable through 2000, before rising four percentage points from 2000 to 2005-09. These elevated levels largely continued through 2010-14. Severe housing cost burden rose slightly (0.6 percentage points) from 2005-09 to 2010-14, an increase that is statistically significant.

Figure 6 - Percent of Households Housing Cost Burdened



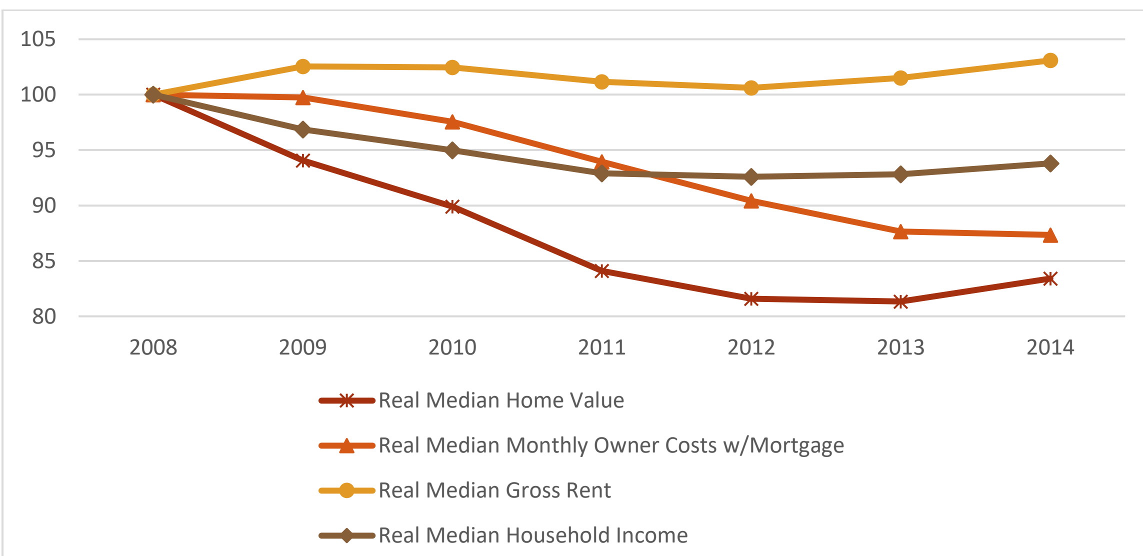
Much of the worsening housing affordability trend since 2000 can be traced to rapidly rising rents and home values relative to incomes. While inflation-adjusted (to 2014 dollars) rents and home values roughly tracked incomes from 1980 to 2000, increases began to exceed changes in income after 2000. This trend has abated somewhat since 2010, however the gap between rents and incomes remains very wide. Real monthly owner costs with a mortgage steadily rose from 1980 to 2010, but declined from 2010 to 2014 as owner housing markets softened.

Figure 7 - Indexed Real Median Housing Costs, Values & Household Income, 1980 - 2014



After the 2008 housing market crash, real home values immediately declined before resuming their rise in 2013, while real incomes dipped before beginning a slow recovery in 2013. Yet rents continued to rise faster than incomes. Much of this rent to income gap developed between 2008 and 2010 as the owner housing market collapsed. However, in more recent years the gap continued to very slowly widen.

Figure 8 – Indexed Real Median Housing Costs, Values, & Household Income, 2008 - 2014



Housing Affordability Trends by Race

When viewed by race, both owner and renter affordability stress across all racial groups rose substantially from 2000 to 2005-09, although owner affordability stress has increased more than renter stress over the long-term. In 1980, Hispanic owner affordability stress was lower than that of African-Americans, however by 1990 it rose to the African-American level and has tracked it ever since. Severe owner affordability stress shows a similar pattern, with Hispanic/African-American convergence achieved in 2005-09. Non-Hispanic white owner affordability and severe affordability stress remained consistently lower than that of blacks and Hispanics, and has reliably increased more slowly over time. The effect has been a slowly widening owner affordability gap between non-Hispanic whites and blacks and Hispanics. Owner affordability stress across all racial groups showed a marked decline post 2005-09, as home prices fell significantly in the wake of the 2008 housing market crash.

Figure 9 - % Owner Cost Burdened (>30% of HH Income)

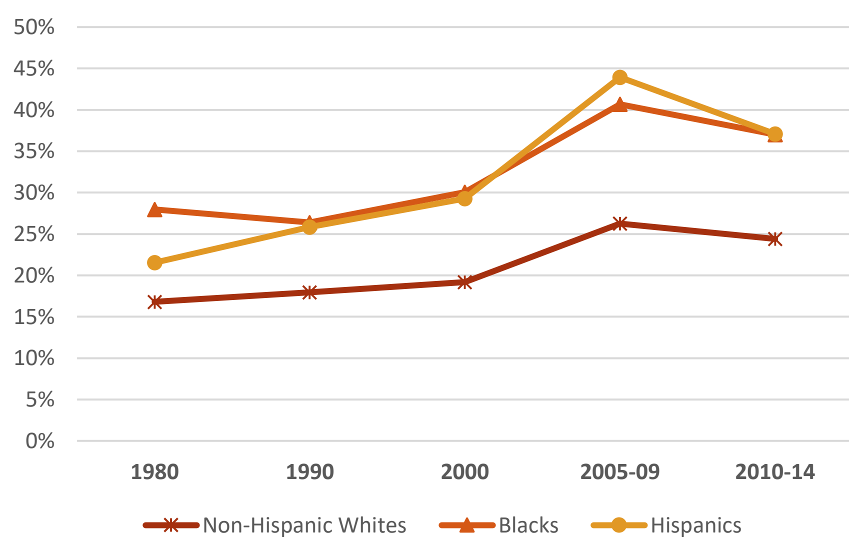
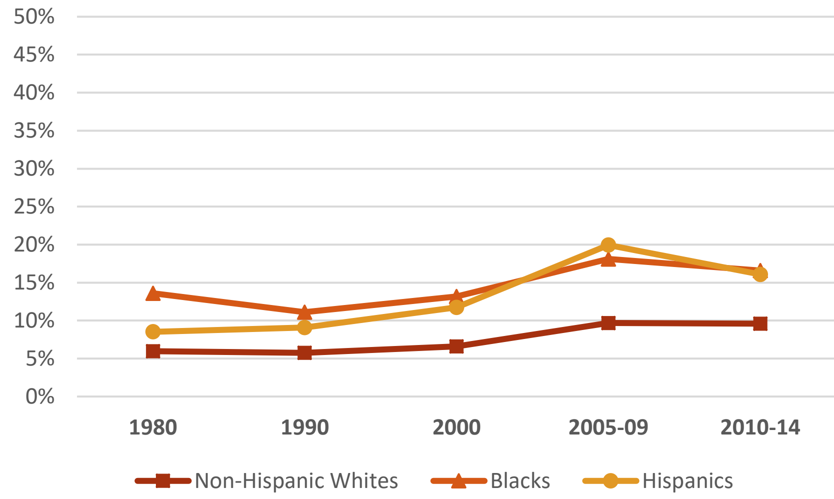


Figure 10 - % Owner Severely Cost Burdened (>50% of HH Income)



Renter affordability stress levels for African Americans and Hispanics have been nearly identical since 1980. Non-Hispanic white renter affordability stress, like owner stress, has been consistently lower and risen more slowly over time, producing a widening affordability gap with blacks and Hispanics. Unlike owner affordability stress, renter affordability stress across all racial groups has steadily risen, including during the period following 2005-09, as the effects of the 2008 housing market crash set in.

Figure 11 - % Renter Cost Burdened (>30% of HH Income)

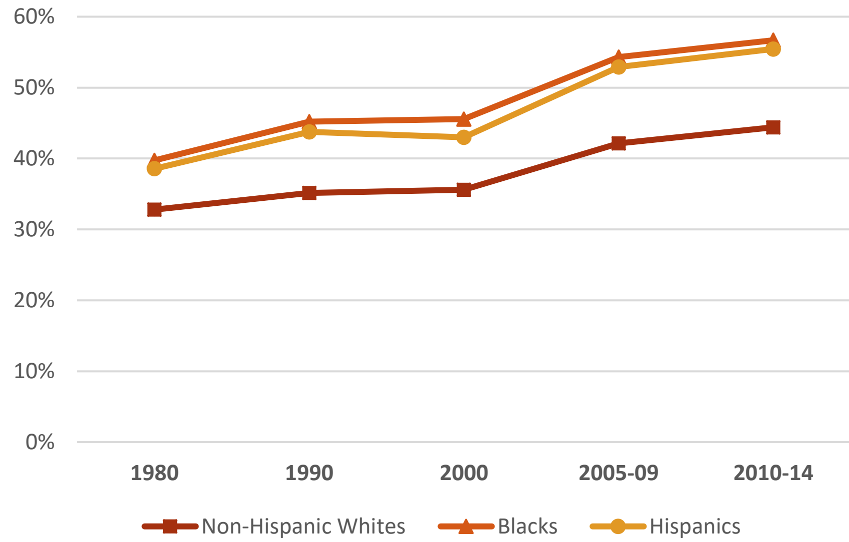
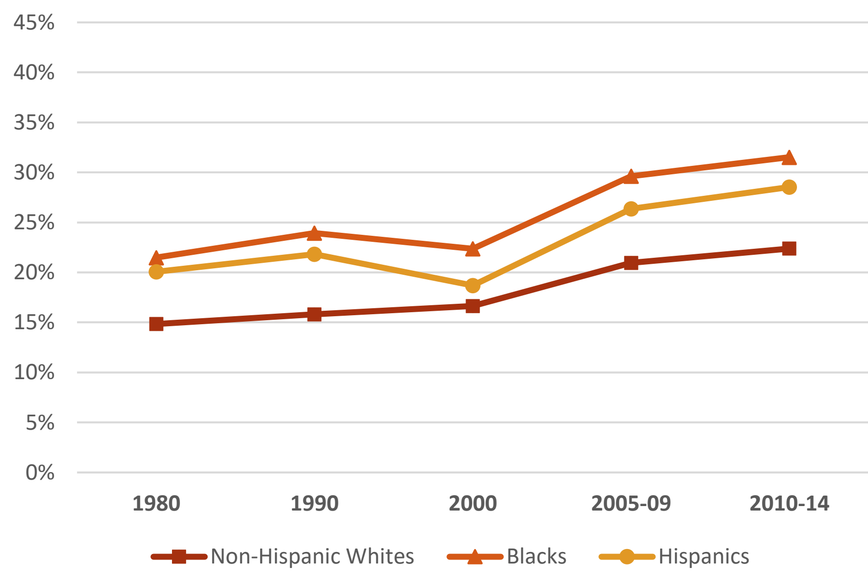
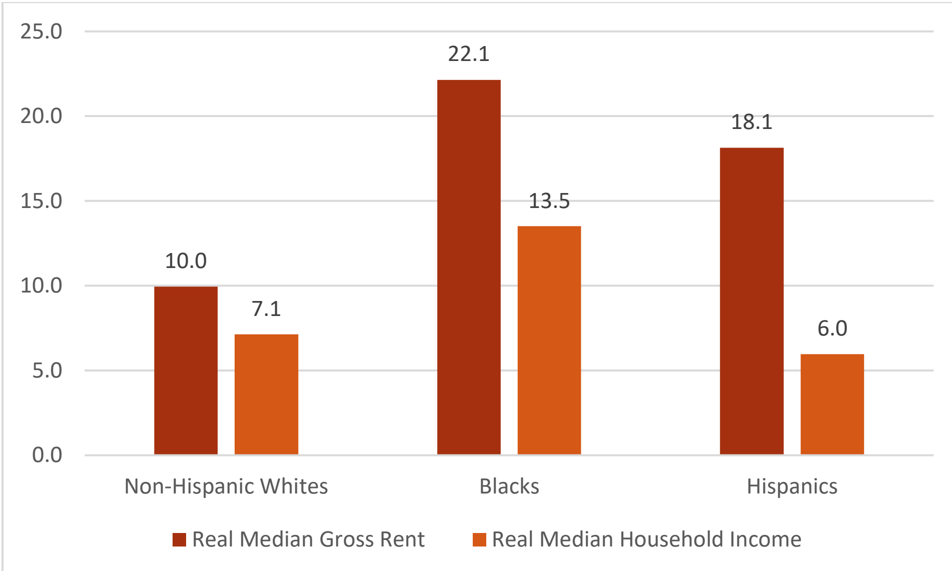


Figure 12 - % Renter Severely Cost Burdened (>50% of HH Income)



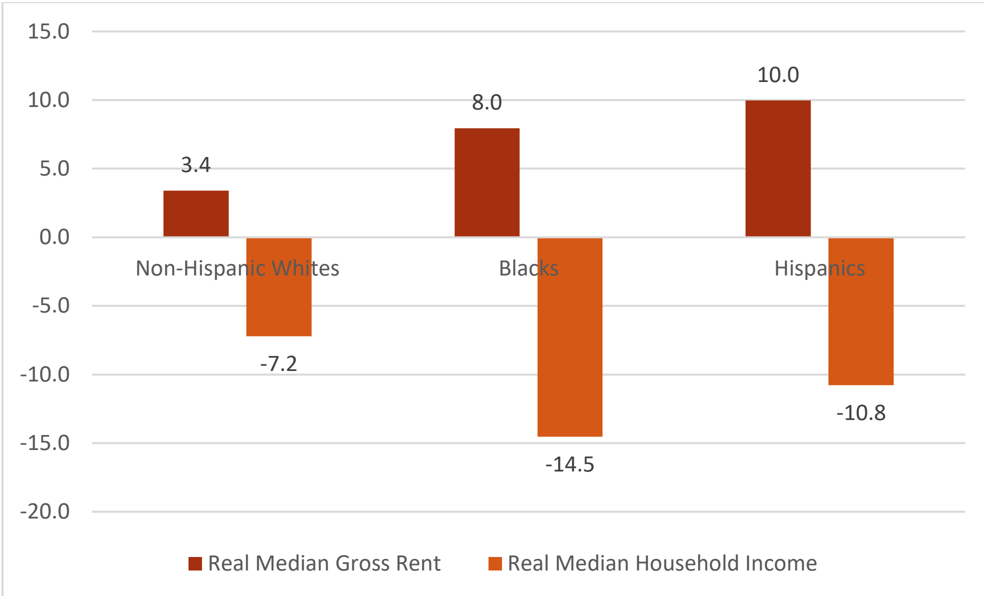
From 1980 through 2000, inflation-adjusted rents grew slightly faster than incomes for non-Hispanic whites but substantially faster for African-Americans and Hispanics.

Figure 13 - Indexed % Change in Real Median Gross Rent and Household Income by Racial Group, 1980 - 2000



After 2000, African-American and Hispanic rents continued a strong growth pattern while non-Hispanic white rents grew more modestly. At the same time, income growth for all racial groups began to steadily decline after 2000. This created a large gap between incomes and rents for African-Americans and Hispanics, and a much smaller gap for whites.

Figure 14 - Indexed % Change in Real Median Gross Rent and Household Income by Racial Group, 2000 – 2010-14

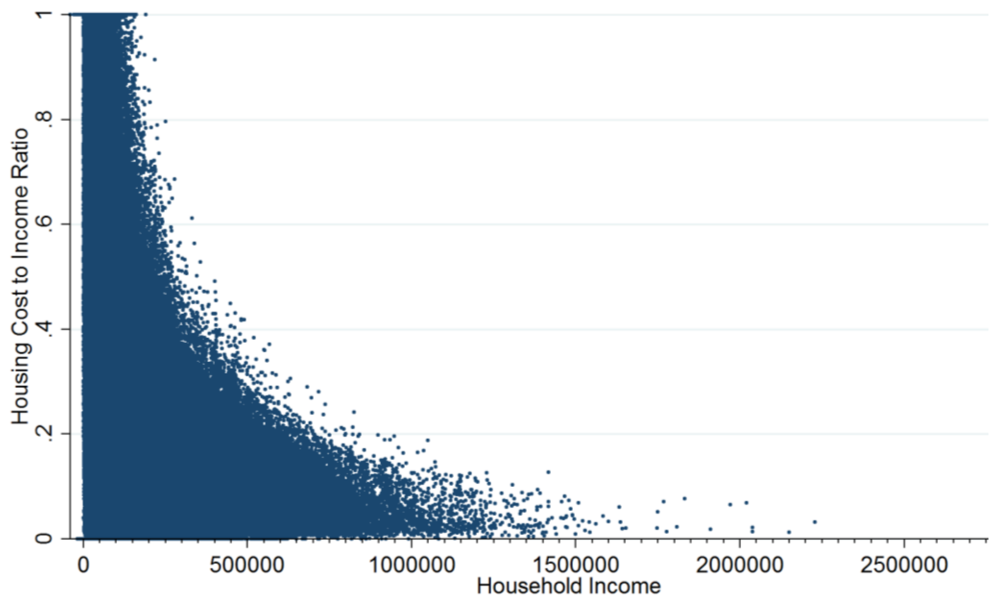


The racial gap in rent increases is partly because African-Americans and Hispanic households tend to be concentrated in areas that experienced significant rent growth over this period. Metropolitan areas with rent growth over the national average and high concentrations of black and Hispanic households include metropolitan New York City, Philadelphia, Baltimore, Houston, San Francisco, San Antonio, and Memphis. 42.3 percent of African-American households lived in metropolitan areas where the median gross rent increased more than the national average of 12.6 percent from 2005-09 to 2010-14. This compares to 39.4 percent for Hispanics, and only 35.6 percent for non-Hispanic Whites.

Housing Affordability Trends by Income Group

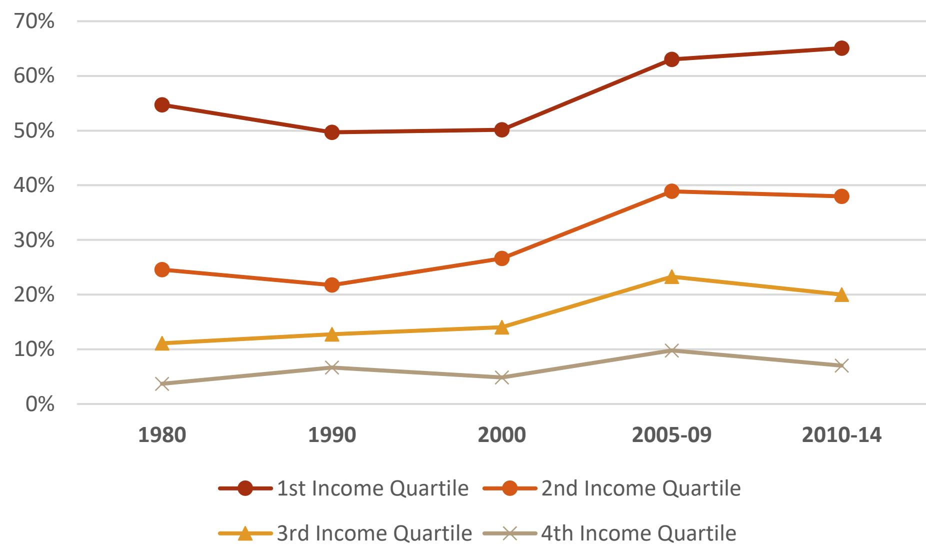
An examination of the housing cost to income ratio distribution against household income reveals that housing affordability stress all but disappears at the highest levels of the income distribution. The cost-to-income ratio experiences a nearly exponential decline after about $200,000 in income. Housing affordability appears to be a more common challenge at lower points along the income distribution.

Figure 15 - Scatterplot - Housing Cost to Income Ratio vs. Household Income



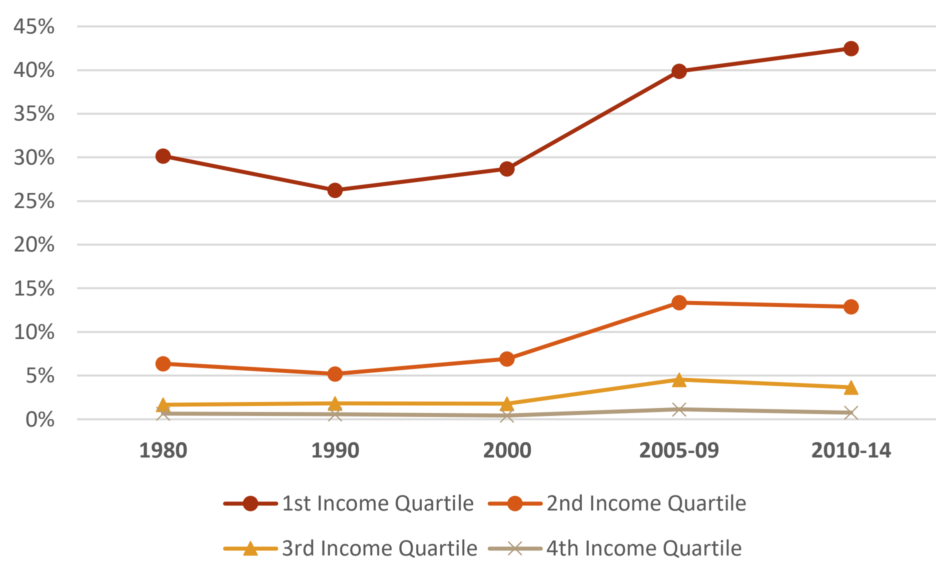
When viewed by income quartile, owner affordability stress levels decrease as income levels rise, as one might expect. However, the exceptionally large and widening gap between the first and second quartiles suggests it is a particularly severe and worsening problem for low-income households. While owner stress decreased slightly for the second, third, and fourth quartile from 2005-09 to 2010-14, it actually slightly increased for the first quartile, an increase that was statistically significant. This is all the more remarkable given the marked decline in home values and broad improvement in owner affordability overall during this period.

Figure 16 - % Owner Cost Burdened (>30% of HH Income)



Similarly, severe owner affordability stress is remarkably high and fast-rising for low-income households relative to others.

Figure 17 - % Owner Severely Cost Burdened (>50% of HH Income)



For renters, affordability stress levels tend to be higher than that of owners. They are also exceptionally high for low-income households, at over 70 percent. This proportion has been consistently rising since 1980, with no signs of abatement. Moderate income households (second quartile) also have distinctly high levels of stress relative to middle and high-income households and have had the fastest growth in stress since 2000. While rental affordability stress dropped slightly for moderate and middle income households in 2000, it has since grown slowly. High income household renter stress has also grown very slightly in recent years, an increase that is statistically significant.

Figure 18 - % Renter Cost Burdened (>30% of HH Income)

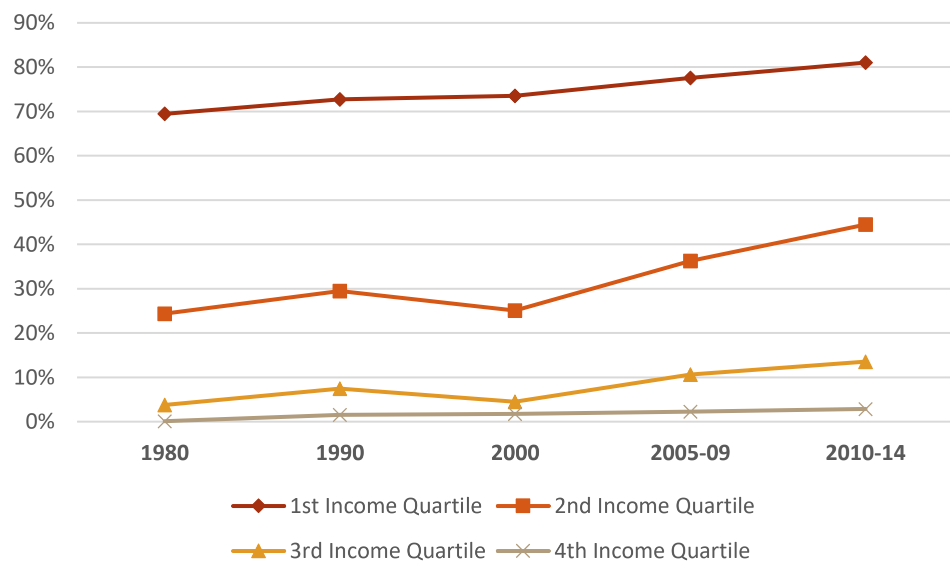
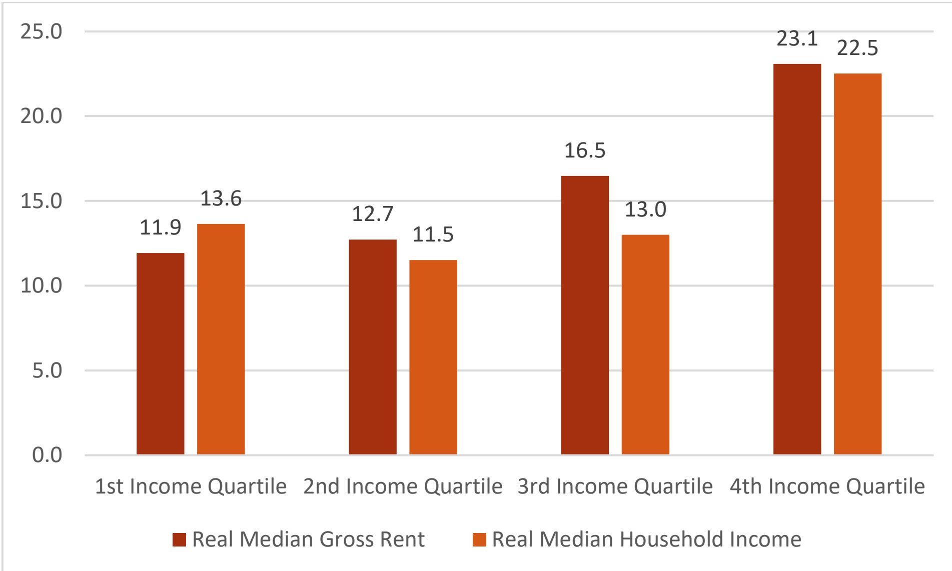


Figure 19 - % Renter Severely Cost Burdened (>50% of HH Income)

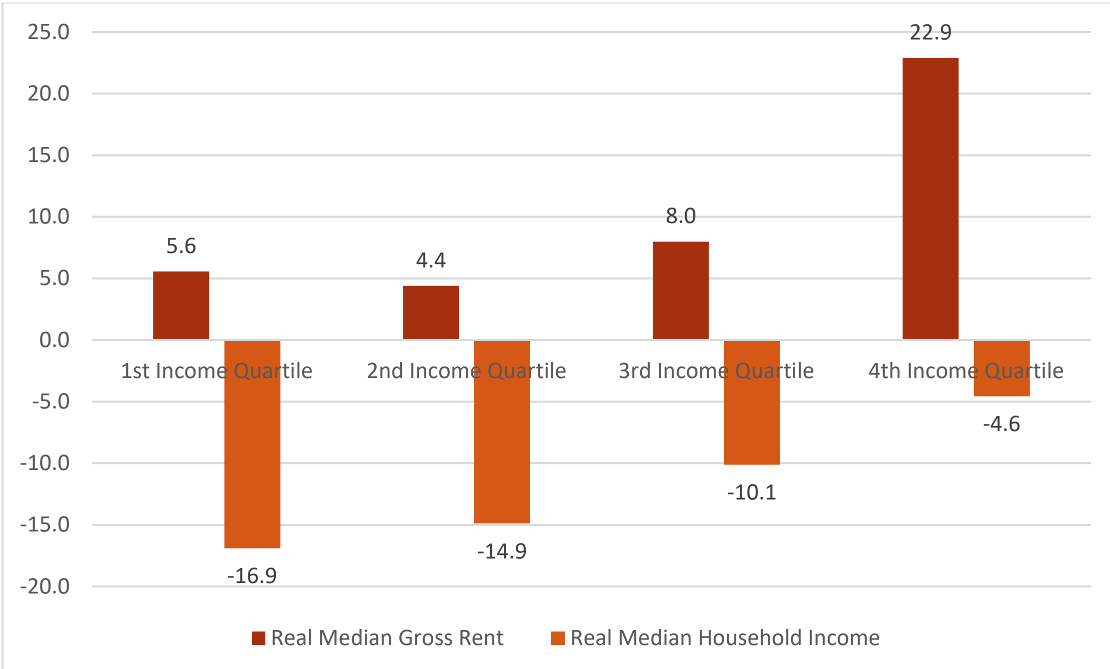
When viewed on a median housing price to median income ratio basis, since 1980, inflation-adjusted rents for fourth quartile high-income households have risen faster than rents for any other income quartile, and even slightly faster than real incomes for these households. This may be due to rising housing consumption preferences for this income group. Although rents paid by the remaining three income quartiles grew more slowly, they exceeded real income growth for the 2nd and 3rd income quartiles.

Figure 20 - Indexed % Change in Real Median Gross Rent and Household Income by Income Quartile, 1980 - 2000



After 2000, rent and income increases for these three income groups began to diverge, a divergence that accelerated from 2005-09 through 2010-14. Inflation-adjusted paid rents rose and real incomes fell across all income quartiles, although the magnitude of the drop declined at higher levels along the income distribution. Rents paid by the top 25% of households rose most dramatically at 18.6 percent from 2000 to 2010-14.

Figure 21 - Indexed % Change in Real Median Gross Rent and Household Income by Income Quartile, 2000 - 2010-14



To test the statistical significance of these income and racial group differences, a series of one-way ANOVA and Kruskal-Wallis (non-parametric) tests were performed using states as the unit of analysis. Both owner and renter affordability stress racial group mean differences from 1980 to 2010 proved statistically significant at 99% confidence, on both a year-by-year and thirty-year average basis in both the ANOVA and Kruskal-Wallis tests. For severe owner and renter affordability stress, racial group mean differences were significant at 99% under both tests for all but severe owner affordability, which was significant at 95% confidence. Likewise, income group differences in owner and renter affordability stress decennial change, proved statistically significant at 99% confidence in each of the ANOVA and Kruskal-Wallis tests. This was also true for average decennial change in severe owner and renter affordability stress. These findings provide strong evidence for variable levels in housing affordability stress and stress change by racial and income group.

Given the marked change in housing affordability trends post 2000, t tests were performed on the differences between housing affordability levels estimates in 2000, 2005-09, and 2010-14. The 2000 to 2005-09 changes each proved statistically significant at 99% confidence for each racial and income group except the increase in severe rent burden for high income households. The 2005-09 to 2010-14 changes were also statistically significant at 99%. The only exceptions were the increase in severe rent burden for non-Hispanic white households, which was not statistically significant, and the increase in severe rent burden for high income households, which was significant at 95% confidence.

Discussion

Housing affordability stress remains an exceptionally large and growing problem for the nation's low and moderate income households. Results show that as expected, low and moderate income households have higher, faster-growing levels of both owner and renter housing affordability stress than higher income households. While the owner affordability problem is abating in the wake of the 2008 housing market crash, the rent affordability problem is reaching crisis levels, with rent increases outpacing income gains for both low-income households and the middle-class. Much of this has been driven by increased demand for rental housing from higher income households. Middle and high income households' (3^{rd} and 4^{th} income quartile) combined share of occupied rental housing rose by 2.1 percentage points from 2005-09 to 2010-14, with the percentage of such households in rental housing rising by 3.2 percentage points. There are also notable racial differences in affordability stress. Both owner and renter affordability stress is higher for Hispanics and African-Americans than it is for non-Hispanic whites, as is the growth in stress over time, as was expected. The housing affordability crisis seems to have a disproportionate effect on minority households, creating a slow-growing housing affordability gap with non-Hispanic whites.

Overall, the long-term trend of declining low-income housing affordability identified by Belsky and Lambert (2001) shows evidence of continuing through 2014. Although Gyourko and Linneman (1993) noted there was no long-term change in housing affordability for middle and high income households, in more recent years, home prices have consistently grown faster than incomes for these households since 2000. Housing affordability is now becoming a problem for wealthier households as well, although its severity pales in comparison to that of low and moderate income households. It remains unclear whether this is due to a change in housing consumption preferences or market-driven phenomena which push housing costs in excess of income levels. However, what is clear is that today housing affordability stress, particularly for renter households, is a growing problem at all income levels.

Geographic Patterns in Housing Affordability

This section presents results on spatial variation in housing affordability stress across the United States by housing tenure, income, and racial group. The following maps show levels of housing affordability stress nationally by public use microdata area (PUMA), the lowest level of geography available from the Public Use Microdata Sample.

When considering owner and renter affordability combined, much of the interior Mid-West, large portions of the Mountain West, much of the Appalachian region, and the South Central region show low levels of affordability stress. Urban areas along the East and West Coasts, such as metropolitan Los Angeles, Miami, and New York City, show large areas with high levels of stress (over 50 percent of owner households cost burdened). However high stress also appears in small areas of other cities such as New Orleans, Atlanta, Chicago, and Rochester. Owner affordability stress tends to be lower than renter stress across the nation and is elevated in fewer areas. Areas where owner stress is strongest (over 50 percent of households cost burdened) include central Los Angeles as well as the cities of Jersey City, Newark, Paterson, and Elizabeth in New Jersey, parts of Long Island, and New York City within metropolitan New York. Renter stress tends to be more widely distributed across the nation. Exceptionally high levels of renter affordability stress (over 50 percent of renter households) can be found in urban areas along the East and West Coasts but also interior metropolitan areas such as St. Louis, Denver, Minneapolis, Atlanta, and Phoenix.

Figure 22 - % of Households with Gross Rent or Owner Costs of Over 30% of Income - 2014

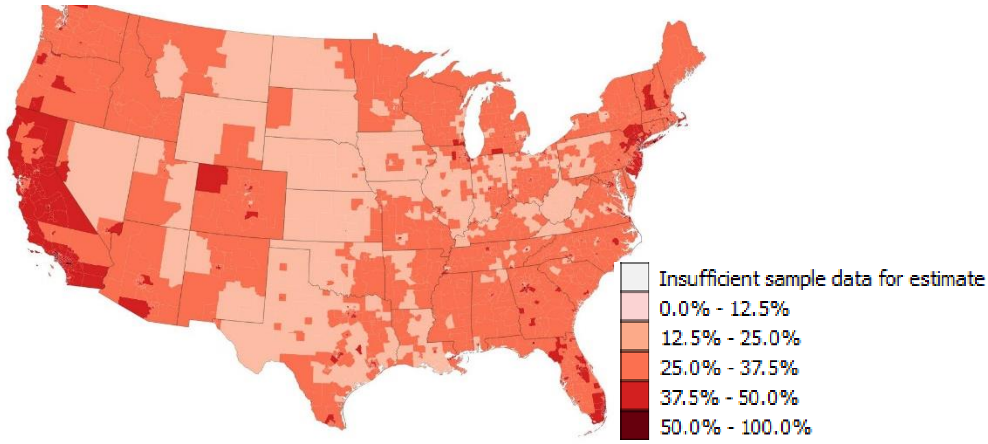


Figure 23 - % of Owner Households with Owner Costs of Over 30% of Income - 2014

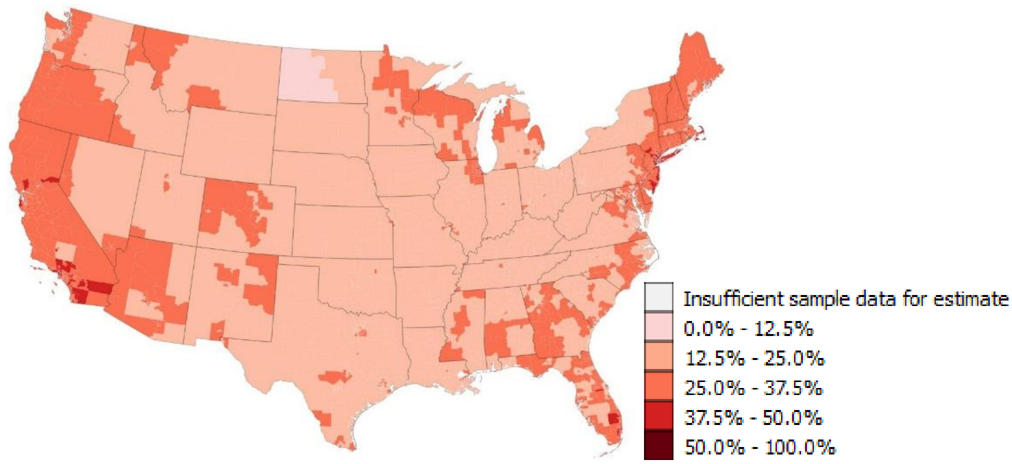
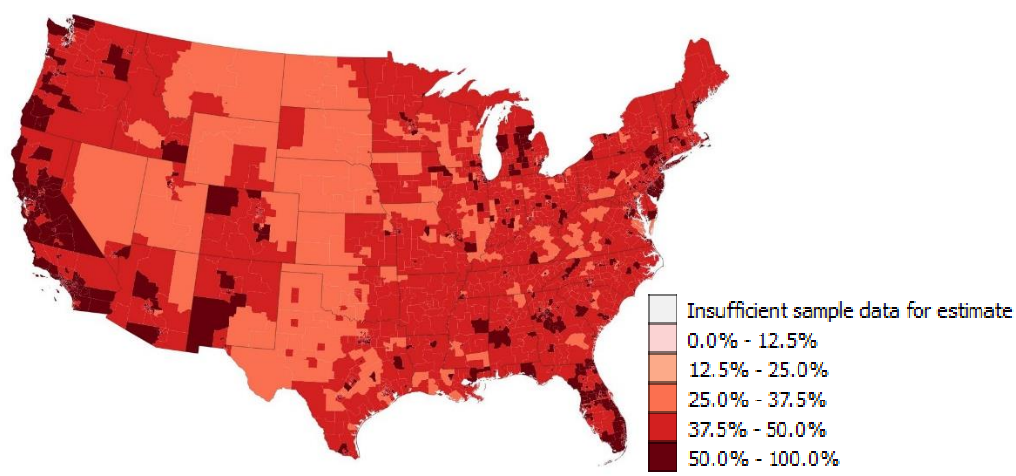
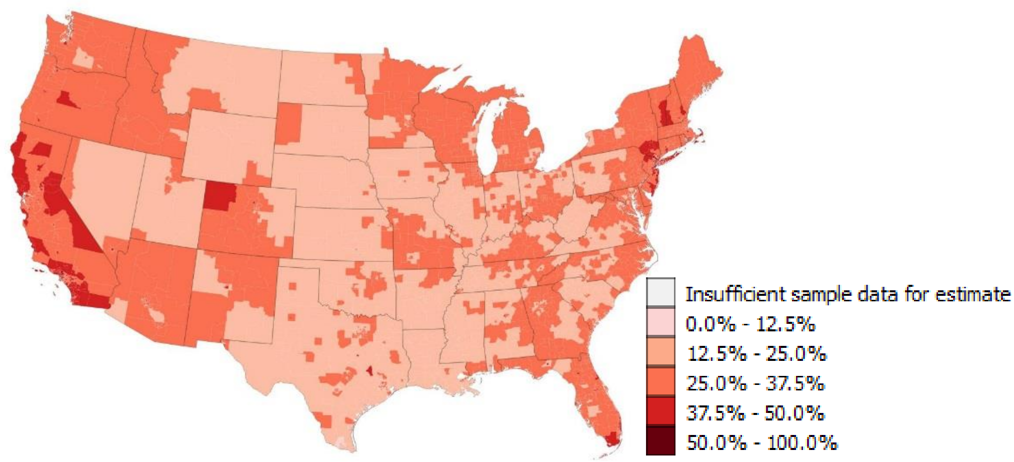


Figure 24 - % of Renter Households with Gross Rent of Over 30% of Income - 2014



Housing cost burdens tend to be much lower for non-Hispanic whites[8] than blacks or Hispanics throughout the nation. Areas where a majority of non-Hispanic white households are cost-burdened are only found in metropolitan Los Angeles, Chicago, Honolulu, Philadelphia, Boston, and New York, which are home to some of the nation's priciest housing.

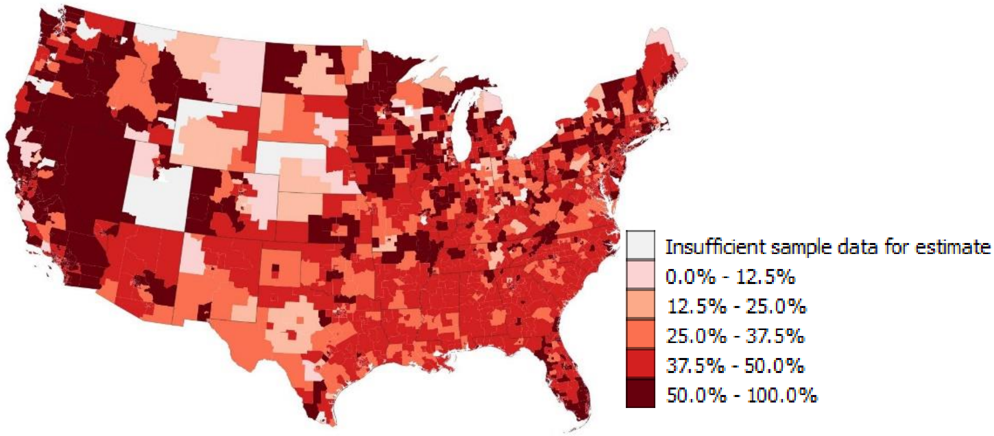
Figure 25 - % of Non-Hispanic White Households with Median Gross Rent or Owner Costs of Over 30% of Income - 2014



Cost-burdened black households, however, can be found more widely throughout the nation, in urban and rural areas alike. Notably, areas where cost burdens are high for non-Hispanic whites have even higher cost burdens for African-Americans.

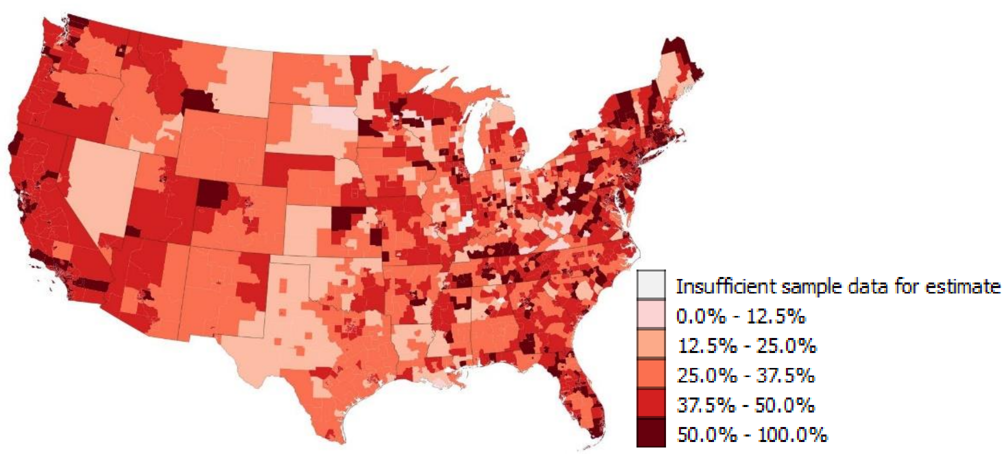
[8] Non-Hispanic white households are defined as households headed by a person identifying as "white" that does not identify as Hispanic or Latino. Black and Hispanic households are similarly defined by the race or ethnicity of the head of household.

Figure 26 - % of Black Households with Median Gross Rent or Owner Costs of Over 30% of Income - 2014



Hispanic households are generally more cost-burdened than non-Hispanic white households throughout the nation, with high concentrations of burden in both urban and rural areas. However high levels of cost burden are found in fewer areas than black households.

Figure 27 - % of Hispanic Households with Median Gross Rent or Owner Costs of Over 30% of Income - 2014



When owner and renter households are considered separately, new spatial patterns appear. Considering non-Hispanic white owner households, there are relatively few areas with very high cost burden. Only in small portions of metropolitan Los Angeles and New York do cost-burdened households form a majority. For African-American owner households, high cost burden is more widely-distributed and well represented in the Pacific Coast states, Mountain West, upper Mid-West, North-East, portions of Texas and New Mexico, and Florida. For Hispanic owners, cost burdens are very high in select areas of the industrial Mid-West, the coastal North-East, the Southeast, and Pacific Coast.

Figure 28 - % of Non-Hispanic White Owner Households with Owner Costs of Over 30% of Income - 2014

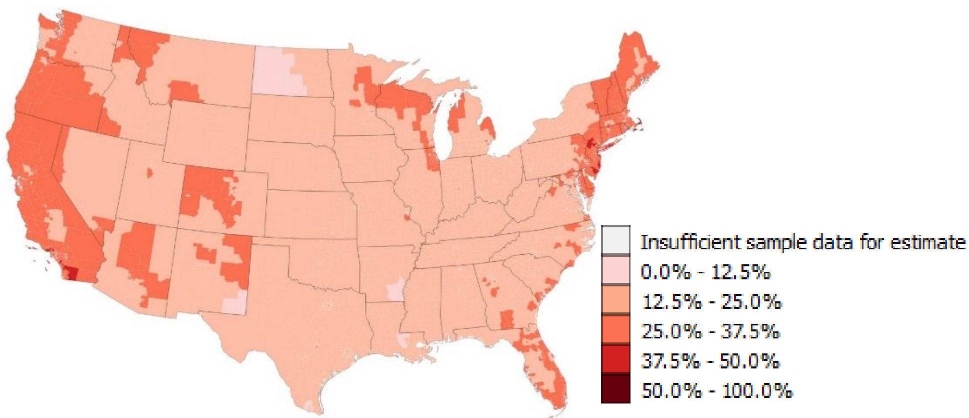


Figure 29 - % of Black Owner Households with Owner Costs of Over 30% of Income - 2014

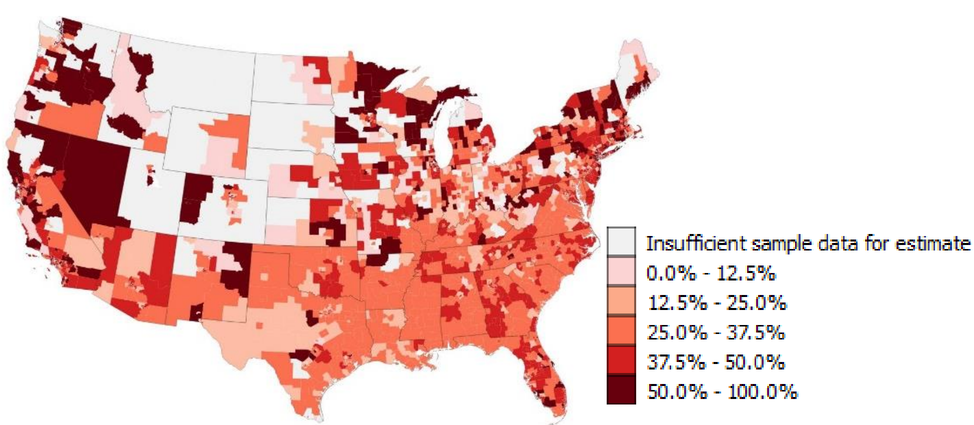
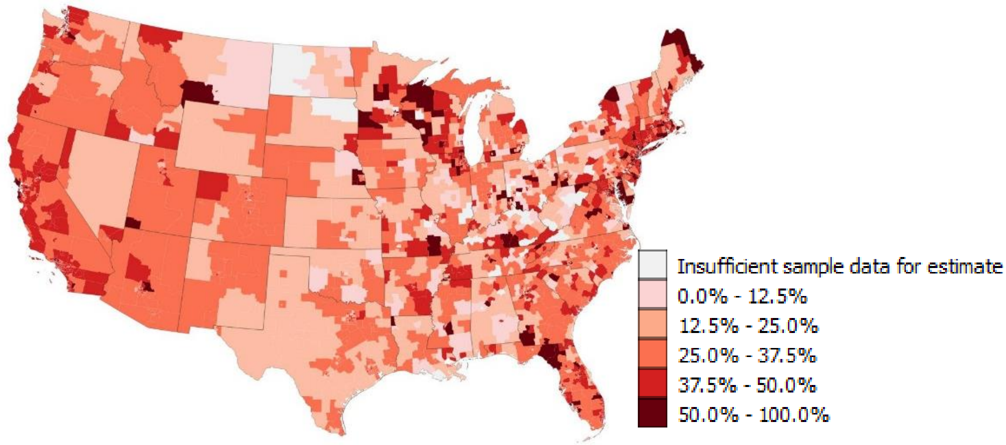
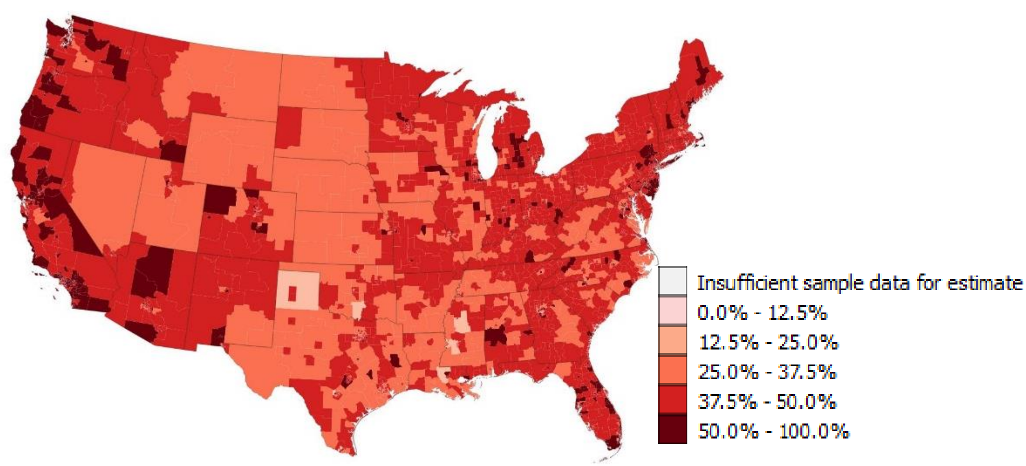


Figure 30 - % of Hispanic Owner Households with Owner Costs of Over 30% of Income - 2014



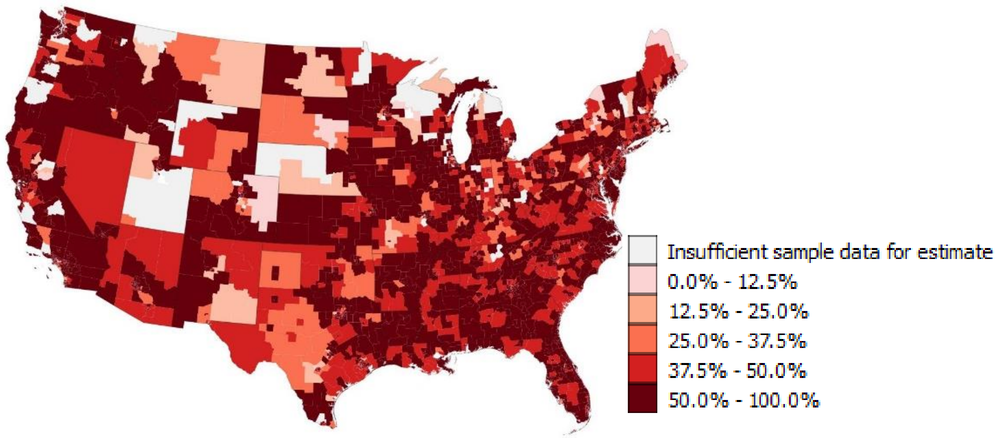
Considering renter households, high concentrations of cost burden for non-Hispanic white households appear in the Pacific Coast states, as well as many metropolitan areas in the North-East, industrial Mid-West, Desert Southwest, Florida, and Texas. Cost burdens tend to be low in the interior Mid-West and much of the Mountain West.

Figure 31 - % of Non-Hispanic White Renter Households with Renter Costs of Over 30% of Income - 2014



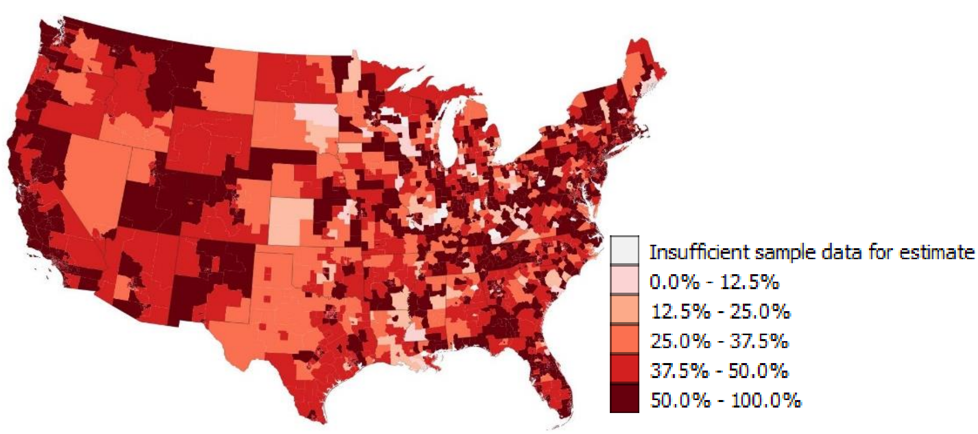
For African-American renters, high cost burdens are found throughout the nation, with low concentrations found in portions of the rural Mid-West, Mountain West and Texas.

Figure 32 - % of Black Renter Households with Renter Costs of Over 30% of Income - 2014



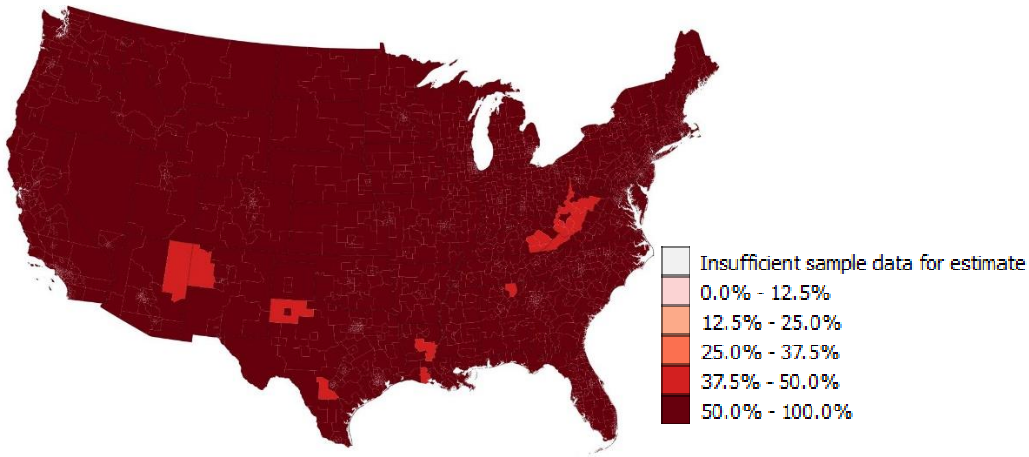
Areas with high Hispanic rent burdens are also more common than non-Hispanic whites, but less common than blacks. These areas are often found throughout the country, although they are notably absent in many rural areas and sparsely populated potions of Texas, the Mid-West, and Mountain West.

Figure 33 - % of Hispanic Renter Households with Renter Costs of Over 30% of Income - 2014



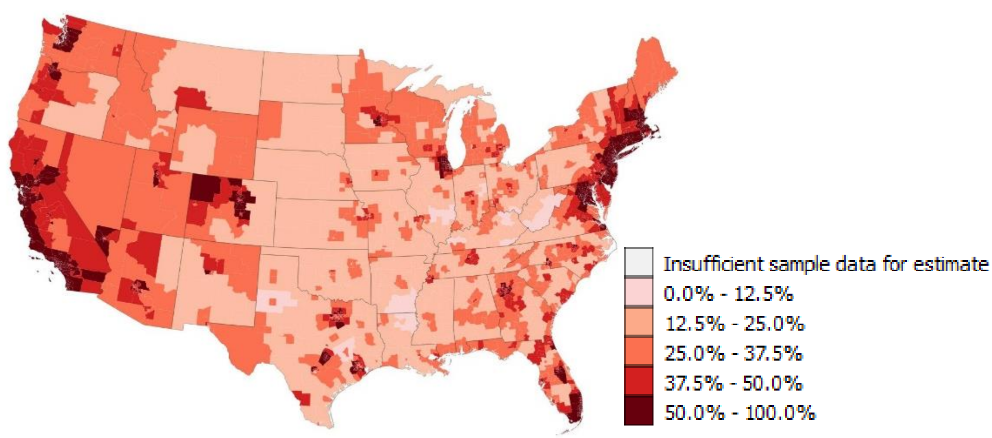
When results are examined by income quartile, different patterns emerge. Low income (1st quartile) households tend to be very heavily housing cost-burdened across the country, with lower burdens only found in rural parts of Appalachia, Alabama, Louisiana, Texas, and Desert Southwest.

Figure 34 - % of 1st Income Quartile Households with Median Gross Rent or Owner Costs of Over 30% of Income - 2014



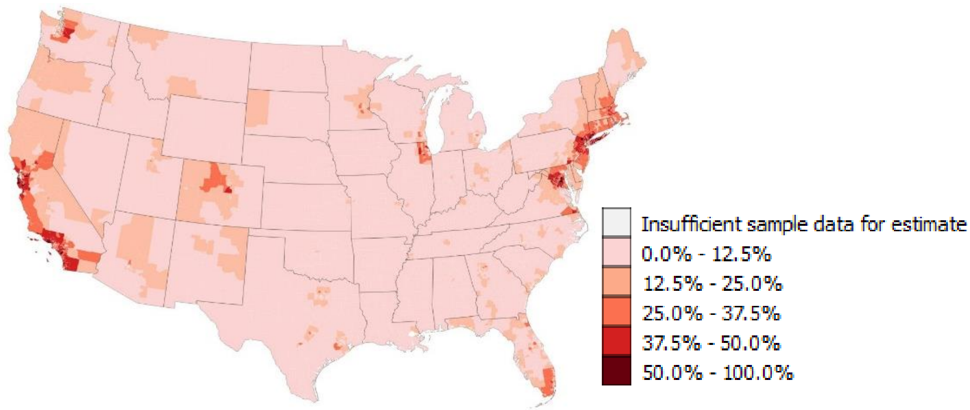
Moderate income (2nd quartile) households often have high housing cost burdens in large metropolitan areas throughout the nation, especially along the Atlantic and Pacific coasts.

Figure 35 - % of 2nd Income Quartile Households with Median Gross Rent or Owner Costs of Over 30% of Income - 2014



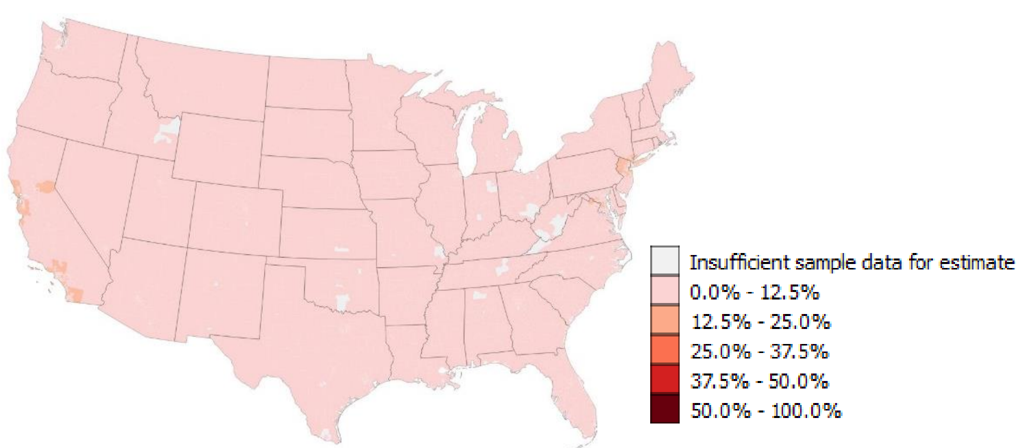
For middle income (3rd quartile) households, cost burdens tend to be elevated in the metropolitan areas of the Pacific Coast states, the Boston-Washington megalopolis, Chicago, Denver, Hampton Roads, Houston, Minneapolis, and South Florida. Areas were a majority of these households are cost-burdened are few, but can be found in metropolitan Washington DC, New York, San Francisco, San Jose, Los Angeles, San Diego, and Honolulu. These areas have some of the nation's highest home prices.

Figure 36 - % of 3rd Income Quartile Households with Median Gross Rent or Owner Costs of Over 30% of Income - 2014



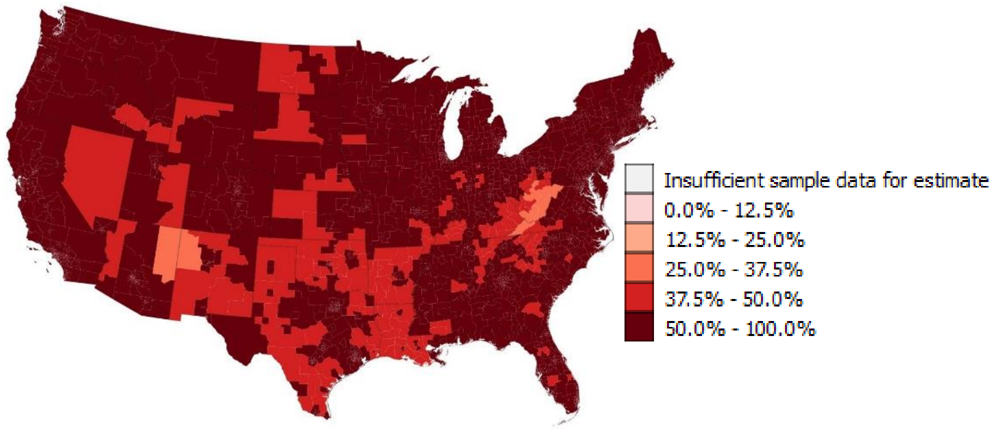
As one might expect, very low percentages of 4th quartile (high income) households are cost burdened, with areas in the 12.5 percent to 25 percent range appearing in metropolitan New York, Washington DC, Chicago, Miami, San Francisco, San Jose, Los Angeles, San Diego, Honolulu, and the Lake Tahoe region.

Figure 37 - % of 4th Income Quartile Households with Median Gross Rent or Owner Costs of Over 30% of Income - 2014



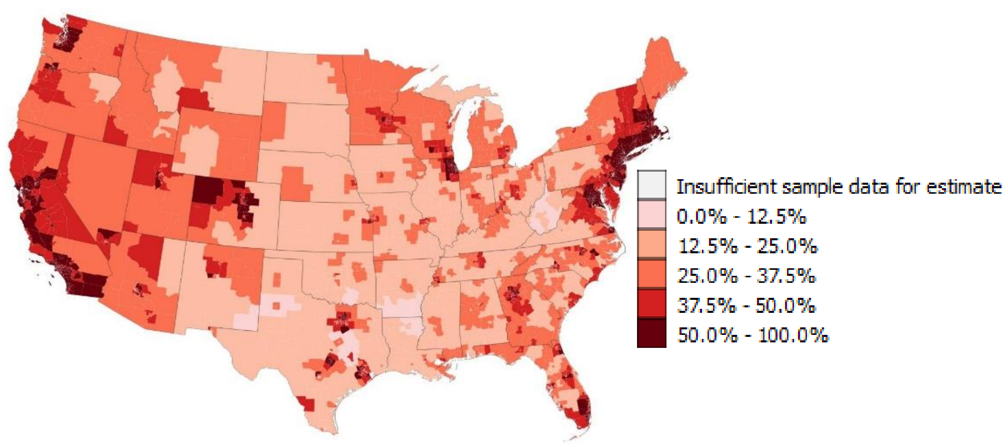
Further differences in spatial variation can be found when owner and renter households are considered separately. For low income owner households, housing cost burdens are uniformly high with the exception of rural potions of the Mountain West, interior Mid-West, Desert Southwest, Texas, South Central states, and Appalachia.

Figure 38 - % of 1st Income Quartile Owner Households with Owner Costs of Over 30% of Income - 2014



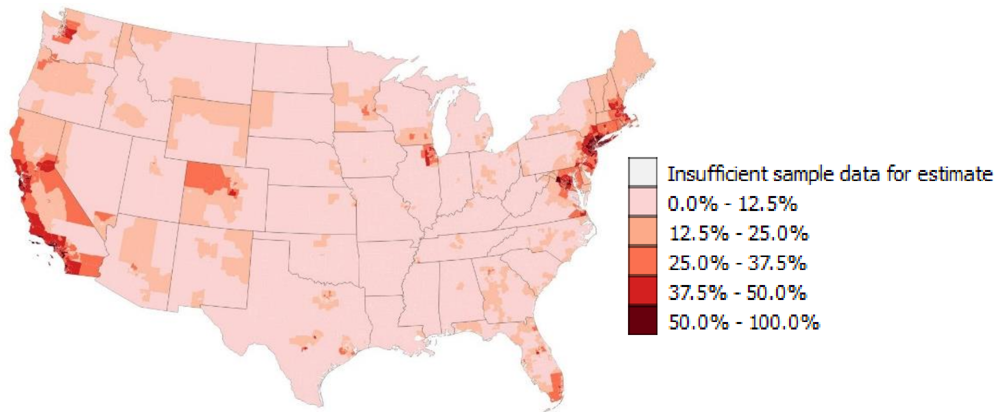
Housing cost burdens for moderate income owner households tend to be lower than low income households, but are elevated in metropolitan areas across the country.

Figure 39 - % of 2nd Income Quartile Owner Households with Owner Costs of Over 30% of Income - 2014



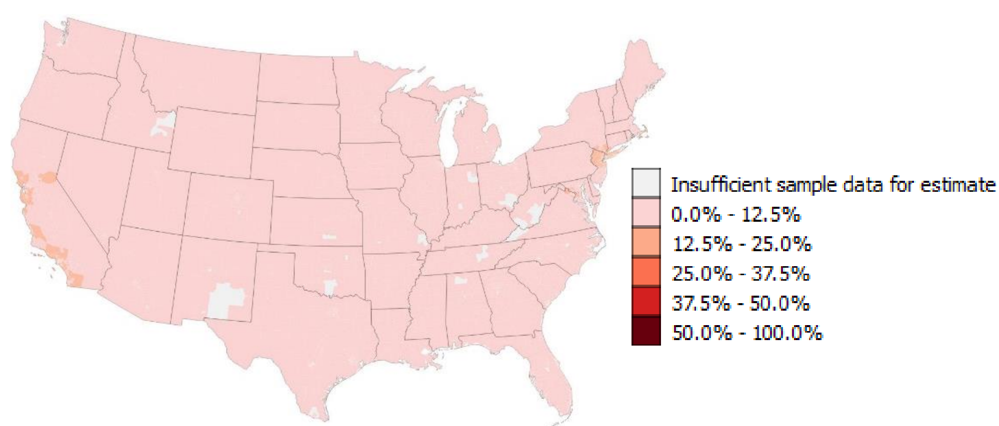
Middle income owner burdens are very high only in a few metropolitan areas, such as metropolitan San Francisco, San Jose, Los Angeles, San Diego, Boston, New York, Washington, Chicago, Honolulu, and Miami.

Figure 40 - % of 3rd Income Quartile Owner Households with Owner Costs of Over 30% of Income - 2014



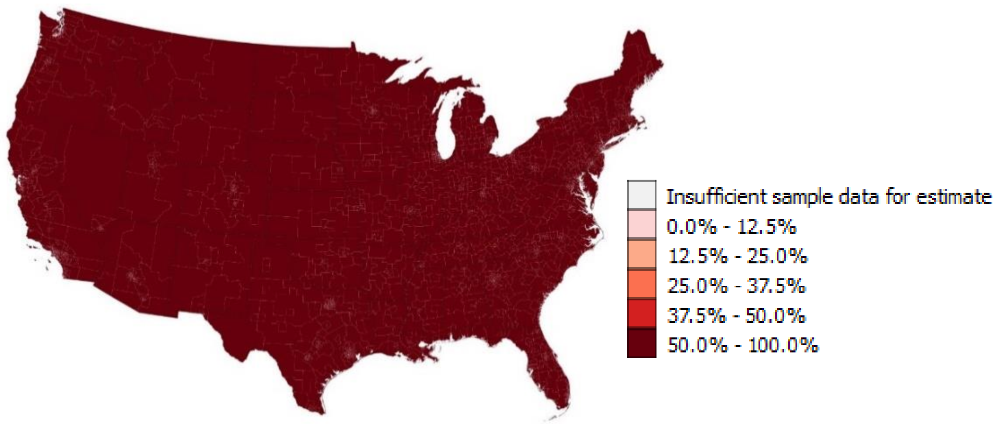
For high income owner households, slightly elevated cost burdens (12.5 percent – 25 percent of households) appear only in metropolitan San Francisco, Sacramento, San Luis Obispo, San Jose, Los Angeles, San Diego, Chicago, Boston, Miami, Washington DC, New York, Cape Cod, Nantucket, Martha's Vineyard, and the Lake Tahoe area.

Figure 41 - % of 4th Income Quartile Owner Households with Owner Costs of Over 30% of Income - 2014



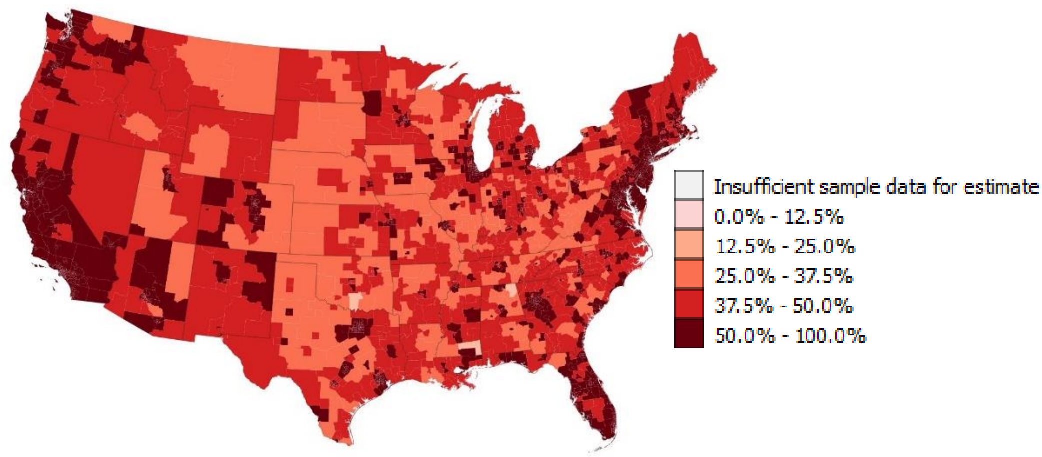
For renters, the distribution of cost burden differs slightly by income quartile. Unlike owner cost burdens, low income renter cost burdens tend to be uniformly high across the entire country. The proportion of these households that is cost-burdened is above 50 percent across the nation.

Figure 42 - % of 1st Income Quartile Renter Households with Renter Costs of Over 30% of Income - 2014



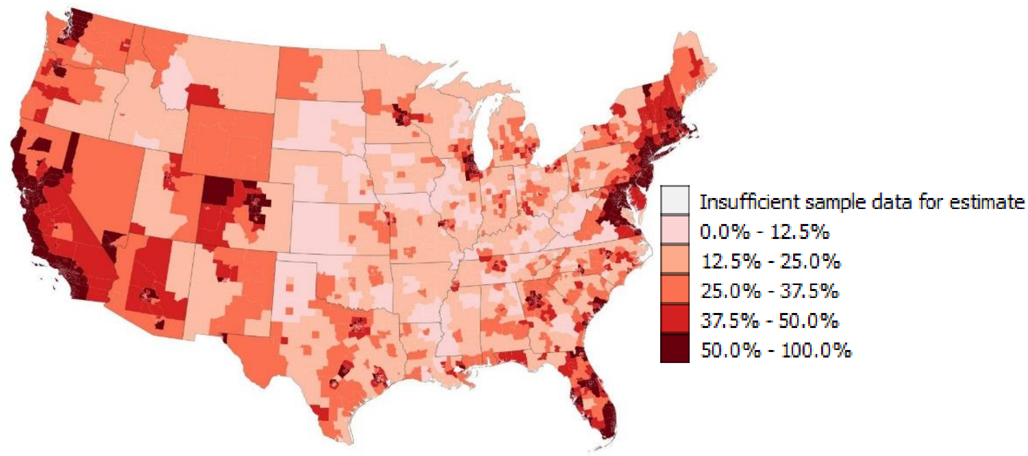
However, more variation appears when severe cost burden (over 50 percent of income) is examined. Severe cost burdens for low income renter households appear along the coasts and in large metropolitan areas, especially along the Pacific Coast and in the Boston-Washington megalopolis.

Figure 43 - % of 1st Income Quartile Renter Households with Renter Costs of Over 50% of Income - 2014



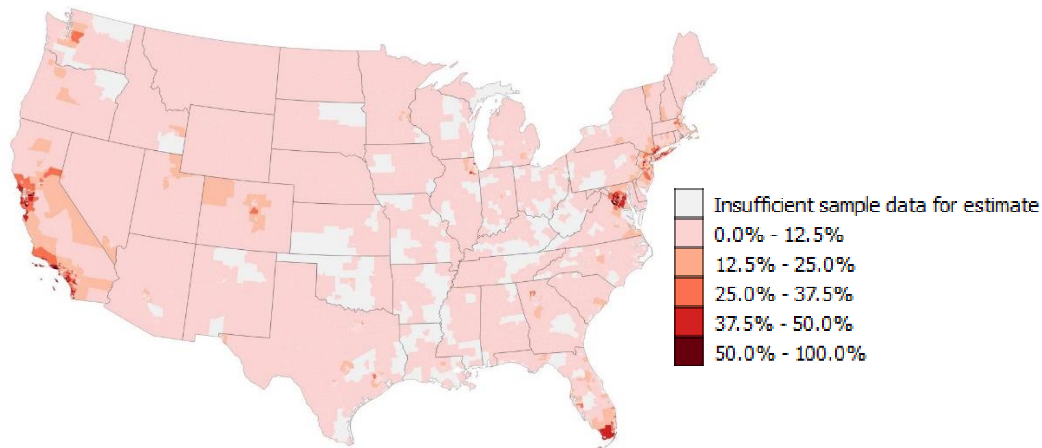
Moderate income rent burdens are high in coastal and large metropolitan areas.

Figure 44 - % of 2nd Income Quartile Renter Households with Renter Costs of Over 30% of Income - 2014



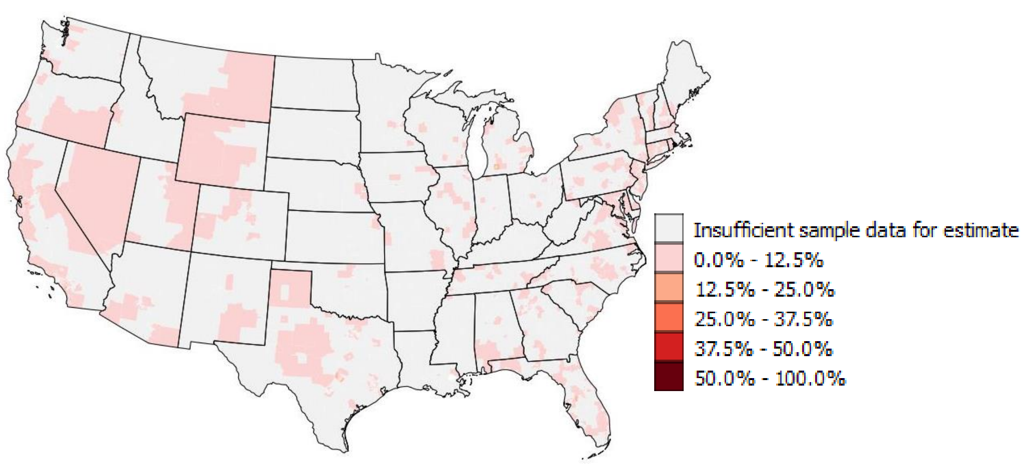
Burdens for middle income renter households are elevated in a select group of coastal metropolitan areas where housing costs are very high. Areas where most of these households are cost-burdened appear in suburban portions of metropolitan San Francisco, San Jose, Los Angeles, San Diego, Washington, DC, Honolulu, and New York.

Figure 45 - % of 3rd Income Quartile Renter Households with Renter Costs of Over 30% of Income - 2014



Slightly elevated concentrations of rent-burdened high-income households (12.5 percent - 25.0 percent) are only found in small suburban areas of metropolitan New York, Trenton, NJ, Lakeland, FL, Austin, Milwaukee, Kalamazoo, Washington, Charlotte, Miami, Dallas, San Francisco, and Los Angeles.

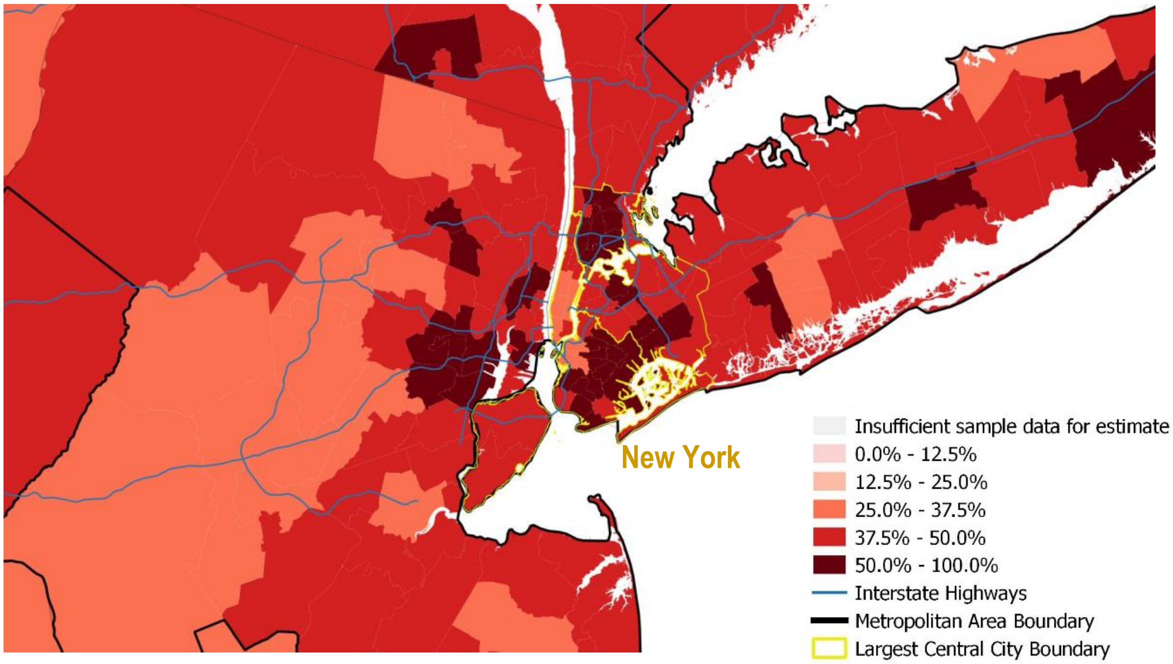
Figure 46 - % of 4th Income Quartile Renter Households with Renter Costs of Over 30% of Income - 2014



Metropolitan Examples

This section examines housing affordability stress for all households (renter and owner) in four high-cost metropolitan areas representing the Northeast, Mid-West, South, and West. These cases demonstrate variation in housing affordability stress within particularly expensive metropolitan housing markets. In metropolitan New York City, high levels housing affordability stress (over 50 percent of households) are found in New York City, particularly within the Bronx, Brooklyn, and Queens. Surprisingly, similarly high levels are not found in Manhattan. However, Manhattan is the wealthiest of the New York City boroughs, with a 2014 median household income of $76,089, and this high-income level may account for a relative lack of affordability stress. Other inner-ring urbanized areas with large low-income populations, such as Newark, Elizabeth, Jersey City, and Paterson in New Jersey show high levels of stress. High stress areas are less common in suburban communities but appear in portions of suburban Nassau, Rockland, and Suffolk counties in New York, Bergen, Passaic and Essex counties in New Jersey, and in Lakewood Township, New Jersey near the Atlantic Coast.

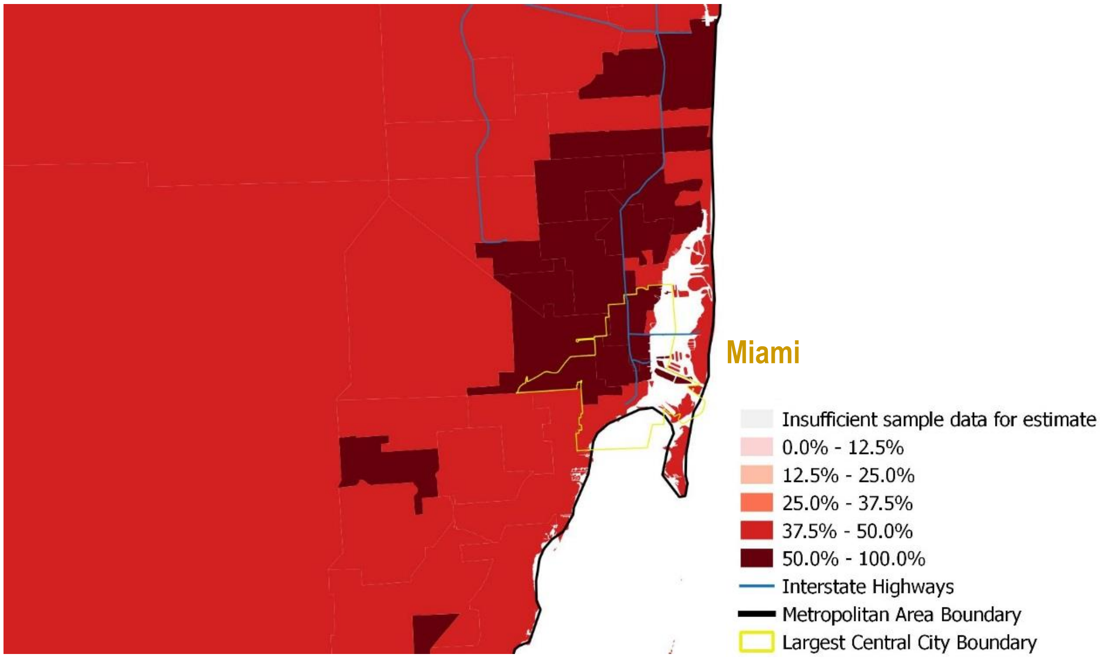
Figure 47 - % of Households with Owner Costs or Gross Rent of 30% or More, Metropolitan New York City – 2014*



*Outer portions of the metropolitan area are not depicted in the map above.

In metropolitan Miami, high levels of housing affordability stress appear in most of the city of Miami, but only in inner ring suburbs immediately north and west of the city such as Hialeah, North Miami, Dania Beach, and Miami Gardens. These areas tend to be amongst the lowest-income suburbs of the metropolitan area. Additional areas of high stress are found in the low-income southern suburbs of Homestead and Kendall Lakes. However, most of the rest of the metropolitan area has elevated concentrations of cost-burdened households, at between 37.5 percent and 50 percent.

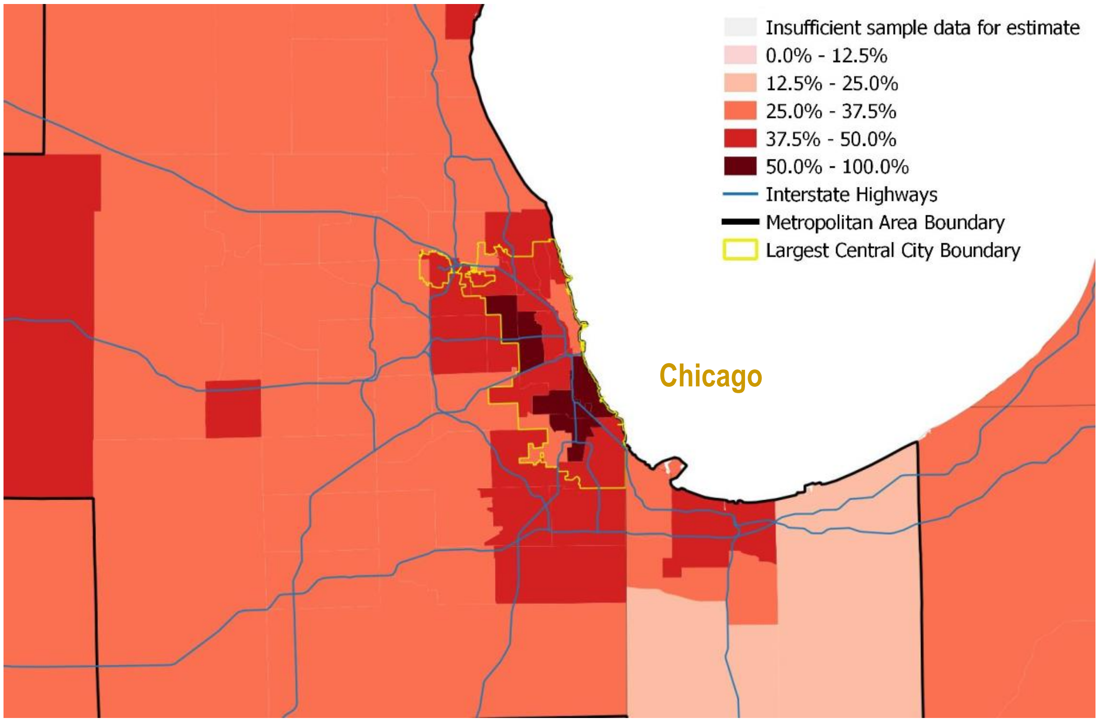
Figure 48 - % of Households with Owner Costs or Gross Rent of 30% or More, Metropolitan Miami, 2014*



*Outer portions of the metropolitan area are not depicted in the map above.

In metropolitan Chicago, areas of intensive housing affordability stress can only be found within the fairly poor West and South Sides of the city, with relatively low levels of affordability stress in the suburbs. Areas with elevated levels of affordability stress (37.5 percent - 50 percent) are found in the immediate northern, western, and southern suburbs, with small areas in affluent Lake County in the north, exurban DeKalb County and the city of Aurora in the west, and the very poor city of Gary, Indiana in the southeast.

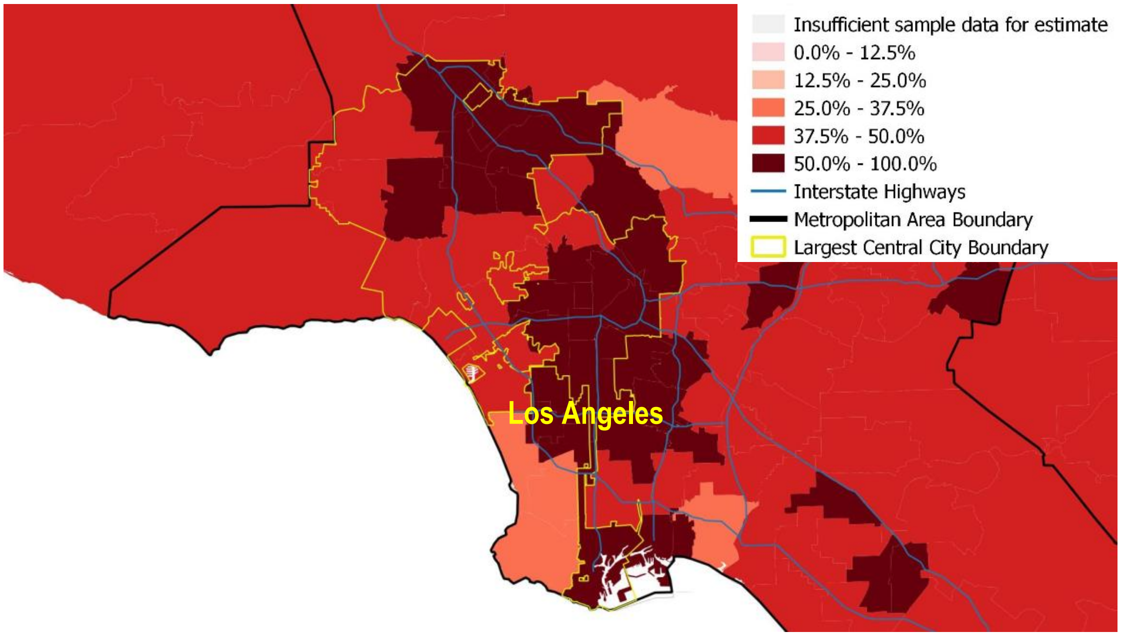
Figure 49 - % of Households with Owner Costs or Gross Rent of 30% or More, Metropolitan Chicago, 2014*



*Outer portions of the metropolitan area are not depicted in the map above.

In metropolitan Los Angeles, very high levels of affordability stress are found in the low income South Central and the moderate to middle income San Fernando Valley areas of Los Angeles. High stress areas are also found in north central neighborhoods such as Downtown and Hollywood. Immediate suburbs such as Glendale, San Fernando, and Long Beach have similarly high levels of stress. Several lower-income inner-ring suburbs with large minority populations, such as Inglewood, Gardena, Hawthorne, and Compton, contain high levels of stress as well. Lower-income eastern suburbs such as El Monte and South El Monte, Pomona, and the Orange County suburbs of Santa Ana and Anaheim also register as high stress. Most of the rest of the metropolitan area shows elevated levels of housing affordability stress at between 37.5 percent and 50 percent of households.

Figure 50 - % of Households with Owner Costs or Gross Rent of 30% or More, Metropolitan Los Angeles, 2014*



*Outer portions of the metropolitan area are not depicted in the map above.

Discussion

In sum, housing cost burdens are not distributed equally across space. Housing affordability stress is very much a national problem for low-income households, but is even more severe for such households in metropolitan areas were housing is generally expensive. The Pacific Coast of the West, the urban North East, and metropolitan areas of the Southeast, particularly in California, Georgia, Florida, New York, New Jersey, and Connecticut, have particularly low housing affordability. This supports the findings of Neogi (2012) and Wolff (2006) that demonstrated similar regional concentrations of high housing cost burden. The most affordable areas in terms of owner and renter housing appear in portions of the Mountain West, the interior Mid-West, the Appalachian South, and Texas. This supports Collins, Crowe, and Carliner's (2002) finding that higher affordable housing shares are found in the West and the South. Moreover, areas with high rent burdens appear more often than areas with owner cost burdens. This likely stems from the fact that renter households typically have lower incomes than owner households, which make high ratios of housing costs to income more common. In 2014, the median household income for renter households was $32,700 compared to $67,364 for owner households.

Geographically, high owner and renter cost burdens are more common for African-Americans than non-Hispanic whites and Hispanics. However, high burdens are more typical for Hispanics than non-Hispanic whites throughout the nation. Moreover, in areas where cost burdens are high for non-Hispanic white households, burdens tend to be even higher for African-American and Hispanic households. Some metropolitan areas contain exceptionally high levels of housing cost burden across all racial groups, such as New York, Washington, Los Angeles and San Francisco. Yet in many of these metros, African-American and Hispanic household cost burdens are still much heavier than non-Hispanic white households.

Significant cost burdens for non-Hispanic white households only tend to appear in a few mostly coastal metropolitan areas. For African-American and to a lesser extent Hispanic households, they appear in many metropolitan and non-metropolitan areas. This suggests that housing affordability remains a more severe challenge for African-Americans and Hispanics than non-Hispanic whites, both in severity relative to income and in the geographic incidence of housing cost burden.

There are notable differences in the geography of high housing cost burden across the income distribution. Low income households are highly cost burdened everywhere, while moderate income households are cost burdened mainly in metropolitan areas. Middle income households are largely cost burdened only in coastal metropolitan areas with tight housing markets, while high income households are only slightly burdened in the priciest, often coastal metros and a few popular vacation destinations. As one might expect, areas where high proportions of higher income households are housing cost burdened are much less common than areas where lower income households similarly burdened. Areas with elevated low and moderate income housing cost burdens are very common, yet there is some notable variation by tenure. Low and moderate income renter households have high cost burdens in many more areas than owner households at the same income quartile. Yet this relationship flips for middle and high income households, for which areas with high owner cost burdens are much more common than areas with high rent burdens. This may reflect a greater propensity for these households to choose more luxurious owner housing that is costlier relative to income. Rental housing may be a more affordable option for middle and high income households that have more modest housing consumption preferences.

In some of the nation's priciest housing markets, exceptionally high levels of housing cost burden (over 50 percent of households) are found in many areas of the central city and in many older, often inner-ring suburbs, but less commonly in more outlying suburbs. This suggests that for many of these markets, much of the area housing affordability problem occurs not in wealthy outlying suburbs but in the central city and inner suburbs. This is because lower-income households, which have high housing cost burdens from their low incomes, tend to be concentrated in these areas. Although low-income households in such suburban areas are likely highly cost-burdened, they are not sufficiently represented in the population that those areas show a high overall level of housing cost burden. The high concentration of low and moderate income households in the central city and inner suburbs, likely contributes to the high housing cost burdens shown there. These high cost burdens highlight the need to assess the effects of municipal land use regulation on low housing affordability for these households, by potentially limiting suburban housing choices and access to job and educational opportunities.

In sum, these results show the nation's housing affordability problem is not evenly distributed across the country. The problem is particularly bad in metropolitan areas within high housing-cost regions of the nation, with particular severity for low-income households and minorities.

Land Use Regulation and Housing Affordability

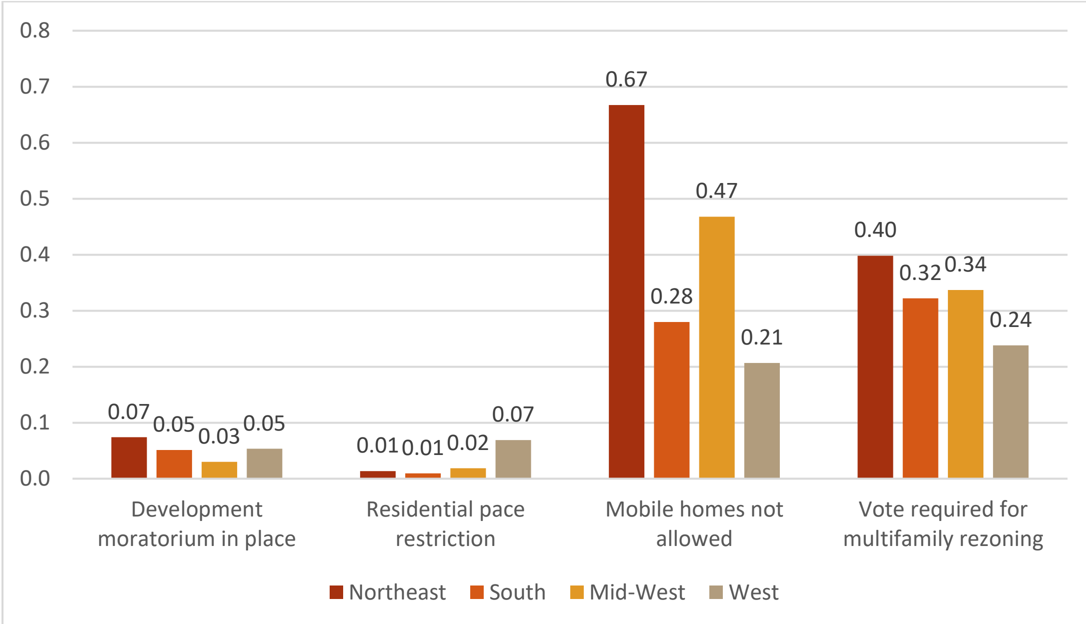
Regional Concentrations of Land Use Regulation

Land use regulation is also not evenly distributed across the nation. There are distinct regional concentrations of regulation types. An examination of the Wharton survey measures shows that more stringent regulation can be found in the metropolitan areas of the Northeast and West, with the Mid-West having the lowest levels of regulation. Supply restrictions have much less of a regional disparity, but are generally more stringent in the Northeast, South, and the West. Density restrictions (minimum lot sizes) are most common in the Northeast, although they are slightly more common in the South and West than the Mid-West. Statistics on land use regulation by metropolitan area can be found in Tables 71 through 75 in the Appendix.

Figure 51 - Average Metropolitan Land Use Regulation (Sample) - Wharton Measures

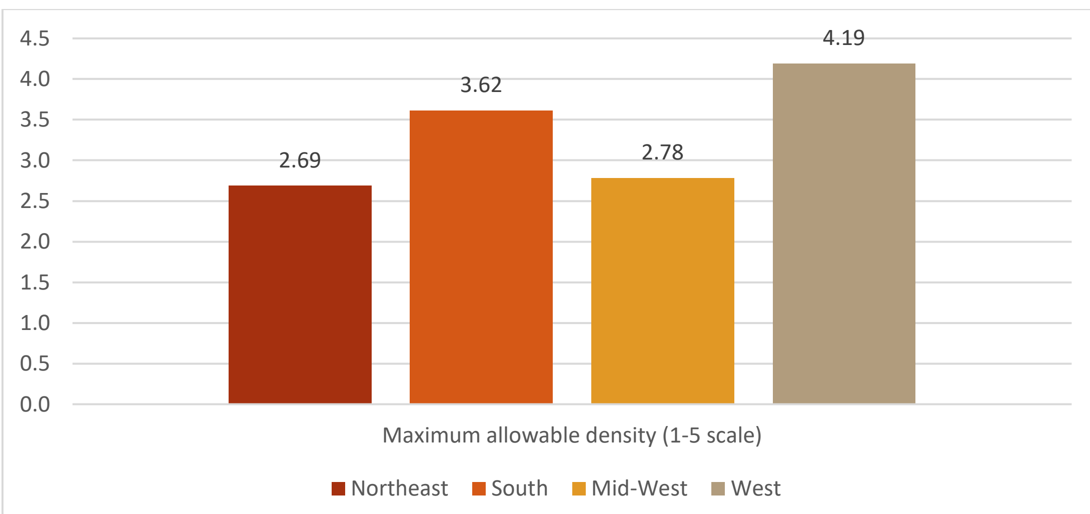
The Pendall survey measures show that development moratoria and residential pace restrictions are very rarely used, although moratoria are more common in the Northeast and pace restrictions in the West. Mobile home bans are implemented more consistently across the nation, although they are much more commonly employed in the Northeast and Midwest than the South and West. Multi-family rezoning vote requirements are more typically found in the Northeast, although such requirements appear much more often in the South and Mid-West than the West.

Figure 52 - Average Metropolitan Land Use Regulation (Sample) - Pendall Measures



Metropolitan maximum allowable densities tend to be significantly higher in the West and the South than the Northeast and the Mid-West.

Figure 53 - Average Maximum Allowable Density Index (Sample) - Pendall



Household-Level Tobit Regression Results

The following section reports results from the household-level tobit regression models that include interaction terms for race and various exclusionary land use regulation measures. The results show the effects on detailed regulation measures in two specifications, one with metropolitan housing characteristics, and another with these characteristics and geographic characteristics. Results are presented in terms of the percentage change in household housing cost to income ratios. To illustrate the impact of a regulation on a typical household, results are also presented in terms of the impact on a hypothetical family making $50,000 per year and paying $1,000 per month in housing costs (rent or owner costs). These assumptions roughly approximate the national medians in 2015. The impact shown is the additional monthly housing cost for the family if there was a one standard deviation increase in the incidence of a particular regulation.

All tobit models include metropolitan area clustered standard errors. The tobit models for owners reflect an upper limit of 1 (housing costs take up 100% of income), while the models for renters reflect an upper limit of 1 and a lower limit of zero, based on the renter ratio's unique distributional censoring at zero. Explanatory variables have been standardized for ease of interpretation. However, all explanatory variables measured as dummy variables or as integers are left unstandardized. Additional multilevel models were run using OLS regression, producing similar, but not completely identical results to tobit. However, tobit was deemed the most appropriate given the clear censoring of housing cost to income ratios at zero and one.

In addition to the standard tobit results, instrumental variables (IV) tobit results based on the model with geographic controls are shown as well to demonstrate robustness to endogeneity. To facilitate model convergence, the IV tobit regressions were conducted on a 10 percent random sample of the full sample. In total, this resulted in approximately 266,000 observations for the Wharton measure regressions and 245,000 observations for the Pendall regressions when considering owners and renters combined. Each land use regulation and land use regulation/race interaction is instrumented separately in individual regressions.[9] For the regulation/race interactions, the instrumental variables are interacted with the head of household race variables in the first stage to instrument the endogenous interactions. Endogeneity is assumed when the null hypothesis of exogeneity is rejected at 90% confidence under a Wald Test of Exogeneity. For the sake of parsimony, each IV tobit table contains only coefficients for the variables of interest. However, each regression includes a full set of controls including land use regulations that are not the focus of each individual table. IV results for the tobit and all the following regressions can be found in the Appendix.Most previous studies examined the impact of land use regulation on home prices. This study focuses on exclusionary land use regulation's effects on housing costs (which can include taxes, utilities, and condominium fees among other costs) as a percentage of household income. Therefore, the analysis is designed to explain variation in a wider array of housing costs than just the

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[9]An alternative set of IV results were prepared modeling all endogenous land use regulation variables simultaneously. However, the results showed the partial R^2 values to be much lower under this approach than modeling each endogenous variable separately. In this case, simultaneous IV regression contributes to more bias on the regression coefficients from weaker instrumentation of each endogenous variable. Moreover, adopting this approach increased the likelihood of failing a test of overidentifying restrictions. In addition, individual IV regressions allowed for the endogeneity of each land use regulation to be assessed separately, rather than as a group. For these reasons, individual IV regressions by endogenous variable were deemed more appropriate.

cost of a mortgage or monthly rent, and the results are likely to differ accordingly from previous studies focused exclusively on housing prices. Results are presented on the following pages.

Table 1 - Tobit Regression Results – Household Housing Cost Ratio – Wharton Measures

Model Number	(1)	(2)	(3)	(4)
	Hshd Mthly Owner Cost to Income Ratio		Hshd Rent to Income Ratio	
	With Metro Hsg Charac.	With Metro Geogr. Charac.	With Metro Hsg Charac.	With Metro Geogr. Charac.
Race/Ethnicity				
African-American [head]	**0.0759*** **	**0.0767*** **	**0.0942*** **	**0.0940*** **
	(30.97)	(30.73)	(18.17)	(18.32)
Hispanic [head]	**0.0716*** **	**0.0716*** **	**0.0484*** **	**0.0483*** **
	(19.32)	(18.86)	(10.92)	(10.65)
Supply Restrictions				
Single Family Development Limit Index	-0.00312	-0.00140	-0.0000162	0.000880
	(-1.82)	(-0.78)	(-0.01)	(0.43)
*Afr.-American [head]*Single Family Development Limit Index*	-0.00227	-0.00246	-0.00490	-0.00459
	(-1.07)	(-1.13)	(-1.31)	(-1.23)
*Hispanic [head]*Single Family Development Limit Index*	0.000266	-0.00153	0.000855	0.0000496
	(0.07)	(-0.35)	(0.29)	(0.02)
Multi Family Development Limit Index	**0.00759***	**0.00709** **	0.00390	0.00464
	(2.39)	(2.85)	(1.36)	(1.58)
*Afr.-American [head]*Multi Family Development Limit Index*	-0.00184	-0.00271	**0.0108***	***0.0103***
	(-0.95)	(-1.44)	(2.01)	(1.92)
*Hispanic [head]*Multi Family Development Limit Index*	-0.00223	-0.00457	0.00296	0.00136
	(-0.50)	(-0.89)	(0.91)	(0.44)

Model Number	(1)	(2)	(3)	(4)
	Hshd Mthly Owner Cost to Income Ratio		**Hshd Rent to Income Ratio**	
	With Metro Hsg Charac.	**With Metro Geogr. Charac.**	**With Metro Hsg Charac.**	**With Metro Geogr. Charac.**
Density Restrictions				
Density Restrictions Importance Index	-0.00178	0.00317	0.000366	**0.00716***
	(-0.55)	(1.01)	(0.08)	(1.97)
*African-American [head]*Density Restrictions Importance Index*	-0.000000885	-0.000589	-0.00923	-0.00935
	(-0.00)	(-0.31)	(-1.33)	(-1.38)
*Hispanic [head]*Density Restrictions Importance Index*	0.000256	0.0000509	0.00286	0.00289
	(0.07)	(0.02)	(0.90)	(1.00)
>1 Acre Minimum Lot Size Requirement	-0.000906	-0.000125	-0.00162	0.00111
	(-0.31)	(-0.05)	(-0.43)	(0.34)
African-American [head]>1 Acre Min. Lot Size Requirement*	-0.000736	-0.00125	-0.00516	-0.00593
	(-0.23)	(-0.41)	(-0.92)	(-1.08)
Hispanic [head]>1 Acre Min. Lot Size Requirement*	-0.00191	-0.00286	***0.00878***	***0.00857***
	(-0.39)	(-0.63)	(1.80)	(1.88)
Observations	**1,871,467**	**1,871,467**	**793,098**	**793,098**
Groups	**65**	**65**	**65**	**65**

Explanatory variables standardized, t statistics in parentheses. Model uses metropolitan-area clustered standard errors.
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 2 – Tobit Regression Results – Household Housing Cost to Income Ratio – Pendall Measures

Model Number	(1)	(2)	(3)	(4)
	Hshd Monthly Owner Cost to Income Ratio		Hshd Rent to Income Ratio	
	With Metro Housing Charac.	With Metro Geographic Charac.	With Metro Housing Charac.	With Metro Geographic Charac.
Race/Ethnicity				
African-American [head]	**0.0768*****	**0.0770*****	**0.0939*****	**0.0939*****
	(32.97)	(33.30)	(27.45)	(27.17)
Hispanic [head]	**0.0771*****	**0.0775*****	**0.0484*****	**0.0489*****
	(18.76)	(18.97)	(15.46)	(16.01)
Supply Restrictions				
Development Moratorium in Place	***0.00370***	***0.00381***	0.00320	**0.00583***
	(1.80)	(1.85)	(1.05)	(2.12)
*African-American [head]*Development Moratorium in Place*	**-0.00363***	**-0.00324***	**-0.0133****	**-0.0128****
	(-2.30)	(-2.11)	(-3.20)	(-3.06)
*Hispanic [head]*Development Moratorium in Place*	0.00148	0.00139	0.000706	0.000132
	(0.34)	(0.32)	(0.26)	(0.05)
Residential Pace Restriction	-0.00106	-0.00224	0.00269	0.00241
	(-0.73)	(-1.55)	(1.50)	(1.21)
*African-American [head]*Residential Pace Restriction*	0.00261	0.00268	0.00164	0.00166
	(1.23)	(1.29)	(0.49)	(0.50)
*Hispanic [head]*Residential Pace Restriction*	**0.00303***	**0.00306***	**0.00308***	**0.00309***
	(2.09)	(2.18)	(2.43)	(2.42)
Mobile Homes Not Allowed	**0.0134*****	**0.0103****	0.00269	-0.00245
	(6.01)	(3.03)	(0.76)	(-0.46)
*African-American [head]*Mobile Homes Not Allowed*	0.00157	0.00102	-0.000635	-0.00145
	(0.72)	(0.49)	(-0.15)	(-0.32)
*Hispanic [head]*Mobile Homes Not Allowed*	**0.00911****	**0.00852****	**0.00897****	**0.00904****
	(2.87)	(2.58)	(2.68)	(2.71)

Model Number	(1)	(2)	(3)	(4)
	Hshd Monthly Owner Cost to Income Ratio		Hshd Rent to Income Ratio	
	With Metro Housing Charac.	With Metro Geographic Charac.	With Metro Housing Charac.	With Metro Geographic Charac.
Density Restrictions				
Vote Required for Multifamily Rezoning	0.00155	-0.00128	-0.00149	-0.00108
	(0.93)	(-0.70)	(-0.53)	(-0.35)
*African-American [head]*Vote Required for Rezoning*	-0.000335	-0.000293	-0.00224	-0.00233
	(-0.18)	(-0.16)	(-0.79)	(-0.82)
*Hispanic [head]*Vote Required for Rezoning*	-0.00236	-0.00251	0.00557	0.00490
	(-0.76)	(-0.80)	(1.54)	(1.43)
No Density Bonus or Incl. Zoning	**-0.0121*** **	**-0.00796** **	**-0.0102* **	**-0.0128** **
	(-4.23)	(-2.68)	(-2.44)	(-2.66)
*African-American [head]*No Density Bonus or Incl. Zoning*	0.00000418	-0.000166	**0.0138*** **	**0.0137*** **
	(0.00)	(-0.07)	(3.31)	(3.30)
*Hispanic [head]*No Density Bonus or Incl. Zoning*	**-0.00735** **	**-0.00739** **	-0.00000669	-0.000274
	(-2.73)	(-2.81)	(-0.00)	(-0.10)
Maximum Allowable Density	**0.0112** **	**0.0113*** **	0.00437	0.00440
	(3.28)	(3.53)	(0.76)	(0.79)
*African-American [head]*Maximum Allowable Density*	-0.00152	-0.00126	-0.00318	-0.00273
	(-0.59)	(-0.49)	(-0.94)	(-0.79)
*Hispanic [head]*Maximum Allowable Density*	**-0.00785* **	**-0.00881** **	-0.00439	-0.00572
	(-2.57)	(-3.04)	(-0.93)	(-1.18)
Observations	**1,715,719**	**1,715,719**	**734,421**	**734,421**
Groups	**51**	**51**	**51**	**51**

Explanatory variables standardized, t statistics in parentheses. Model uses metropolitan-area clustered standard errors.

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Wharton Controls (OLS & IV): Local Assembly Index, Local Project Approval Index, Local Political Pressure Index, State Political Involvement Index, State Court Involvement Index, Local Zoning Approval Index, Open Space Index, Exactions Index, Approval Delay Index, Single Family Housing Unit, Housing Structure Built before 1960, Number of Rooms, Population, Population Density [metro], Water % of Metro Area, % Hispanic [metro], % Black [metro], % Age 65 or Older [metro], % of Over 25 with a Bachelor's Degree [metro], Rent-Occupied Share of Occupied Housing [metro], Med. Property Tax to Med. Home Value Ratio [metro], Multi-State Metro, Metro Contains at Least One Mountain Range, Metro in Census Northeast Region, Metro in Census South Region, Metro in Census Midwest Region

Pendall Controls (OLS & IV): Growth Management Index, Local Assembly Index, Local Project Approval Index, Local Political Pressure Index, State Political Involvement Index, State Court Involvement Index, Local Zoning Approval Index, Open Space Index, Exactions Index, Approval Delay Index, Single Family Housing Unit, Housing Structure Built before 1960, Number of Rooms, Population, Population Density [metro], Water % of Metro Area, % Hispanic [metro], % Black [metro], % Age 65 or Older [metro], % of Over 25 with a Bachelor's Degree [metro], Rent-Occupied Share of Occupied Housing [metro], Med. Property Tax to Med. Home Value Ratio [metro], Multi-State Metro, Metro Contains at Least One Mountain Range, Metro in Census Northeast Region, Metro in Census South Region, Metro in Census Midwest Region

One immediate striking result is the large positive coefficients on the Hispanic and African-American household dummy variables. Results suggest that even after controlling for land use regulation and household and metropolitan area characteristics, housing cost ratios are still larger considerably larger for African-American and Hispanic households than non-Hispanic white households. The Wharton models with geographic controls suggest the housing cost to income ratio is an astounding 9.4 percentage points higher for African-American renters than white renters, and 4.8 percentage points higher for Hispanic renters, holding all else constant. Much of these differences are due to differences in income between the racial groups, however the addition of household income to the model still does not eliminate the statistical significance of the racial dummies. Race clearly matters to housing affordability.

Supply Restrictions

Single family and multi-family development limits show variable effects on owner and renter affordability. Single family development limits demonstrate no statistically significant impacts on owner or renter cost burden across both specifications. Multi-family development limits show strong and statistically significant effects on cost burdens for owner households at 95% confidence.

A one standard deviation increase in the metropolitan incidence of multi-family development limits produces a 0.71 percentage point increase in owner household cost to income ratios. For the hypothetical white family, this translates into an additional $30 per month. The exact effects for Hispanics and blacks can be calculated by adding the interaction coefficient to the regulation coefficient when the interaction coefficient is statistically significant. Since the interactions in this case are all statistically insignificant, the same effect occurs for whites, blacks, and Hispanics. However, the predicted values from the regulation and regulation/race interaction coefficients suggest a hypothetical black family would pay an additional $18 per month and if Hispanic, $10.50 per month.

The link between such limits and lower renter affordability, while positive, just falls short of statistical significance. However, the interaction coefficient for an African-American renter household is positive, statistically significant in both tobit and IV tobit results (at 90%), and large in magnitude (0.0103), exceeding the effect size for owner households. For an African-American hypothetical household, that would mean an additional $62 per month. This is not an insignificant amount. This unique effect for African-Americans possibly occurs by limiting growth in multi-family housing supply, more heavily occupied by African-American renters. 76.0 percent of African-American renter households in the sample resided in multi-family structures (more than one unit per structure) compared to only 72.8 percent of non-Hispanic white renter households.

Considering the Pendall supply restriction measures, the development moratorium measure indicates whether jurisdictions have a moratorium on new residential building permits or processing of subdivision plats in place for all or a portion of the jurisdiction. Such moratoria may effectively curb development of owner housing, increase home prices and owner cost burden. Development moratoria show a positive relationship with owner cost burdens at 90% confidence in the tobit results after controlling for geographic characteristics. A one standard deviation increase in the incidence of such moratoria produces a 0.38 percentage point increase in homeowner housing cost to income ratios. This effect does not seem to differ for Hispanic households as the interaction coefficient is statistically insignificant. A white-headed hypothetical family would pay about $16 more per month with a one SD increase in moratoria. A similar Hispanic family would pay $22 more per month. However, the negative sign on the African-American coefficient suggests that the net effect for black households is essentially zero, a finding confirmed by a hypothesis test. Such development moratoria are even more strongly linked to higher renter cost burdens at 95% confidence, a finding unconfirmed in the IV results, but without evidence of endogeneity. If the same hypothetical family occupied a rental unit, it would be paying an additional $24 per month if it were white and $25 if it were Hispanic, with a one SD increase in moratoria. A large and statistically significant negative coefficient on the African-American interaction variable suggests that the net effect of such moratoria on African-American rent burdens is zero, which was confirmed by a hypothesis test.

The Pendall survey also measures "residential pace restrictions" as having an annual limit to population growth or residential building permit issuance. Residential pace restrictions show no effects on cost burdens across all households. However, for Hispanic owners and renters, a positive, but small coefficient on the interaction variables show that such restrictions harm housing affordability for Hispanic households at 95% confidence. A one standard deviation increase in the incidence of such restrictions would yield a 0.31 percentage point increase in Hispanic homeowner or renter cost to income ratios. A hypothetical Hispanic family would pay roughly $3.46 per month more under such conditions. Although IV tobit results fail to confirm this finding for Hispanic owners and renters, Wald Test results suggest a non-endogenous relationship in both cases.

Mobile home bans show adverse positive effects on owner cost burdens for all racial groups. The positive and highly significant coefficient on the Hispanic interaction variable suggests the effect is about two-thirds larger for Hispanic households than white households. In addition, a positive and significant coefficient for Hispanic renter households indicates such bans uniquely harm Hispanic renter affordability. A one standard deviation increase in the incidence of such bans leads to a one percentage point increase in owner cost to income ratios. This increase would mean a $43 per month cost increase for the hypothetical white family and $47 for a similar black family, holding all else equal. This rises to $78 per month if the homeowner family is Hispanic and $27 if the family were a Hispanic renter household. Of the supply restrictions, mobile home bans very clearly have the most powerful effects on household housing affordability.

Density Restrictions

Density restrictions show fundamentally different effects on housing affordability by tenure. One acre or more minimum lot size requirements show no statistical connection to housing affordability for across all owners and all renters. However, the positive and statistically significant coefficient (at 90% confidence) on the Hispanic renter interaction suggests that such requirements do adversely affect housing affordability for Hispanic renter households. A one standard deviation increase in the incidence of one acre or more minimum lot size requirements increases the Hispanic household rent to income ratio by 0.86 percentage points. The hypothetical Hispanic family would pay an additional $40 per month in this circumstance. Although this relationship loses statistical significance in the IV tobit results, a Wald Test suggests the relationship is not endogenous. 2005 American Housing Survey data show that 78.7 percent of white (defined as not black or Hispanic) households reside in one-unit structures. The figure for Hispanic households is substantially lower at 60.6 percent. Amongst households in one-unit structures, 28.3 percent of white households live in structures on lots of one acre or more compared to only 11.2 percent of Hispanic households. Hispanic households are much more likely to choose rental housing, with 51 percent of such households living in rental housing in 2005 compared to only 24 percent of whites. White households have a clear preference for (or greater ability to obtain) one unit structures and structures on larger lots, meaning minimum lot size requirements likely create a bias toward the type of housing matching their preferences. This occurs at the expense of more affordable rental housing matched to Hispanic preferences.

The importance of density restrictions to controlling development shows a statistically significant positive effect on renter cost to income ratios, with no evidence that the effects are significantly different for Hispanic and black households. Although this result is not confirmed in the IV tobit regressions, a Wald Test suggests the relationship is not endogenous. A one standard deviation increase in the importance of these restrictions increases household rent to income ratios by 0.72 percentage points or $30 per month for the hypothetical white family and $42 for a Hispanic family.

Another analysis was performed using land use regulation measures captured in the Pendall survey. An exploration of individual density restriction measures reveals nuances in how such restrictions affect housing affordability by race. A lack of a density bonus or other inclusionary incentive is linked to lower owner cost to income ratios, with the effect 93 percent larger for Hispanics than whites. Yet this variable is likely endogenous since areas with low housing cost burdens are less likely to adopt such incentives, a conclusion supported by Wald Test results. IV tobit results show that the coefficient on this variable remains negative and significant at 90% confidence.

For renters, the coefficient on a lack of density bonuses or inclusionary incentives is negative and statistically significant, however it is positive and very significant on the African-American interaction variable, essentially cancelling out the negative effect for African-Americans. This finding of zero net effect for African-Americans was confirmed by a hypothesis test. IV tobit regression results controlling for endogeneity suggest that a lack of such incentives is still linked to lower cost to income ratios for owners and renters. However the relative weakness of the instruments in this case may not have allowed for the clear endogeneity of the relationship to be fully purged. While the results do not confirm statistical significance on the Hispanic owner and African-American renter interactions, Wald Test results suggest these interactions are exogenous, meaning the tobit interactions results may be valid. Therefore, what can be concluded is that having a density bonus or inclusionary incentive shows no clear causal link to higher housing affordability. It remains linked to lower levels of affordability in what is likely an endogenous relationship.

The tobit results show that high maximum density limits are statistically linked to higher owner cost to income ratios but show no clear links to rent ratios. The negative and statistically significant coefficient on the Hispanic interaction suggests this net positive effect is much smaller for Hispanic owners than non-Hispanic owners. Yet IV tobit regression results show that after controlling for endogeneity, identified by a Wald Test, this relationship across all owner households flips sign and becomes negative and statistically insignificant. Higher density limits do not appear to directly contribute to higher owner cost to income ratios.

These tobit results were next compared to those produced by Ordinary Least Squares regression and a multilevel regression with random effects. OLS results were very similar to tobit, with only multi-family development limits becoming statistically significant in the model for renters. Multilevel results were somewhat similar but not identical. Those results showed the coefficients on development moratoria becoming statistically insignificant for African-American owners, residential pace restrictions becoming negative and significant (at 95%) for whites, and lack of a density bonus or inclusionary incentives becoming insignificant for renters. They also showed the multi-family development limits becoming significant (at 90%) for white and Hispanic renters, density restrictions importance becoming insignificant for renters, and minimum lot sizes of one acre or more becoming significant for whites and blacks (at 90%). Yet it is important to note the multilevel model does not take into account the censoring of the housing cost to income ratios. In the Wharton and Pendall regressions, 4 percent of the owner sample and 11 percent of the renter sample were censored, with ratios either below zero or above one. These observations were each recoded to one since they demonstrate housing costs consume 100 percent of available income. Since such sizable potions of the sample were recoded to one, tobit regression with metropolitan area clustered standard errors was deemed the most appropriate model.

Metropolitan Area Regression Results by Income Quartile

The next set of regressions focus on housing cost burdens at the metropolitan level, using the percentage of renters or owners with a housing cost to income ratio greater than 30 percent as the dependent variable. Results are presented by income quartile to decompose the effects of each regulation on housing affordability by income group. Moreover, two different specifications are shown, one that includes geographic characteristics (multi-state location, presence of mountain range, and region of the country) and one excluding such characteristics, but retaining housing characteristics at the metropolitan level. Individual IV regressions were run for each instrumented variable of interest. For the sake of parsimony, the IV results only show results with geographic characteristics included. Each of the IV models passed both Sargan and Basmann tests of overidentifying restrictions at 90% confidence. I assumed endogeneity of the land use regulation variables if either the Durbin score chi2 p value or Wu-Hausman F p value was significant at 90% confidence. For these and all the following regressions, both the dependent and explanatory variables have been standardized, allowing for comparable interpretation in terms of standard deviations.

Table 3 – Wharton OLS Regression Results by Income Quartile - Owners

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All Income Quartiles - Owners		1st Quartile Income - Owners		2nd Quartile Income - Owners		3rd Quartile Income - Owners****		4th Quartile Income - Owners****	
	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.
Supply Restrictions										
Single Family Dev. Limit Index	-0.0975	-0.0494	0.0346	0.0606	-0.0584	-0.0115	-0.109	-0.0512	***-0.121***	-0.0637
	(-1.18)	(-0.60)	(0.35)	(0.65)	(-0.62)	(-0.13)	(-1.54)	(-0.70)	(-1.82)	(-0.82)
Multi Family Dev. Limit Index	***0.185***	***0.180***	***0.234***	**0.280***	***0.211***	**0.224***	0.131	0.111	0.113	0.0796
	(1.83)	(1.74)	(1.92)	(2.41)	(1.85)	(2.03)	(1.33)	(1.35)	(1.25)	(0.90)
Density Restrictions										
Density Restr. Imp. Index	0.0491	0.109	0.0483	0.133	0.110	***0.190***	0.0203	0.0786	-0.0412	-0.000504
	(0.47)	(1.05)	(0.38)	(1.14)	(0.93)	(1.72)	(0.19)	(0.92)	(-0.37)	(-0.01)
1 Acre or More Min.Lot Size	-0.0102	0.0542	0.0371	0.106	0.0110	0.110	-0.0229	0.0327	-0.0534	-0.0139
	(-0.10)	(0.52)	(0.30)	(0.91)	(0.10)	(0.99)	(-0.24)	(0.35)	(-0.51)	(-0.12)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.721**	**0.756**	**0.592**	**0.692**	**0.645**	**0.723**	**0.751**	**0.791**	**0.757**	**0.772**

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

******Robust standard errors used due to presence of heteroskedasticity**

Table 4 – Wharton OLS Regression Results by Income Quartile - Renters

Model Number	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	All Income Quartiles - Renters		1st Quartile Income - Renters		2nd Quartile Income - Renters****		3rd Quartile Income - Renters****		4th Quartile Income - Renters	
	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.
Supply Restrictions										
Single Family Dev. Limit Index	0.0174	0.0428	-0.157	-0.133	-0.00375	-0.00190	-0.0314	-0.0397	0.0914	0.0913
	(0.14)	(0.34)	(-1.30)	(-1.03)	(-0.05)	(-0.02)	(-0.46)	(-0.52)	(0.90)	(0.82)
Multi Family Dev. Limit Index	0.211	***0.291***	0.128	0.155	0.0987	0.128	0.120	***0.159***	0.120	0.152
	(1.34)	(1.84)	(0.87)	(0.96)	(1.31)	(1.60)	(1.39)	(1.88)	(0.97)	(1.09)
Density Restrictions										
Density Restr. Imp. Index	0.103	0.196	-0.0611	-0.0293	0.0919	0.116	**0.231***	***0.223***	**0.464*****	**0.446****
	(0.63)	(1.24)	(-0.40)	(-0.18)	(0.96)	(1.28)	(2.13)	(1.91)	(3.64)	(3.20)
1 Acre or More Min.Lot Size	0.0995	0.226	-0.0492	0.00148	0.0998	0.161	0.0853	0.154	0.166	***0.249***
	(0.63)	(1.42)	(-0.33)	(0.01)	(0.93)	(1.41)	(0.82)	(1.29)	(1.33)	(1.78)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.328**	**0.430**	**0.409**	**0.403**	**0.772**	**0.774**	**0.741**	**0.729**	**0.582**	**0.558**

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

******Robust standard errors used due to presence of heteroskedasticity**

Table 5 – Pendall OLS Regression Results by Income Quartile – Owners

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All Income Quartiles - Owners		1st Quartile Income - Owners		2nd Quartile Income - Owners****		3rd Quartile Income - Owners		4th Quartile Income - Owners	
	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.
Supply Restrictions										
Development Moratorium in Place	0.0413	0.0438	0.148	***0.204***	0.136	0.177	0.0196	0.0317	-0.0226	-0.0438
	(0.47)	(0.43)	(1.47)	(1.91)	(1.44)	(2.07)	(0.24)	(0.35)	(-0.27)	(-0.44)
Residential Pace Restriction	-0.0673	-0.0975	-0.0519	-0.0799	-0.0633	-0.122	-0.0586	-0.0859	-0.0175	-0.0432
	(-0.96)	(-1.27)	(-0.65)	(-0.99)	(-0.97)	(-1.57)	(-0.91)	(-1.25)	(-0.26)	(-0.58)
Mobile Homes Not Allowed	**0.356*** **	**0.244***	**0.484*** **	**0.326***	**0.454** **	0.329	**0.284** **	0.166	0.114	0.0282
	(3.94)	(2.18)	(4.68)	(2.77)	(2.92)	(1.57)	(3.43)	(1.65)	(1.33)	(0.26)
Density Restrictions										
Vote Required for Rezoning	-0.0362	-0.119	-0.0820	-0.120	-0.0616	-0.148	-0.0175	-0.0846	-0.00375	-0.0889
	(-0.37)	(-1.02)	(-0.73)	(-0.97)	(-0.47)	(-0.94)	(-0.19)	(-0.80)	(-0.04)	(-0.77)
No Density Bonus or Inclusionary Zoning	**-0.276***	-0.175	0.208	0.230	-0.166	-0.0744	**-0.335** **	***-0.265***	**-0.373** **	***-0.269***
	(-2.30)	(-1.13)	(1.51)	(1.41)	(-0.92)	(-0.41)	(-3.05)	(-1.90)	(-3.27)	(-1.77)
Maximum Allowable Density	0.277	***0.324***	-0.0700	0.0333	0.222	0.193	***0.239***	***0.301***	**0.269***	***0.295***
	(2.06)	(1.87)	(-0.45)	(0.18)	(1.40)	(1.21)	(1.94)	(1.93)	(2.11)	(1.74)
Constant	0.0439	0.362	0.0635	-0.0823	0.0405	0.685	0.0397	0.220	0.0372	0.412
	(0.68)	(0.63)	(0.86)	(-0.14)	(0.50)	(1.11)	(0.67)	(0.43)	(0.61)	(0.74)
Observations	51	51	51	51	51	51	51	51	51	51
Adjusted R-squared	0.852	0.847	0.786	0.813	0.776	0.780	0.877	0.878	0.861	0.848

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

******Robust standard errors used due to presence of heteroskedasticity**

Table 6 – Pendall OLS Regression Results by Income Quartile – Renters

Model Number	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	All Income Quartiles - Renters		1st Quartile Income - Renters		2nd Quartile Income - Renters****		3rd Quartile Income - Renters****		4th Quartile Income - Renters	
	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.
Supply Restrictions										
Development Moratorium in Place	0.0141	0.132	0.0165	0.0556	0.0124	0.0175	***0.189***	***0.233***	0.188	***0.261***
	(0.07)	(0.58)	(0.10)	(0.26)	(0.14)	(0.15)	(1.72)	(1.81)	(1.58)	(1.72)
Residential Pace Restriction	0.0265	-0.00496	0.0747	0.0530	-0.0407	-0.0315	-0.103	-0.111	-0.161	-0.190
	(0.18)	(-0.03)	(0.55)	(0.33)	(-0.57)	(-0.37)	(-1.18)	(-1.14)	(-1.70)	(-1.66)
Mobile Homes Not Allowed	-0.0915	-0.237	-0.197	-0.162	-0.118	-0.139	-0.0933	-0.0945	0.0840	0.00462
	(-0.47)	(-0.95)	(-1.12)	(-0.69)	(-1.27)	(-1.10)	(-0.83)	(-0.66)	(0.58)	(0.03)
Density Restrictions										
Vote Required for Rezoning	-0.202	-0.184	-0.0568	-0.0626	-0.0810	-0.0798	-0.0545	-0.0602	0.0612	0.0268
	(-0.95)	(-0.70)	(-0.30)	(-0.26)	(-0.80)	(-0.61)	(-0.44)	(-0.40)	(0.36)	(0.15)
No Density Bonus or Inclusionary Zoning	-0.0278	-0.118	-0.283	-0.234	-0.140	-0.140	0.0119	0.0156	0.217	0.243
	(-0.11)	(-0.34)	(-1.21)	(-0.72)	(-1.13)	(-0.81)	(0.08)	(0.08)	(1.06)	(1.05)
Maximum Allowable Density	0.0618	0.174	0.0656	-0.0364	**0.314***	0.382	0.197	0.241	-0.0919	-0.0134
	(0.21)	(0.45)	(0.25)	(-0.10)	(2.27)	(1.97)	(1.18)	(1.09)	(-0.50)	(-0.05)
Constant	0.0745	-0.0872	0.145	0.555	0.0509	-0.121	-0.0283	0.300	-0.0232	0.384
	(0.54)	(-0.07)	(1.16)	(0.47)	(0.77)	(-0.19)	(-0.35)	(0.41)	(-0.27)	(0.45)
Observations	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**
Adjusted R-squared	**0.172**	**0.087**	**0.277**	**0.147**	**0.839**	**0.803**	**0.740**	**0.723**	**0.584**	**0.569**

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

******Robust standard errors used due to presence of heteroskedasticity**

Wharton Model Controls (OLS & IV), Local Assembly Index, Local Project Approval Index, Local Political Pressure Index, State Political Involvement Index, State Court Involvement Index, Local Zoning Approval Index, Open Space Index, Exactions Index, Approval Delay Index, Population, Population Density, Water % of Metro Area, % Hispanic, % Black, % Age 65 or Older, % of Over 25 with a Bachelor's Degree, Rent-Occupied Share of Occupied Housing, Med. Property Tax to Med. Home Value Ratio, Multi-State Metro, Metro Contains at Least One Mountain Range, Metro in Census Northeast Region, Metro in Census South Region, Metro in Census Midwest Region

Pendall Model Controls (OLS & IV), Growth Management Index, Local Assembly Index, Local Project Approval Index, State Political Involvement Index, State Court Involvement Index, Local Zoning Approval Index, Open Space Index, Exactions Index, Approval Delay Index, Population, Population Density, Water % of Metro Area, % Hispanic, % Black, % Age 65 or Older, % of Over 25 with a Bachelor's Degree, Rent-Occupied Share of Occupied Housing, Med. Property Tax to Med. Home Value Ratio, Multi-State Metro, Metro Contains at Least One Mountain Range, Metro in Census Northeast Region, Metro in Census South Region, Metro in Census Midwest Region

Considering the Wharton survey measures, although results show a connection between single-family development limits and higher cost burdens for high-income homeowners, statistical significance is lost when geographic controls are added to the model. Yet multi-family development limits are associated with higher cost burdens in the models for all owner and renter households. In the individual income quartile regressions, they prove significant for low-income owners at 95% confidence. The relationship is also significant for moderate-income owners, but proves endogenous and insignificant in the IV regressions. This implies that multi-family limits only show clear causal effects on low-income household cost burdens. A one standard deviation increase in the metropolitan incidence of multi-family development limits increases cost burdens for owner households by approximately one-fifth of a standard deviation and burdens for renter households by three-tenths, holding all else constant. In practical terms, it would increase the share of owner cost-burdened households by 1.44 percentage points and the share of rent-burdened households by 1.35 percentage points. However for low-income homeowners the effect is even larger at 2.25 percentage points, meaning such limits are highly regressive in their effects.

2005 American Housing Survey data show that 6.4 percent of homeowners below the poverty line live in multi-family housing compared to 4.9 percent of non-poor homeowners, a share that is over 31 percent higher. Although the poor form 8.6 percent of those living in owner-occupied housing, they form 11 percent of those living in multi-family owner housing. Such housing is more affordable than single-family owner housing. The sample data show that the median owner housing cost for a multi-family housing unit is $1,239, compared to $1,430 for single-family housing, an over 15 percent difference. Therefore, multi-family development limits should have stronger effects on housing affordability for poor owners than non-poor owners, which the regression results demonstrate.

Density restrictions also demonstrate links to higher cost burdens. Metropolitan areas where density restrictions are critical to regulating development have higher burdens for moderate-income owners and middle-income renters at 90% confidence, holding all else equal. However in this case, the effects are larger for middle-income renters (0.22 SD) than moderate-income owners (0.19 SD). This variable is even more strongly linked (0.45 SD) to higher burdens for high-income renters at 95% confidence, a result that is confirmed by the IV results. This suggests such restrictions impede development of higher-density rental properties that appeal to high-income households. Density restrictions not only impact affordability for the middle-class but also wealthy renter households, a notable finding. This likely occurs by constraining the growth of high-density housing development, which typically tends to be rental housing. In 2005, rental housing composed over 85 percent of multi-family housing nationally. One acre or more minimum lot sizes show a positive relationship with cost burdens for high-income renters at 90% confidence. A one SD increase in the incidence of such regulations increases cost burdens for these households by one-quarter of a standard deviation, holding all else equal. This translates into a cost burdened share that is 0.30 percentage points higher, a relatively small effect.

The Pendall survey measures produce slightly different results. Although development moratoria are linked to higher burdens for low-income owners, middle-income renters, and high-income renters at 90% confidence, IV results show these relationships to be endogenous and statistically insignificant. Residential pace restrictions show no statistically significant links to cost burdens in the OLS regressions. Yet mobile home bans demonstrate very clear and statistically significant links to higher burdens across all income quartiles as well as low income owners. Holding all else constant, a one standard deviation increase in the incidence of mobile home bans increases the share of low-income owner cost burdened households by one-third of a standard deviation. This is a very significant effect that translates to a 2.5 percentage point increase in the low-income cost-burdened share. Such bans have very powerful effects on housing affordability for low income households. A positive link also appears between such bans and cost burdens for middle-income owners, however statistical significance is lost when geographic controls are added to the model. Vote requirements for multi-family rezoning show no statistical significance across any of the OLS or IV models. Although a lack of a density bonus of inclusionary incentive is linked to lower burdens for middle and high-income owners at 90%, the IV results suggest this relationship is both endogenous and statistically insignificant. Maximum allowable densities are connected to higher cost burdens in the models for all owners as well as middle and high-income owners at 90% confidence. However, in the IV results, evidence of endogeneity was found and each of the relationships flipped sign and lost statistical significance. Areas with high population density are likely to enact higher maximum allowable densities, producing an endogenous relationship.

In conclusion, it is clear that multi-family development limits have strong harmful effects on housing cost burdens for low-income households. Density restrictions in general have particularly hurtful effects for moderate income owners and middle and high-income renters. Minimum lot size requirements above one acre harm affordability for high-income renters by constraining development of higher-density housing. Mobile home bans have clear adverse effects on burdens for low, moderate, and middle income owner households, by constraining the supply of one of the most affordable types of owner housing. Notably, these bans registered the strongest effects of any form of land use regulation on housing affordability for low-income owner households.

Home Value to Household Income Ratio Regression Results

The next set of regressions present results utilizing four quartiles of ratios of median home values to median household incomes as the dependent variables. These ratios are calculated from individual household data by metropolitan area by dividing the median of the first quartile of home values by the median of the first quartile of household incomes, dividing the second by the second, and so on. This measures the *general* affordability of owner housing relative to incomes as opposed to the share of households that are cost burdened. Examining general housing affordability in this way controls for household housing consumption preferences that produce higher housing cost ratios by choice.

Table 7 – Wharton OLS Regression Results by Value to Income Ratio

Model Number	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
	1st Quartile Home Value to 1st Quartile Income Ratio****		**2nd Quartile Home Value to 2nd Quartile Income Ratio******		**3rd Quartile Home Value to 3rd Quartile Income Ratio******		**4th Quartile Home Value to 4th Quartile Income Ratio**	
	w/Hsg.	**w/Geo.**	**w/Hsg.**	**w/Geo.**	**w/Hsg.**	**w/Geo.**	**w/Hsg.**	**w/Geo.**
Supply Restrictions								
Single Family Development Limit Index	-0.0409	-0.0141	**-0.152****	**-0.113***	**-0.160***	***-0.105***	-0.0179	0.0271
	(-0.49)	(-0.17)	(-3.31)	(-2.01)	(-2.58)	(-1.76)	(-0.25)	(0.35)
Multi Family Development Limit Index	0.0420	0.0421	-0.00377	-0.0314	0.0556	0.0185	0.0519	0.00761
	(0.54)	(0.56)	(-0.06)	(-0.47)	(0.73)	(0.25)	(0.59)	(0.08)
Density Restrictions								
Density Restrictions Importance Index	0.0162	0.0345	-0.0280	0.0119	-0.0969	-0.0513	**0.215***	**0.262****
	(0.17)	(0.43)	(-0.36)	(0.16)	(-1.24)	(-0.69)	(2.38)	(2.75)
1 Acre or More Minimum Lot Size	-0.109	-0.0678	-0.0655	-0.0563	0.0486	0.0906	0.0529	0.0825
	(-1.38)	(-0.79)	(-0.98)	(-0.75)	(0.64)	(1.21)	(0.59)	(0.85)
Constant	3.80e-09	0.173	2.87e-09	0.198	1.09e-10	**0.525***	0.0355	0.489
	(0.00)	(0.74)	(0.00)	(0.91)	(0.00)	(2.10)	(0.61)	(1.53)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**64**	**64**
Adjusted R-squared	**0.820**	**0.841**	**0.884**	**0.890**	**0.844**	**0.873**	**0.790**	**0.793**

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

******Robust standard errors used due to presence of heteroskedasticity**

Table 8 – Pendall OLS Regression Results by Value to Income Ratio

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1st Quartile Home Value to 1st Quartile Income Ratio****		2nd Quartile Home Value to 2nd Quartile Income Ratio		3rd Quartile Home Value to 3rd Quartile Income Ratio		4th Quartile Home Value to 4th Quartile Income Ratio	
	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.	w/Hsg.	w/Geo.
Supply Restrictions								
Development Moratorium in Place	-0.0541	-0.0639	0.000164	0.0264	-0.0702	-0.0733	0.0318	0.0199
	(-0.70)	(-0.59)	(0.00)	(0.44)	(-1.23)	(-1.19)	(0.28)	(0.14)
Residential Pace Restriction	-0.0271	-0.0579	-0.0314	-0.0450	-0.0584	**-0.0954***	**_-0.150_**	-0.191
	(-0.54)	(-0.95)	(-0.75)	(-0.98)	(-1.29)	(-2.38)	(-1.77)	(-1.97)
Mobile Homes Not Allowed	0.120	0.0393	0.0284	-0.0279	**0.190****	**_0.110_**	0.143	0.0446
	(1.51)	(0.35)	(0.52)	(-0.42)	(3.25)	(1.87)	(1.27)	(0.31)
Density Restrictions								
Vote Required for Rezoning	-0.0400	-0.0976	-0.0492	-0.0398	-0.0437	-0.0961	-0.00138	-0.0949
	(-0.55)	(-1.07)	(-0.83)	(-0.57)	(-0.69)	(-1.27)	(-0.01)	(-0.64)
No Density Bonus or Incl. Zoning	0.0106	0.0604	**-0.276*****	**-0.322****	**-0.436*****	**-0.397***	-0.311	-0.202
	(0.08)	(0.40)	(-3.83)	(-3.48)	(-5.61)	(-2.75)	(-2.03)	(-0.96)
Maximum Allowable Density	0.128	0.104	**_0.149_**	0.153	0.0937	0.0383	0.198	0.180
	(1.43)	(0.83)	(1.84)	(1.47)	(1.07)	(0.35)	(1.18)	(0.81)
Constant	0.00906	0.281	0.00518	-0.144	0.0241	0.319	0.00377	0.530
	(0.16)	(0.45)	(0.13)	(-0.42)	(0.58)	(0.85)	(0.05)	(0.72)
Observations	**51**	**51**	**51**	**51**	**51**	**51**	**50**	**50**
Adjusted R-squared	**0.887**	**0.877**	**0.950**	**0.949**	**0.942**	**0.951**	**0.775**	**0.748**

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

******Robust standard errors used due to presence of heteroskedasticity**

The Wharton survey results show a positive relationship between single-family development limits and general housing affordability for moderate (2nd quartile) and middle (3rd quartile) income homeowners, although the IV results show this relationship is endogenous and statistically insignificant. Greater importance of density restrictions to regulating development is also linked to lower affordability for high-income homeowners, yet IV results also suggest this relationship to be endogenous and insignificant. Multi-family development limits and one acre or more minimum lot sizes show no statistically significant relationship at any income level. The Wharton measures demonstrate no clear causal links to general housing affordability.

The Pendall measures, however demonstrate stronger links to housing affordability. Residential pace restrictions are related to better middle-income homeowner affordability, yet again in the IV results endogeneity is detected and the relationship flips sign and loses significance. Such restrictions are also linked to better high-income homeowner affordability, but only in the model without geographic controls, making the relationship insignificant when geographic characteristics are taken into account. Mobile home bans show a connection to lower middle-income homeowner affordability at 90% confidence. Ceteris paribus, a one SD increase in the incidence of such bans leads to a 0.11 SD decrease in middle-income homeowner affordability. A lack of density bonuses and incentives shows a link to better affordability for moderate and middle-income households, results which are confirmed in the IV regressions. This likely reflects the continued endogeneity of this variable in the IV regressions, as the instruments had a partial R^2 value of only 0.08 in both regressions, demonstrating weakness in predicting not having an incentive. Higher maximum allowable densities are tied to lower middle-income homeowner affordability, however when geographic controls are added, the relationship becomes statistically insignificant.

Overall, the value to income ratio results shows much more tenuous connections between land use regulation and general homeowner affordability, yet they provide very clear evidence of the harmful effects of mobile home bans on housing affordability for middle-income households.

Difference Regression Results by Income Quartile

The next set of regression examine the impact of land use regulation on the 2005-09 to 2010-14 change in the percentage of households with a housing cost burden of over 30 percent by income quartile. Similar to the previous sets of results, both OLS and IV results (in the Appendix) are presented to gauge robustness to endogeneity.

Table 9 – Owner Difference OLS Regression Results – Wharton Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All Income Quartiles - Owners % Cost Burdened % Cost Burdened		1st Quartile Income - Owners % Cost Burdened		2nd Quartile Income - Owners % Cost Burdened		3rd Quartile Income - Owners % Cost Burdened		4th Quartile Income - Owners % Cost Burdened	
Model	**w/Housing**	**w/Geography**	**w/Housing**	**w/Geography**	**w/Housing**	**w/Geography**	**w/Housing**	**w/Geography**	**w/Housing**	**w/Geography**
Supply Restrictions										
Single Family Development Limit Index	-0.0976	-0.0397	-0.0662	0.0115	-0.0458	0.0326	-0.0459	-0.0717	-0.0180	-0.0730
	(-0.71)	(-0.28)	(-0.44)	(0.07)	(-0.35)	(0.24)	(-0.42)	(-0.64)	(-0.19)	(-0.69)
Multi Family Development Limit Index	-0.148	-0.251	***-0.289***	**-0.356***	-0.199	***-0.299***	-0.131	-0.142	-0.0514	-0.00665
	(-1.00)	(-1.64)	(-1.78)	(-2.10)	(-1.40)	(-2.01)	(-1.11)	(-1.16)	(-0.50)	(-0.06)
Density Restrictions										
Density Restrictions Importance Index	0.0434	0.0634	-0.0548	0.0586	0.0119	0.000975	0.0404	-0.0382	**0.267***	0.212
	(0.25)	(0.35)	(-0.29)	(0.29)	(0.07)	(0.01)	(0.29)	(-0.26)	(2.22)	(1.55)
1 Acre or More Minimum Lot Size	0.223	0.155	0.132	0.125	0.201	0.134	***0.253***	***0.217***	0.0665	0.0434
	(1.41)	(0.97)	(0.76)	(0.70)	(1.33)	(0.86)	(2.01)	(1.71)	(0.60)	(0.36)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.301**	**0.372**	**0.161**	**0.228**	**0.361**	**0.406**	**0.558**	**0.603**	**0.661**	**0.646**

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 10 – Renter Difference OLS Regression Results – Wharton Measures

Model Number	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	All Income Quartiles - Renters % Cost Burdened		1st Quartile Income - Renters % Cost Burdened		2nd Quartile Income - Renters % Cost Burdened		3rd Quartile Income - Renters % Cost Burdened		4th Quartile Income - Renters % Cost Burdened	
Model	w/Housing	w/Geography	w/Housing	w/Geography	w/Housing	w/Geography	w/Housing	w/Geography	w/Housing	w/Geography
Supply Restrictions										
Single Family Development Limit Index	-0.0752	0.00469	-0.0271	0.0101	-0.0422	0.0245	-0.0826	-0.139	0.0668	0.0675
	(-0.45)	(0.03)	(-0.16)	(0.05)	(-0.27)	(0.14)	(-0.54)	(-0.82)	(0.38)	(0.36)
Multi Family Development Limit Index	-0.0943	-0.179	-0.165	-0.171	-0.122	-0.194	0.0270	0.0660	-0.0500	-0.111
	(-0.53)	(-0.94)	(-0.88)	(-0.83)	(-0.72)	(-1.05)	(0.16)	(0.36)	(-0.26)	(-0.54)
Density Restrictions										
Density Restrictions Importance Index	0.174	0.212	0.0986	0.0803	0.125	0.294	0.116	0.116	-0.286	-0.339
	(0.84)	(0.94)	(0.45)	(0.33)	(0.63)	(1.33)	(0.61)	(0.52)	(-1.29)	(-1.38)
1 Acre or More Minimum Lot Size	0.0683	0.0625	-0.110	-0.0504	0.295	0.235	0.0686	0.0558	0.278	0.185
	(0.36)	(0.31)	(-0.55)	(-0.23)	(1.63)	(1.22)	(0.39)	(0.29)	(1.37)	(0.86)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Adjusted R-squared	**-0.007**	**0.021**	**-0.125**	**-0.142**	**0.086**	**0.078**	**0.141**	**0.072**	**-0.144**	**-0.146**

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 11 - Owner Difference OLS Regression Results – Pendall Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All Income Quartiles - Owners % Cost Burdened		1st Quartile Income - Owners % Cost Burdened		2nd Quartile Income - Owners % Cost Burdened		3rd Quartile Income - Owners % Cost Burdened		4th Quartile Income - Owners % Cost Burdened	
Model	w/Housing	w/Geography	w/Housing	w/Geography	w/Housing	w/Geography	w/Housing	w/Geography	w/Housing	w/Geography
Supply Restrictions										
Development Moratorium in Place	0.0451	0.0122	-0.185	-0.238	-0.162	-0.216	-0.0613	-0.0997	0.0884	0.101
	(0.33)	(0.08)	(-1.17)	(-1.54)	(-1.08)	(-1.33)	(-0.46)	(-0.66)	(0.81)	(0.81)
Residential Pace Restriction	**-0.358***	**-0.417***	-0.0139	-0.128	***-0.274***	***-0.279***	**-0.294***	-0.257	-0.136	-0.136
	(-2.74)	(-2.78)	(-0.09)	(-0.81)	(-1.94)	(-1.69)	(-2.33)	(-1.67)	(-1.33)	(-1.07)
Mobile Homes Not Allowed	0.0797	0.159	***0.334***	***0.348***	***0.310***	0.304	-0.0854	-0.0445	-0.0275	-0.0469
	(0.52)	(0.81)	(1.90)	(1.70)	(1.88)	(1.41)	(-0.58)	(-0.22)	(-0.23)	(-0.28)
Density Restrictions										
Vote Required for Rezoning	-0.0112	-0.115	-0.00527	0.0510	0.0407	-0.0536	-0.0480	-0.0973	-0.145	-0.163
	(-0.07)	(-0.60)	(-0.03)	(0.25)	(0.23)	(-0.25)	(-0.31)	(-0.49)	(-1.15)	(-1.01)
No Density Bonus or Incl. Zoning	-0.0138	0.109	**-0.479***	-0.327	-0.200	-0.0795	0.0842	0.104	**0.405***	**0.389***
	(-0.07)	(0.52)	(-2.18)	(-1.48)	(-0.97)	(-0.34)	(0.45)	(0.48)	(2.70)	(2.18)
Maximum Allowable Density	-0.207	-0.439	-0.104	-0.441	-0.186	-0.242	-0.121	-0.195	**-0.352***	-0.266
	(-1.13)	(-1.64)	(-0.49)	(-1.57)	(-0.94)	(-0.82)	(-0.68)	(-0.71)	(-2.45)	(-1.17)
Observations	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**
Adjusted R-squared	**0.479**	**0.466**	**0.150**	**0.272**	**0.419**	**0.377**	**0.602**	**0.536**	**0.734**	**0.680**

Standardized coefficients shown above, t statistics in parentheses
italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 12 - Renter Difference OLS Regression Results – Pendall Measures

Model Number	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	All Income Quartiles - Renters % Cost Burdened		1st Quartile Income - Renters % Cost Burdened		2nd Quartile Income - Renters % Cost Burdened		3rd Quartile Income - Renters % Cost Burdened		4th Quartile Income - Renters % Cost Burdened	
Model	**w/Housing**	**w/Geography**	**w/Housing**	**w/Geography**	**w/Housing**	**w/Geography**	**w/Housing******	**w/Geography**	**w/Housing**	**w/Geography**
Supply Restrictions										
Development Moratorium in Place	0.0856	0.0137	0.116	0.0863	-0.0479	-0.0944	-0.115	-0.128	-0.131	-0.0486
	(0.55)	(0.09)	(0.76)	(0.53)	(-0.25)	(-0.44)	(-0.43)	(-0.59)	(-0.59)	(-0.26)
Residential Pace Restriction	-0.150	-0.173	0.178	0.103	-0.0510	-0.0661	***-0.290***	-0.198	0.186	***0.354***
	(-1.02)	(-1.06)	(1.24)	(0.62)	(-0.28)	(-0.30)	(-2.02)	(-0.90)	(0.89)	(1.89)
Mobile Homes Not Allowed	***0.354***	0.438	0.205	0.230	0.0728	-0.0643	0.0408	0.244	-0.202	0.285
	(2.05)	(2.05)	(1.22)	(1.06)	(0.34)	(-0.22)	(0.17)	(0.85)	(-0.83)	(1.16)
Density Restrictions										
Vote Required for Rezoning	-0.0577	-0.140	-0.211	-0.169	-0.231	-0.104	-0.273	-0.299	-0.395	**-0.725****
	(-0.32)	(-0.67)	(-1.19)	(-0.80)	(-1.02)	(-0.37)	(-1.38)	(-1.06)	(-1.54)	(-3.04)
No Density Bonus or Incl. Zoning	-0.125	0.00885	0.312	***0.448***	-0.139	0.0274	0.166	0.0931	0.0736	-0.0575
	(-0.58)	(0.04)	(1.48)	(1.92)	(-0.51)	(0.09)	(0.52)	(0.30)	(0.24)	(-0.22)
Maximum Allowable Density	-0.324	**-0.619***	**-0.438***	**-0.717***	-0.399	-0.438	0.132	-0.161	-0.180	-0.541
	(-1.57)	(-2.12)	(-2.17)	(-2.42)	(-1.54)	(-1.11)	(0.44)	(-0.41)	(-0.62)	(-1.62)
Observations	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**
Adjusted R-squared	**0.007**	**0.047**	**0.235**	**0.202**	**-0.032**	**-0.151**	**0.005**	**-0.007**	**-0.329**	**0.162**

Standardized coefficients shown above, t statistics in parentheses
italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001
******Robust standard errors used due to presence of heteroskedasticity**

Wharton Model Controls (OLS & IV), Local Assembly Index, Local Project Approval Index, Local Political Pressure Index, State Political Involvement Index, State Court Involvement Index, Local Zoning Approval Index, Open Space Index, Exactions Index, Approval Delay Index, 5 Yr. Chg. in Population, 5 Yr. Chg. in Population Density, Water % of Metro Area, 5 Yr. Chg. in % Hispanic, 5 Yr. Chg. in % Black, 5 Yr. Chg. in % Age 65 or Older, 5 Yr. Chg. in % of Over 25 with a Bachelor's Degree, 5 Yr. Chg. in Rent-Occupied Share of Occupied Housing, 5 Yr. Chg. in Med. Property Tax to Med. Home Value Ratio, Multi-State Metro, Metro Contains at Least One Mountain Range, Metro in Census Northeast Region, Metro in Census South Region, Metro in Census Midwest Region

Pendall Model Controls (OLS & IV), Growth Management Index, Local Assembly Index, Local Project Approval Index, State Political Involvement Index, State Court Involvement Index, Local Zoning Approval Index, Open Space Index, Exactions Index, Approval Delay Index, 5 Yr. Chg. in Population, 5 Yr. Chg. in Population Density, Water % of Metro Area, 5 Yr. Chg. in % Hispanic, 5 Yr. Chg. in % Black, 5 Yr. Chg. in % Age 65 or Older, 5 Yr. Chg. in % of Over 25 with a Bachelor's Degree, 5 Yr. Chg. in Rent-Occupied Share of Occupied Housing, 5 Yr. Chg. in Med. Property Tax to Med. Home Value Ratio, Multi-State Metro, Metro Contains at Least One Mountain Range, Metro in Census Northeast Region, Metro in Census South Region, Metro in Census Midwest Region

Amongst the Wharton measures, multi-family development limits are linked to falling cost burdens for low-income and moderate-income owners, likely creating a development bias toward housing accessible to owners. While the relationship for low income owners shows no evidence of endogeneity, the relationship for moderate income owners did, but is nonetheless statistically significant at 95% in the IV results. A one standard deviation increase in the incidence of multi-family development limits produces a 1.07 percentage point (0.36 SD) reduction in the share of low-income owner households that are cost burdened and a 1.15 percentage point (0.30 SD) reduction in the share of burdened moderate-income owner households, holding all else constant. The importance of density restrictions to regulating development shows a link to rising burdens for high-income owners, but this relationship becomes insignificant after adding geographic controls. One acre or more minimum lot sizes show a positive connection to middle-income owner burdens at 90% confidence. None of the Wharton measures show a relationship to cost burden change for renter households.

The Pendall measures show stronger links to changing cost burdens. Residential pace restrictions are associated with falling burdens in the models for all owners and moderate income owners. Such restrictions may have the effect of slowing development of rental housing in favor of owner housing. Although such restrictions also show a connection to falling burdens for middle income (3rd quartile) owners and renters, this becomes insignificant with the addition of geographic controls. However, residential pace restrictions show a strong link to rising burdens for high income renters at 99% confidence. A one standard deviation increase in the incidence of residential pace restrictions yields a 0.32 percentage point (0.35 SD) rise in the share of cost burdened high income renters, holding all else constant.

Lacking a density bonus or inclusionary incentive is linked to falling cost burdens for low-income owners, but this becomes insignificant with inclusion of geographic controls. Yet lacking of such a bonus or incentive is connected to rising burdens for high income owners at 95% confidence, which shows no evidence of endogeneity. Lacking such a bonus or incentive increases the share of cost burdened high-income owners by 2.36 percentage points (0.39 SD), holding all else equal. The relationship for low-income renters is also positive and significant at 90% confidence, but is endogenous and insignificant in the IV regressions. Higher maximum allowable densities show a link to falling burdens for high income owners and all renters. However, the relationship loses significance for high income owners once geographic controls are added and proves endogenous and insignificant for all renters in the IV results. Finally, higher allowable densities show a strong connection to falling burdens for low income renters at 95% confidence. Ceteris paribus, a one SD increase in metropolitan allowable density limits yields a 1.74 percentage point (0.72 SD) drop in the share of cost burdened low income renters.

Difference Regression – Home Value to Household Income Ratio Results

The next set of regressions show difference regression results with the ratio of median home values to median household incomes at four home value and household income quartiles.

Table 13 – Value to Income Ratio Difference OLS Regression Results – Wharton Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1st Quartile Home Value to 1st Quartile Income Ratio****		2nd Quartile Home Value to 2nd Quartile Income Ratio****		3rd Quartile Home Value to 3rd Quartile Income Ratio		4th Quartile Home Value to 4th Quartile Income Ratio	
Model	w/Housing	w/Geography	w/Housing	w/Geography	w/Housing****	w/Geography	w/Housing****	w/Geography****
Supply Restrictions								
Single Family Development Limit Index	-0.0266	0.0163	**0.208***	0.184	0.149	0.121	***-0.222***	-0.225
	(-0.20)	(0.11)	(2.05)	(1.62)	(1.44)	(1.08)	(-1.78)	(-1.53)
Multi Family Development Limit Index	0.119	0.0400	0.143	0.165	-0.0432	-0.0535	0.0403	0.0225
	(0.85)	(0.25)	(1.31)	(1.33)	(-0.49)	(-0.44)	(0.28)	(0.14)
Density Restrictions								
Density Restrictions Importance Index	-0.0165	0.0331	-0.0206	-0.0885	-0.0233	-0.0976	**-0.352***	**-0.443****
	(-0.10)	(0.18)	(-0.16)	(-0.60)	(-0.22)	(-0.67)	(-2.55)	(-2.87)
1 Acre or More Minimum Lot Size	***0.255***	0.200	0.159	0.169	0.0249	-0.0457	-0.0175	-0.103
	(1.71)	(1.22)	(1.36)	(1.31)	(0.21)	(-0.36)	(-0.12)	(-0.67)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**64**	**64**
Adjusted R-squared	**0.375**	**0.335**	**0.622**	**0.588**	**0.585**	**0.596**	**0.374**	**0.371**

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

******Robust standard errors used due to presence of heteroskedasticity**

Table 14 – Value to Income Ratio Difference OLS Regression Results – Pendall Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1st Quartile Home Value to 1st Quartile Income Ratio		2nd Quartile Home Value to 2nd Quartile Income Ratio		3rd Quartile Home Value to 3rd Quartile Income Ratio		4th Quartile Home Value to 4th Quartile Income Ratio	
	w/Housing****	w/Geography	w/Housing****	w/Geography****	w/Housing	w/Geography****	w/Housing	w/Geography
Supply Restrictions								
Development Moratorium in Place	-0.106	-0.105	-0.0550	-0.0590	-0.00561	-0.00716	-0.135	-0.128
	(-0.69)	(-0.64)	(-0.52)	(-0.57)	(-0.05)	(-0.07)	(-0.67)	(-0.58)
Residential Pace Restriction	-0.0116	-0.0922	0.103	0.0748	0.0884	0.177	0.0173	0.145
	(-0.09)	(-0.55)	(0.95)	(0.60)	(0.80)	(1.53)	(0.10)	(0.71)
Mobile Homes Not Allowed	-0.0645	0.0699	-0.0919	-0.0252	-0.163	-0.106	0.0730	-0.0153
	(-0.33)	(0.32)	(-0.62)	(-0.13)	(-1.27)	(-0.70)	(0.35)	(-0.06)
Density Restrictions								
Vote Required for Rezoning	-0.0679	-0.264	0.107	0.0240	0.0931	0.0258	0.0810	0.0582
	(-0.40)	(-1.23)	(0.99)	(0.16)	(0.69)	(0.18)	(0.37)	(0.22)
No Density Bonus or Inclusionary Zoning	0.0396	0.127	**0.572***	**0.622***	**0.449***	0.411	0.0856	0.0245
	(0.16)	(0.54)	(3.54)	(2.86)	(2.78)	(1.53)	(0.33)	(0.08)
Maximum Allowable Density	-0.0687	-0.264	-0.123	-0.238	0.00631	0.0378	0.361	***0.691***
	(-0.39)	(-0.88)	(-0.87)	(-0.98)	(0.04)	(0.19)	(1.43)	(1.84)
Observations	**51**	**51**	**51**	**51**	**51**	**51**	**50**	**50**
Adjusted R-squared	**0.511**	**0.513**	**0.750**	**0.713**	**0.716**	**0.694**	**0.192**	**0.146**

Standardized coefficients shown above, t statistics in parentheses
italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001
******Robust standard errors used due to presence of heteroskedasticity**

Wharton Model Controls (OLS & IV), Local Assembly Index, Local Project Approval Index, Local Political Pressure Index, State Political Involvement Index, State Court Involvement Index, Local Zoning Approval Index, Open Space Index, Exactions Index, Approval Delay Index, 5 Yr. Chg. in Population, 5 Yr. Chg. in Population Density, Water % of Metro Area, 5 Yr. Chg. in % Hispanic, 5 Yr. Chg. in % Black, 5 Yr. Chg. in % Age 65 or Older, 5 Yr. Chg. in % of Over 25 with a Bachelor's Degree, 5 Yr. Chg. in Rent-Occupied Share of Occupied Housing, 5 Yr. Chg. in Med. Property Tax to Med. Home Value Ratio, Multi-State Metro, Metro Contains at Least One Mountain Range, Metro in Census Northeast Region, Metro in Census South Region, Metro in Census Midwest Region

Pendall Model Controls (OLS & IV), Growth Management Index, Local Assembly Index, Local Project Approval Index, State Political Involvement Index, State Court Involvement Index, Local Zoning Approval Index, Open Space Index, Exactions Index, Approval Delay Index, 5 Yr. Chg. in Population, 5 Yr. Chg. in Population Density, Water % of Metro Area, 5 Yr. Chg. in % Hispanic, 5 Yr. Chg. in % Black, 5 Yr. Chg. in % Age 65 or Older, 5 Yr. Chg. in % of Over 25 with a Bachelor's Degree, 5 Yr. Chg. in Rent-Occupied Share of Occupied Housing, 5 Yr. Chg. in Med. Property Tax to Med. Home Value Ratio, Multi-State Metro, Metro Contains at Least One Mountain Range, Metro in Census Northeast Region, Metro in Census South Region, Metro in Census Midwest Region

The results for the value to income ratio regressions show a link between single family development limits and falling moderate-income and high-income homeowner affordability. However these relationships lose significance when geographic controls are added. Greater importance of density restrictions improves affordability for high-income owners at 90% confidence. A one SD increase in the importance of density restrictions yields a 0.44 SD improvement in high-income homeowner affordability, holding all else equal, a rather significant effect. This may arise by creating a bias toward lower-density housing development preferred more by these owners.

Minimum lot sizes of one acre or more also demonstrate a link to a falling low-income homeowner affordability, yet lose significance when geographic controls are added to the model. A lack of a density bonus or incentive is connected to improving moderate income homeowner affordability at 99% confidence, in an endogenous relationship that is nonetheless significant at 99% in the IV results. While a similar relationship appears for the middle-income households, it loses significance in the model with geographic controls. Higher maximum allowable densities show a link to falling owner affordability for high income households at 90% confidence. A one SD increase in allowable density limits produces a 0.69 SD decrease in high-income homeowner affordability, holding all else constant. Higher allowable densities potentially shift development activity away from low-density owner housing preferred by high-income households.

Suburban/Central City Regression Results

The final set of regressions measure the impact of suburban land use regulations on housing cost burdens (over 30% of income) in central cities:

Table 15 - Suburban/Central City Cost Burden OLS Regression Results – Wharton Measures

Model Number	(1)	(2)	(3)	(4)
	Central City Owners % Cost Burdened		Central City Renters % Cost Burdened	
	w/Housing	w/Geography	w/Housing	w/Geography
Supply Restrictions				
Suburb Single Family Development Limit Index	-0.154	-0.184	0.0160	-0.188
	(-1.12)	(-1.14)	(0.06)	(-0.76)
Suburb Multi Family Development Limit Index	0.202	0.267	0.248	0.456
	(1.27)	(1.45)	(0.83)	(1.63)
Density Restrictions				
Suburb Density Restrictions Importance Index	-0.0749	-0.0636	0.198	0.130
	(-0.56)	(-0.41)	(0.79)	(0.55)
Suburb 1 Acre or More Minimum Lot Size	-0.0165	-0.0895	0.000323	-0.191
	(-0.13)	(-0.66)	(0.00)	(-0.92)
Observations	**55**	**55**	**55**	**55**
Adjusted R-squared	**0.656**	**0.669**	**-0.212**	**0.238**

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 16 - Suburban/Central City Cost Burden OLS Regression Results – Pendall Measures

Model Number	(1)	(2)	(3)	(4)
	Central City Owners % Cost Burdened		Central City Renters % Cost Burdened	
Supply Restrictions	**w/Housing**	**w/Geography**	**w/Housing**	**w/Geography**
Suburb Development Moratorium in Place	-0.0604	0.224	-0.290	***0.571***
	(-0.40)	(1.34)	(-0.73)	(1.76)
Suburb Residential Pace Restriction	0.0210	0.105	-0.0328	0.180
	(0.11)	(0.59)	(-0.06)	(0.52)
Suburb Mobile Homes Not Allowed	0.286	0.148	-0.218	-0.372
	(1.27)	(0.64)	(-0.37)	(-0.83)
Density Restrictions				
Suburb Vote Required for Rezoning	-0.122	-0.0231	-0.363	-0.209
	(-0.50)	(-0.10)	(-0.56)	(-0.48)
Suburb No Density Bonus or Inclusionary Zoning	-0.127	-0.419	-0.0692	***-0.857***
	(-0.47)	(-1.65)	(-0.10)	(-1.74)
Suburb Maximum Allowable Density	-0.0827	0.377	-1.017	0.0843
	(-0.26)	(1.01)	(-1.24)	(0.12)
Observations	**43**	**43**	**43**	**43**
Adjusted R-squared	**0.770**	**0.855**	**-0.590**	**0.451**

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Wharton Model Controls (OLS & IV), Sub. Local Assembly Index, Sub. Local Political Pressure Index, Sub. Local Zoning Approval Index, Sub. Local Project Approval Index, Sub. Open Space Index, Sub. Exactions Index, Sub. Approval Delay Index, Central City Supply Restrictions Index, Central City Density Restrictions Index, Central City Local Political Pressure Index, Central City State Political Involvement Index, Central City State Court Involvement Index, Central City Local Zoning Approval Index, Central City Local Project Approval Index, Central City Open Space Index, Central City Exactions Index, Central City Approval Delay Index, Central City Population, Central City Population Density, Water % of Metro Area, Central City % Hispanic, Central City % Black, Central City % Age 65 or Older, Central City % of Over 25 with a Bachelor's Degree, Central City Rent-Occupied Share of Occupied Housing, Central City Med. Property Tax to Med. Home Value Ratio, Multi-State Metro, Metro Contains at Least One Mountain Range, Metro in Census Northeast Region, Metro in Census South Region, Metro in Census Midwest Region

Pendall Model Controls (OLS & IV), Sub. Growth Management Index, Sub. Local Assembly Index, Sub. Local Political Pressure Index, Sub. Local Zoning Approval Index, Sub. Local Project Approval Index, Sub. Open Space Index, Sub. Exactions Index, Sub. Approval Delay Index, Central City Supply Restrictions Index, Central City Density Restrictions Index, Central City Local Political Pressure Index, Central City State Political Involvement Index, Central City State Court Involvement Index, Central City Local Zoning Approval Index, Central City Local Project Approval Index, Central City Open Space Index, Central City Exactions Index, Central City Approval Delay Index, Central City Population, Central City Population Density, Water % of Metro Area, Central City % Hispanic, Central City % Black, Central City % Age 65 or Older, Central City % of Over 25 with a Bachelor's Degree, Central City Rent-Occupied Share of Occupied Housing, Central City Med. Property Tax to Med. Home Value Ratio, Multi-State Metro, Metro Contains at Least One Mountain Range, Metro in Census Northeast Region, Metro in Census South Region, Metro in Census Midwest Region

None of the suburban Wharton measures prove statistically significant to explaining central city cost burdens. However, of the Pendall measures, suburban development moratoria show a positive link to higher central city burdens for renters at 90% confidence, a result that is confirmed by the IV regressions at 95% confidence. A one standard deviation increase in the incidence of suburban development moratoria results in a 0.57 SD or 2.7 percentage point in the share of cost burdened central city renters, holding all else constant. This is a sizable effect. Such suburban regulations have a substantial impact on rent affordability within central cities. Although lack of a suburban density bonus or inclusionary incentive shows a link to lower burdens for central city renters at 90% confidence, this relationship proves endogenous, flips sign, and becomes insignificant in the IV results. Such suburban incentives are likely less common in metropolitan areas where housing is generally affordable.

The central city/suburban results are perhaps the most surprising, given the fact only one suburban regulation showed a link to central city housing affordability. The limited available sample of metropolitan areas and suburban jurisdictions within these areas may have produced insufficient statistical power to detect the effects of other regulations. Under these conditions, the strength of suburban land use regulation may not be adequately measured. For example, suburban multi-family development limits showed a connection to higher central city renter cost burdens, however at statistical significance just shy of 90% ($t = 1.63$). With more observations in terms of suburbs within metros and metros themselves, relationships such as these might emerge as more statistically significant. Yet even with this limitation, the one significant connection found reveals that suburban land use regulation can affect central city housing affordability for renter households.

CHAPTER 5: Conclusions and Implications for Policy

Overall, the results demonstrate that the United States remains very far away from the goal that "every American family be able to afford a decent home in a suitable environment" (National Affordable Housing Act of 1990). In fact, today it is perhaps the farthest it has ever been from that goal. Not only has housing affordability been declining for low-income households, it has been declining across all income levels for renters. In the face of such troubling trends, current housing policy appears to be ineffective in promoting affordable housing for every American family. Moreover, the results show that housing affordability problems in metropolitan areas are severe and continuing to worsen, particularly for racial minorities and low income households, but now also for middle and high income households. The problem is especially severe in coastal housing markets where high density and high incomes produce exceptionally expensive housing. Black and Hispanic households, especially those within expensive coastal housing markets have particularly severe and worsening affordability problems. The problem is most significant for renters, for which the entry of more high and middle income households into the rental market appears to be driving up the cost of rental housing. The regression results show that exclusionary land use regulation is an important contributor to this trend. Results suggest that exclusionary land use regulation tends to restrict and promote various types of development, which affects the affordability of certain types of restricted housing.

Supply restrictions have variable impacts on housing affordability by race and income depending on the type of regulation. Tobit results suggest that of these regulations, mobile home bans have the strongest adverse effects on owner affordability, while density restrictions in general and development moratoria have the most sizable effects on renter affordability.

African-American renters are especially harmed by multi-family development limits, while Hispanic renters are particularly harmed by residential pace restrictions. Such multi-family development limits increase cost burdens for all owners and renters, but have particularly distinct effects on low-income owners. This also supports the findings of Knaap, Meck, Moore, and Parker (2007), who found that the Portland, Oregon metropolitan area's significant zoning of multi-family development was associated with lower housing prices and rents relative to other metropolitan areas. In metropolitan Boston, they found evidence of massive barriers to multi-family housing development and high and fast-rising housing prices and rents. These results establish more of a direct causal association between such restrictions on multi-family development and higher housing cost burdens for both owners and renters, controlling for other relevant, confounding factors and the general endogeneity of land use regulation. Yet in terms of the change in affordability over time, multi-family development limits are linked to falling cost burdens for low and moderate income owners, which may reflect a development bias toward owner housing over time.

Residential pace restrictions on new population growth or housing development are connected to higher burdens for high-income renters, but lower cost burdens for owners, particularly moderate income owners across metropolitan areas. However, they are associated with declining housing affordability for moderate income owners over time. Katz and Rosen (1987) found home prices to be between 17 and 38 percent higher in areas with growth moratoria and/or growth controls in their study of housing in metropolitan San Francisco communities. These results confirm a link between such controls and higher cost burdens for renters across metropolitan areas, but the evidence on owners remains mixed. Moreover, Pendall (2000) found that building permit caps had the effect of limiting Hispanic residents in a community. These results suggest such caps when implemented as residential pace restrictions have exceptional effects on Hispanic renter affordability.

Results show that mobile home bans have especially detrimental effects on low-income household cost burdens and on housing affordability more broadly for middle-income households. Genz (2001) found that mobile home buyers tend to have very low incomes and that such homes represent the only viable path to homeownership for millions of households. Genz also noted that land use regulation contributes to the discriminatory treatment of mobile home occupants. These results support these findings and also demonstrate that limitations on mobile home development have broader negative implications for low-income and even middle-income owner affordability. Restricting the choice of owner housing options to site-built homes impacts the price that low and middle income households will pay to become homeowners. Moreover, mobile home bans have exceptionally strong effects on Hispanic owner affordability when compared to other racial and ethnic groups. This likely occurs because Hispanics owners are generally more likely choose mobile homes or trailers as their place of residence. 4.2 percent of Hispanic owner households in the sample reside in mobile homes or trailers compared to

3.5 percent of non-Hispanic white owner households and 1.0 percent of black owner households.

Development moratoria in suburbs also show harmful effects on cost burdens for central city renter households, perhaps by constraining the available supply of affordable housing outside the central city, driving up demand for central city rental properties. While Ihlanfeldt (2004) noted that suburban growth controls increase the cost of suburban housing, these results suggest that such controls can also increase the cost of central city rental housing. Belsky and Lambert (2001) found that affordable housing barriers are very significant in suburban areas, particularly in exurban areas well outside the central city. These results suggest that suburban development moratoria in particular contribute to the costliness of central city rental housing, possibly by limiting the development of rental options outside the borders of central cities.

Density restrictions also have a substantial impact on housing affordability. Results show that the importance of density restrictions to regulating development is associated with lower affordability for moderate, middle, and high income renters alike. This largely supports the findings of Rothwell (2009), who found a link between metropolitan anti-density regulation and higher housing prices in the presence of demand shocks. Yet these results show these effects are more consistent and significant for renter households than owner households. This likely arises from the fact that rental housing is mostly high-density housing. 2005 American Community Survey data show that over 70 percent of renter-occupied housing is multi-family or single-family attached housing.

One acre or more minimum lot sizes show clear adverse effects for middle income owners and high-income renters. While most studies have found that such requirements inflate housing prices (Glaeser, Gyourko, and Saks, 2005b; Glaeser, Schuetz, and Ward, 2006; Glaeser and Ward, 2009), results show these requirements lower affordability particularly for high-income households that rent. Since rental housing is more typically found on smaller lots, this likely occurs by expanding the large-lot housing supply out of line with their housing preferences. In addition, the results showed that large-lot size requirements have exceptional adverse effects on Hispanic owner affordability, meaning such requirements do not have equal effects across ethnic groups.

Results show that a lack of inclusionary incentives contributes to rising cost burdens for high-income owners. From an alternative perspective, inclusionary incentives have the effect of lowering burdens for high-income owners. These findings add important context to recent research examining the subject. Examining inclusionary incentive programs in Los Angeles and Orange Counties, Mukhija, Regus, Slovin and Das (2010) found no evidence of any negative impact of such incentives on housing supply. Looking at adoption of inclusionary housing incentives in California from 1988 to 2005, Bento, Lowe, Knaap, and Chakraborty (2009) found that adoption of inclusionary incentives produced increase in multi-family housing starts and a relative slowdown in the growth in housing size. These results suggest that such incentives may have broader impacts than encouraging the production of affordable housing for lower-income households, they may actually reduce burdens for wealthy households over time as well.

Higher maximum allowable densities appear to produce falling cost burdens for low income renters, but they may reduce affordability for high-income owners, perhaps by constraining development of large-lot housing preferred by these households, relative to other metropolitan areas. Previous research has found that in some metropolitan cases, higher densities and higher allowable densities can be linked to higher housing prices and rents (Knaap, Meck, Moore, and Parker, 2007). Other research found that high-density zoning results in higher levels of multi-family housing production (Chakraborty, Knaap, Nguyen, and Shin, 2010), which should have the effect of lowering cost burdens, particularly for renters. Much of the association between higher densities and cost burdens may be due to an endogenous relationship between the two, as high density areas with housing affordability problems are more likely to allow higher housing densities. These results support Chakraborty, Knaap, Nguyen, and Shin's findings by demonstrating that after controlling for endogeneity, high density zoning lowers cost burdens for low-income renters over time. Results suggest that density regulations can produce for advantages for certain kinds of housing consumers within a metropolitan area. High-density, affordable rental housing preferred by low-income household and low density luxury housing preferred by high-income households essentially constitute separate housing markets. Yet they are connected in that land use regulation (or lack of regulation) can create a bias toward housing development serving each market. This bias can lead to higher housing costs in the market disadvantaged by regulation.

Policy Implications

Since the housing affordability problem is the most severe in coastal metropolitan areas with expensive housing markets, national policymakers concerned with housing affordability might focus on those coastal areas where a much broader segment of the population than low income households and racial minorities is affected. Additional affordable housing development incentives and interventions may be necessary in extremely tight markets in states such as California, New York, New Jersey, and Florida to relieve extreme housing cost pressures.

Since housing affordability problems seems to manifest itself at a regional level, naturally regional or metropolitan solutions are warranted. Although an obvious solution would be to restrict, limit, or regulate the exclusionary land use regulation activity of local jurisdictions through state or regional governments or judicial action, in many cases political and legal barriers make this less than a viable option. Zoning remains a vital tool of local governments to regulate and control the demand for locally-provided public goods and services and to rationalize development activity for the public benefit. Because of this, removing or usurping zoning powers from local governments would undoubtedly meet fierce resistance both within state legislatures and the courts. However, the Supreme Court’s 2015 ruling in *Texas Department of Housing and Community Affairs vs. Inclusive Communities Project* validated racial disparate impact claims under the Fair Housing Act. Such disparate impact can be shown be demonstrating policy effects on racial disparities in housing access, similar to what has been demonstrated in this study. The ruling provides a means to address discriminatory housing programs or practices that promote racial segregation through the federal courts.

Areas with metropolitan or large county governments such as metropolitan Miami, Indianapolis, Jacksonville, and Nashville have unique capacity to enact regional solutions because a sizable portion of their metropolitan area is under one local political jurisdiction. However, in most cases, metropolitan areas are composed of a multitude of often small and independent municipal governments. Intergovernmental cooperation to mitigate and control exclusionary land use regulation may provide the best practical solution in this situation, as is the case in metropolitan areas such as Portland, Oregon (Song and Knaap, 2004). Perhaps the best vehicles for this are regional associations or collaboratives such as metropolitan councils of governments, which allow for a forum for local governments within the region to discuss and examine the impact of land use regulation on neighboring jurisdictions. These organizations can also coordinate, and if empowered to do so, regulate local land use regulation activity within an entity representative of local governments in the region. State legislatures can grant such entities the authority to exercise these coordinating and regulatory functions.

Knaap, Meck, Moore, and Parker (2007) identified a number of potential solutions based on the results of their research that are quite relevant to these research findings. Better surveillance of regional housing market conditions and housing affordability would help gauge the magnitude of the problem locally and determine if it is worsening or improving over time. In addition, much better tracking of land use regulation would be needed, such that restrictions imposed by all zoning jurisdictions within a metropolitan area could be monitored and assessed for their exclusionary impact. Collection of more data on a frequent basis would allow for more studies to be conducted outlining the exclusionary impact of land use regulation. At a minimum creating a much better understanding of the problem can provide valuable information to inform and encourage action from local officials.

CHAPTER 6: Avenues for Future Research

The results have shown that various racial and income groups have different housing preferences or abilities to secure particular types of housing. Therefore, to the extent exclusionary land use regulation restricts development of racially and income group preferred housing, it can negatively impact housing affordability by racial and income group. Descriptive statistics on racial and income group housing preferences offer some useful hypotheses congruent with microeconomic theory on why these relationships exist. However, the precise causal mechanisms by which these exclusionary land use regulation impacts housing affordability by race and income are perhaps best addressed through future research on particular local housing markets. A locally-based study could use maps and GIS techniques to chart land use regulation and housing affordability patterns within a single metropolitan housing market. Examining a local market in detail may illuminate the income and racially sensitive supply-constraining effects implied by these results.

Moreover, future research could further drill down on the impact of land use regulation on housing affordability by racial income subgroup, such as the magnitude of effects on low income African-Americans versus middle-income African Americans. Comparisons could also be made between racial groups at the same income level, which would further reveal the impact of land use regulation by race after controlling for income.

Future studies also might more deeply examine the relationship between suburban land use regulation and central city housing affordability. Better measurement of suburban regulation throughout the whole of a metropolitan area might provide a better idea of how such regulation affects central city housing cost burdens. This study was limited by the number and scope of suburban jurisdictions responding on the Wharton and Pendall studies. Future research might collect land use regulation data on all suburban jurisdictions within a metropolitan area to better and more precisely assess the impact on housing affordability within the central city or cities. Such research could reveal important linkages between suburban and central city housing markets mediated by land use regulation. In addition, the connection between the owner and renter housing markets and the markets for low, middle, and high income households merit further investigation. A single metropolitan case study could reveal how each of these markets interact in the context of a strict land use regulatory environment.

This research also suggests there are important connections between the housing markets for low income renters and high income households through land use regulation. Future research might further investigate the basis of these linkages and interactions, specifically how land use regulation can promote housing development within one market at the expense of the other.

Perhaps the biggest challenge to research in the field is a lack of continually available, comprehensive data on land use regulation in the United States. The lack of such data prevents the adoption of time series and panel regression approaches which could measure the effects of changes in land use regulation on changes in housing affordability. Development of a continually updated comprehensive national dataset on local land use regulation could inspire of wealth of new studies on the topic. Also, such data would allow for robust experimental designs to identify the impact of newly imposed land use regulations on housing affordability in both local and regional contexts.

Finally, future research might focus more on how land use regulations are developed in response to housing affordability challenges, to better understand the endogenous relationship between many types of land use regulation and housing affordability implied by these results. Such research would build understanding of the motivating factors behind land use regulation and offer valuable theoretical context for researchers attempting to deal with the endogeneity of land use regulation and housing prices. This research might also inform the identification of better instruments for land use regulation in future studies. In sum, more research and investigation into the relationship between exclusionary land use regulation and housing affordability can inform policy interventions making it easier to find an affordable place to call home.

Appendix

Table 17 - Income Limits by Income Quartile and Year (used for national descriptive statistics only)

	1980		1990		2000		2005-09		2010-14	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1st Quartile*	($9,995)	$8,610	($22,998)	$15,000	($19,998)	$22,500	($42,563)	$26,800	($24,649)	$26,712
2nd Quartile	$8,615	$16,800	$15,001	$29,606	$22,510	$42,500	$26,803	$52,398	$26,713	$53,619
3rd Quartile	$16,805	$26,810	$29,607	$48,975	$42,505	$71,500	$52,400	$90,135	$53,620	$95,030
4th Quartile**	$26,815	$75,000	$48,976	$822,503	$71,505	$1,456,200	$90,136	$2,228,376	$95,031	$3,750,744

Minima includes sample households that reported net losses rather than pos

***Maxima top-coded*

Table 18 - Pendall Sample Selection Weight Logit Results

Dependent Variable: Included in Pendall Sample	
Population	-0.00000419 (-1.61)
Number of occupied housing units	**0.0000170*** (2.35)
Owner occupied share of occupied units	**-1.643***** (-6.49)
% of pop. age 65 or older	**-1.894**** (-2.83)
% of pop. under age 18	0.547 (0.79)
% non-Hispanic white	**-1.020***** (-5.55)
Log of median home value	0.0738 (1.04)
% of over 25 pop. with a bachelor's degree	**0.0161***** (5.31)
% of over 25 pop. with a high school diploma or GED	**0.0201**** (3.14)
Constant	-2.246* (-2.28)
N	6,405

t statistics in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Table 19 - Iterated Principal Factor Analysis Results (rotated) - Wharton Survey Variables

Factor	Variance	Difference	Proportion	Cumulative
Factor1	**2.12**	0.14	0.24	0.24
Factor2	**1.98**	0.54	0.22	0.46
Factor3	**1.44**	0.18	0.16	0.62
Factor4	**1.26**	0.21	0.14	0.76
Factor5	**1.05**	0.59	0.12	0.88
Factor6	0.47	0.21	0.05	0.93
Factor7	0.26	0.10	0.03	0.96
Factor8	0.15	0.00	0.02	0.98
Factor9	0.15	0.13	0.02	1.00
Factor10	0.02	.	0.00	1.00

N = 65
Eigen values > 1 in bold

Table 20 - Rotated Factor Loadings and Unique Variances (orthogonal varimax rotation) - Wharton Survey Variables

Variable	Density restriction (Factor1)	Multi-family development limits (Factor2)	Residential "under-zoning" (Factor3)	Single family development limits (Factor4)	Min. lot size (Factor5)	Unique-ness
Multi-Family "Underzoned"	0.3	0.09	**0.77**	-0.05	0.01	0.21
Single Family "Underzoned"	0.11	-0.01	**0.84**	-0.03	-0.14	0.22
Single Family Ann. Permit Limit	0.05	0.02	-0.17	**0.66**	-0.05	0.36
Single Family Ann. Constr. Limit	0.06	0.31	0.01	**0.86**	0	0.16
Multi-Family Ann. Constr. Limit	0.09	**0.95**	0.03	0.29	-0.07	-0.04
Multi-Family Dwelling Limit	0.09	**0.96**	0.02	-0.01	0.08	0.02
Single Family Density Restr. Imp.(1-5)	**0.93**	0.11	0.13	0.07	0.14	0.04
Multi-Family Density Restr. Imp. (1-5)	**0.95**	0.1	0.13	0.02	0.05	0.03
Minimum Lot Size	0.17	0.02	-0.16	-0.02	**0.83**	0.24
Minimum 1/2 Acre Lot Size	0.17	0.02	0.21	-0.04	**0.41**	0.39
Minimum 1 Acre Lot Size	**0.43**	-0.18	0.15	0.04	0.37	0.47

N = 65
Loadings >.4 in bold

Table 21 - Iterated Principal Factor Analysis Results (rotated) - Pendall Excl. Reg. Variables

Factor	Variance	Difference	Proportion	Cumulative
Factor1	**1.22**	0.64	0.60	0.60
Factor2	0.59	0.46	0.29	0.89
Factor3	0.13	0.05	0.06	0.96
Factor4	0.08	0.07	0.04	1.00
Factor5	0.01	--	0.01	1.00

N = 51
Eigen values > 1 in bold

Table 22 - Rotated Factor Loadings and Unique Variances (orthogonal varimax rotation) - Pendall Excl. Reg. Variables

Variable	Density restriction (Factor1)	Uniqueness
Development moratorium in place	-0.18	0.73
Residential pace restriction in place	-0.20	0.88
Mobile homes not allowed	0.31	0.57
Rezone required for rezoning to multi-family	**0.45**	0.72
No density bonus or inclusionary incentive	**0.50**	0.68
Maximum residential density (Coded 1 -9; <4 to >30 dwellings per acre)	**-0.77**	0.39

N = 51
Loadings >.4 in bold

Table 23 - Iterated Principal Factor Analysis Results (rotated) - Pendall Growth Management and Affordable Housing Incentive Variables

Factor	Variance	Difference	Proportion	Cumulative
Factor1	**2.42**	0.38	0.50	0.50
Factor2	**2.04**	1.83	0.42	0.92
Factor3	0.21	0.07	0.04	0.97
Factor4	0.14	0.13	0.03	1.00
Factor5	0.02	.	0.00	1.00

N = 51
Eigen values > 1 in bold

Table 24 - Rotated Factor Loadings and Unique Variances (orthogonal varimax rotation) - Pendall Survey Growth Mgmt. and Affordable Housing. Incentive Variables

Variable	Growth Management (Factor1)	No Affordable Housing Incentives (Factor 2)	Uniqueness
Urban growth boundary in place	**0.91**	0.04	0.13
Urban limit line in place	**0.73**	-0.20	0.27
Sprawl containment tool in place	**0.99**	-0.13	-0.02
No affordable housing units	-0.26	**0.54**	0.53
Less than four affordable housing incentives	-0.10	**0.88**	0.20
No affordable housing incentives in place	-0.04	**0.96**	0.06

N = 51
Loadings >.4 in bold

Table 25 - Pendall Survey Indices by Component

Index	Components
Supply Restrictions Index	Development moratorium in place
	Residential pace restriction
	Mobile homes not allowed
Growth Management Index	Urban growth boundary in place
	Urban limit line in place
	Sprawl containment tool in place
Density Restriction Index	Vote required for multi-family rezoning
	No density bonus or inclusionary incentive
	Maximum residential density *(recoded to negative values for index consistency)* (coded -1 to -5; <4 to >30 dwellings per acre)
Affordable Housing Incentive Index	No affordable housing units
	No affordable housing incentives in place
	Less than four affordable housing incentives

Table 26 - Wharton Survey Indices by Component

Index	Components
Wharton Residential Land Use Regulation Index	Combination of all Wharton regulation subindices
Supply Restrictions Index	Annual limit on single family home permits
	Annual limit on multi-family home permits
	Annual limit on new single family home construction
	Annual limit on new single multi-family home construction
	Annual limit on new single family dwellings
	Annual limit on new multi-family dwellings
Density Restrictions Index	1-acre minimum lot size requirement for new development
	2-acre minimum lot size requirement for new development
Local Assembly Index	Local assembly such as a town meeting is involved in reg. process
Local Project Approval Index	Local planning commission approves new projects
	Local council, managers, or commissioners approve new projects
	County governing body approves new projects
	Environmental review board approves new projects
	Public health board approves new projects
	Design review board approves new projects
State Political Involvement Index	State leg. involvement in building activities or growth management (1-5)
	State exec. and leg. involvement over last 10 years in enacting stricter land use reg. (1-3)
State Court Involvement Index	Tendency of state courts to uphold municipal land use regulation (1-3)
Local Zoning Approval Index	Local planning commission approves zoning changes
	Local zoning board approves zoning changes
	Local council, managers, or commissioners approve zoning changes
	County governing body approves zoning changes
	County zoning board approves zoning changes

Index	Components
Local Zoning Approval Index (continued)	Environmental review board approves zoning changes
	Town meeting approves zoning changes
Open Space Index	Developers must supply open space or pay a fee to preserve it
Exactions Index	Developers must pay a fee toward the cost of infrastructure improvements
Approval Delay Index	Average review time for single family project
	Average review time for multi-family project
	Average rezoning app. time for less than 50 single family unit project
	Average rezoning app. time for more than 50 single family unit project
	Average rezoning app. time for multi-family unit project
	Average subdivision app. time for less than 50 single family unit project
	Average subdivision app. time for more than 50 single family unit project
	Average subdivision app. time for multi-family unit project
Single Family Development Limit Index (author-constructed)	Annual limit on new single family home construction
	Annual limit on single family home permits
Multi-Family Development Limit Index (author-constructed)	Annual limit on new multi-family dwellings
	Annual limit on multi-family home permits
Density Restriction Importance Index (author-constructed)	Single family density restriction importance to regulating rate of residential development (1-5)
	Multi-family density restriction importance to regulating rate of residential development (1-5)

Table 27 - Descriptive Statistics - Wharton Survey Indices

1995 Metro Area	Wharton Residential Land Use Regulation Index	Supply Restrictions Index	Density Restrictions Index	Local Assembly Index	Local Project Approval Index	State Political Involvement Index	State Court Involvement Index	Local Zoning Approval Index	Local Project Approval Index	Open Space Index	Exactions Index	Approval Delay Index
Akron, OH PMSA	0.07	0.66	0.12	0.00	-0.15	-1.11	1.00	2.00	1.63	0.67	0.54	9.08
Allentown-Bethlehem-Easton, PA MSA	0.02	0.21	0.13	0.00	-0.79	0.66	1.00	2.20	1.56	0.60	0.62	5.67
Ann Arbor, MI PMSA	0.39	0.00	0.32	0.00	0.41	0.59	2.00	2.15	1.57	0.49	0.69	6.83
Atlanta, GA MSA	0.03	0.44	0.28	0.00	0.42	0.11	2.00	2.19	1.38	0.60	0.60	4.79
Bergen-Passaic, NJ PMSA	0.67	0.27	0.29	0.00	0.81	1.42	1.00	1.81	1.52	0.33	0.74	5.76
Boston, MA-NH PMSA	1.68	0.16	0.61	0.57	0.46	1.33	2.04	1.75	2.03	0.31	0.30	9.30
Buffalo-Niagara Falls, NY MSA	-0.23	0.72	0.00	0.00	-0.24	-1.00	2.00	2.01	2.07	0.71	0.77	4.97
Burlington, VT MSA	1.18	0.95	0.46	0.13	-0.34	0.76	3.00	1.99	1.61	0.71	0.78	12.41
Charlotte-Gastonia-Rock Hill, NC-SC MSA	-0.40	0.31	0.16	0.00	0.04	-0.21	2.00	1.89	1.10	0.25	0.38	3.35
Chicago, IL PMSA	0.01	0.33	0.13	0.00	0.33	-0.93	2.00	2.33	1.63	0.75	0.91	6.94
Cincinnati, OH-KY-IN PMSA	-0.61	0.29	0.27	0.00	-0.11	-0.93	1.48	2.18	1.43	0.17	0.64	4.18
Cleveland-Lorain-Elyria, OH PMSA	-0.16	0.37	0.16	0.00	0.04	-1.11	1.00	1.83	1.88	0.53	0.64	6.52
Columbus, OH MSA	0.26	0.00	0.43	0.00	1.11	-1.11	1.00	1.82	1.50	0.92	0.78	5.56
Dallas, TX PMSA	-0.23	0.13	0.16	0.00	0.04	-0.47	2.00	2.30	1.31	0.83	0.89	4.97
Dayton-Springfield, OH MSA	-0.46	0.00	0.15	0.00	0.16	-1.11	1.00	2.18	1.29	0.71	0.68	4.36
Denver, CO PMSA	0.86	0.62	0.22	0.00	0.74	0.57	2.00	2.28	2.10	0.77	0.85	8.21
Des Moines, IA MSA	-0.84	0.00	0.00	0.00	-0.10	-1.11	2.00	1.98	1.73	0.42	0.66	3.10
Detroit, MI PMSA	0.05	0.13	0.21	0.00	-0.19	0.59	2.00	1.94	1.40	0.42	0.54	6.34
Fort Lauderdale, FL PMSA	0.72	0.00	0.20	0.00	0.63	0.54	2.00	1.96	1.75	0.95	0.95	8.12
Fort Worth-Arlington, TX PMSA	-0.27	0.58	0.04	0.00	0.13	-0.47	2.00	2.22	1.60	0.55	1.00	4.71
Grand Rapids-Muskegon-Holland, MI MSA	-0.14	0.00	0.13	0.00	-0.11	0.59	2.00	1.98	1.24	0.49	0.93	4.85
Harrisburg-Lebanon-Carlisle, PA MSA	0.54	0.05	0.29	0.00	-0.14	0.66	1.00	1.62	2.08	0.85	0.67	6.08
Hartford, CT MSA	0.48	0.15	0.72	0.00	0.00	0.00	2.00	1.51	1.95	0.81	0.34	6.06
Honolulu, HI MSA	2.30	0.00	1.00	0.00	1.79	0.19	2.00	1.00	1.00	1.00	1.00	17.28
Houston, TX PMSA	-0.40	0.44	0.35	0.00	0.02	-0.47	2.00	1.27	1.44	0.36	0.64	2.89
Indianapolis, IN MSA	-0.74	0.05	0.18	0.00	0.13	-1.68	3.00	1.75	1.25	0.60	0.91	4.34
Kansas City, MO-KS MSA	-0.79	0.06	0.12	0.00	-0.09	-1.71	3.00	2.31	1.55	0.61	0.87	4.83
Lancaster, PA MSA	0.29	0.13	0.20	0.00	-0.60	0.66	1.00	1.99	1.54	0.76	0.92	7.42
Los Angeles-Long Beach, CA PMSA	0.49	0.00	0.20	0.00	0.03	1.02	3.00	1.89	1.72	0.64	0.72	8.42

1995 Metro Area	Wharton Residential Land Use Regulation Index	Supply Restrictions Index	Density Restrictions Index	Local Assembly Index	Local Project Approval Index	State Political Involvement Index	State Court Involvement Index	Local Zoning Approval Index	Local Project Approval Index	Open Space Index	Exactions Index	Approval Delay Index
Miami, FL PMSA	0.94	1.08	0.30	0.00	0.65	0.54	2.00	2.29	1.65	0.95	1.00	8.35
Middlesex-Somerset-Hunterdon, NJ PMSA	1.19	0.00	0.19	0.00	1.29	1.42	1.00	1.50	1.48	0.53	0.81	9.15
Milwaukee-Waukesha, WI PMSA	0.46	0.28	0.18	0.00	0.08	0.45	3.00	2.00	2.01	0.69	0.90	8.26
Minneapolis-St. Paul, MN-WI MSA	0.37	0.38	0.12	0.00	0.00	0.54	2.07	1.29	1.27	0.92	0.88	5.10
Monmouth-Ocean, NJ PMSA	1.58	0.05	0.58	0.00	1.56	1.42	1.00	2.38	1.72	0.55	0.72	10.30
Nashville, TN MSA	-0.41	0.00	0.36	0.00	-0.17	-0.32	3.00	1.89	1.43	0.24	0.89	4.89
Nassau-Suffolk, NY PMSA	0.70	2.06	0.29	0.00	0.43	-1.00	2.00	2.24	2.01	0.32	0.51	11.54
New Haven-Meriden, CT PMSA	0.00	0.00	0.59	0.00	-0.05	0.00	2.00	2.39	1.70	0.55	0.49	4.41
New London-Norwich, CT-RI MSA	0.38	0.00	0.77	0.00	-0.59	0.00	2.00	1.65	2.05	0.90	0.19	6.42
New York, NY PMSA	0.65	0.00	0.42	0.00	0.06	-1.00	2.00	1.62	2.78	0.65	0.70	11.35
Newark, NJ PMSA	0.68	0.07	0.39	0.00	0.49	1.42	1.00	1.98	1.86	0.30	0.53	6.16
Oakland, CA PMSA	0.62	0.00	0.13	0.00	-0.28	1.02	3.00	1.89	1.38	0.81	1.00	10.61
Oklahoma City, OK MSA	-0.37	0.00	0.29	0.00	-0.05	-0.99	2.00	2.05	1.70	0.75	0.81	3.77
Orange County, CA PMSA	0.35	0.38	0.12	0.00	-0.23	1.02	3.00	2.03	1.52	0.86	0.90	6.92
Orlando, FL MSA	0.32	0.00	0.32	0.00	0.28	0.54	2.00	1.95	1.64	0.63	1.00	5.82
Philadelphia, PA-NJ PMSA	1.13	0.08	0.58	0.00	0.62	0.66	1.00	1.95	2.07	0.62	0.65	9.46
Phoenix-Mesa, AZ MSA	0.64	0.00	0.29	0.00	0.14	1.18	3.00	2.20	1.62	0.96	1.00	7.28
Pittsburgh, PA MSA	0.10	0.05	0.27	0.00	-0.21	0.66	1.00	2.04	1.70	0.52	0.67	4.88
Portland-Vancouver, OR-WA PMSA	0.27	0.00	0.00	0.00	0.16	1.21	2.00	1.74	1.11	0.55	1.00	6.90
Providence-Fall River-Warwick, RI-MA MSA	1.94	0.63	0.80	0.09	1.18	1.80	2.00	1.39	1.60	0.63	0.41	10.95
Provo-Orem, UT MSA	0.21	0.92	0.24	0.00	-0.13	0.20	3.00	1.54	1.92	0.51	1.00	6.37
Raleigh-Durham-Chapel Hill, NC MSA	0.50	0.46	0.08	0.00	1.25	-0.21	2.00	2.08	1.85	0.83	1.00	6.66
Riverside-San Bernardino, CA PMSA	0.53	0.25	0.37	0.00	0.01	1.02	3.00	1.92	1.57	0.72	0.92	7.09
Rochester, NY MSA	-0.06	0.55	0.43	0.00	-0.43	-1.00	2.00	1.99	2.00	0.70	0.75	6.41
St. Louis, MO-IL MSA	-0.73	0.10	0.14	0.00	0.11	-1.53	2.75	2.06	1.62	0.43	0.77	4.35
Salt Lake City-Ogden, UT MSA	-0.03	0.43	0.06	0.00	-0.21	0.20	3.00	1.95	1.99	0.60	0.88	5.89
San Antonio, TX MSA	-0.21	0.00	0.27	0.00	0.59	-0.47	2.00	2.08	1.58	0.47	0.86	3.89
San Diego, CA MSA	0.40	0.16	0.00	0.00	0.06	1.02	3.00	1.81	1.73	0.78	0.86	7.50
San Francisco, CA PMSA	0.72	0.00	0.08	0.00	0.34	1.02	3.00	1.84	1.61	0.73	0.58	10.22
Scranton--Wilkes-Barre--Hazleton, PA MSA	0.01	0.00	0.25	0.00	-0.44	0.66	1.00	2.20	1.78	0.47	0.78	4.91
Seattle-Bellevue-Everett, WA PMSA	0.93	0.19	0.15	0.00	0.00	2.42	2.00	1.64	1.04	0.70	0.93	8.25
Springfield, MA MSA	0.75	0.06	0.52	0.38	-0.14	1.35	2.00	1.59	1.57	0.08	0.27	6.22

1995 Metro Area	Wharton Residential Land Use Regulation Index	Supply Restrictions Index	Density Restrictions Index	Local Assembly Index	Local Project Approval Index	State Political Involvement Index	State Court Involvement Index	Local Zoning Approval Index	Local Project Approval Index	Open Space Index	Exactions Index	Approval Delay Index
Tampa-St. Petersburg-Clearwater, FL MSA	-0.22	0.00	0.10	0.00	-0.41	0.54	2.00	2.42	0.88	0.55	0.70	6.07
Toledo, OH MSA	-0.57	0.14	0.07	0.00	0.03	-1.11	1.00	1.85	1.30	0.56	0.93	4.21
Washington, DC-MD-VA-WV PMSA	0.45	0.20	0.07	0.00	0.28	0.40	2.00	1.57	1.75	0.46	0.72	9.03
West Palm Beach-Boca Raton, FL MSA	0.31	0.00	0.32	0.00	0.19	0.54	2.00	1.83	1.25	0.80	0.86	5.76
Number of Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Min	**-0.84**	**0.00**	**0.00**	**0.00**	**-0.79**	**-1.71**	**1.00**	**1.00**	**0.88**	**0.08**	**0.19**	**2.89**
Max	**2.30**	**2.06**	**1.00**	**0.57**	**1.79**	**2.42**	**3.00**	**2.42**	**2.78**	**1.00**	**1.00**	**17.28**
Mean	**0.30**	**0.24**	**0.27**	**0.02**	**0.17**	**0.18**	**1.99**	**1.93**	**1.62**	**0.62**	**0.75**	**6.81**
Median	**0.31**	**0.13**	**0.22**	**0.00**	**0.04**	**0.54**	**2.00**	**1.96**	**1.61**	**0.62**	**0.78**	**6.34**
Standard Deviation	**0.64**	**0.35**	**0.21**	**0.09**	**0.51**	**0.95**	**0.68**	**0.29**	**0.32**	**0.21**	**0.20**	**2.58**

Table 28 - Descriptive Statistics - Wharton Survey Individual Measures and Author-Constructed Indices

1995 Metro Area	Minimum Lot Size Req.	>1 Acre Minimum Lot Size Req.	Affordable Housing Req.	Multi-family Density Restrictions Importance (1-5)	Single Family Density Restrictions Importance (1-5)	Multi-family "Under-zoned" Compared to Demand (1-5)	Single Family "Under-zoned" Compared to Demand (1-5)	Single Family Development Limit Index	Multi Family Development Limit Index	Density Restriction Importance Index
Akron, OH PMSA	0.72	0.16	0.12	3.19	3.62	3.73	3.53	0.10	0.28	6.92
Allentown-Bethlehem-Easton, PA MSA	0.73	0.28	0.00	3.15	2.94	3.14	3.12	0.00	0.14	6.09
Ann Arbor, MI PMSA	0.85	0.48	0.00	4.00	3.95	3.31	3.00	0.00	0.00	7.94
Atlanta, GA MSA	0.89	0.57	0.14	4.20	3.99	3.22	3.19	0.00	0.24	8.19
Bergen-Passaic, NJ PMSA	0.87	0.41	0.59	3.80	3.42	3.80	3.42	0.00	0.12	7.14
Boston, MA-NH PMSA	0.94	0.74	0.40	3.67	3.38	4.37	3.59	0.04	0.04	6.95
Buffalo-Niagara Falls, NY MSA	1.00	0.00	0.29	3.14	2.96	3.05	2.78	0.00	0.40	6.10
Burlington, VT MSA	0.91	1.00	0.28	3.70	3.50	3.77	3.67	0.32	0.32	6.98
Charlotte-Gastonia-Rock Hill, NC-SC MSA	0.92	0.31	0.11	3.10	2.36	3.43	2.88	0.00	0.16	5.46
Chicago, IL PMSA	0.86	0.21	0.13	4.05	3.65	3.76	3.57	0.06	0.09	7.68
Cincinnati, OH-KY-IN PMSA	0.91	0.46	0.08	3.41	3.37	3.82	3.76	0.00	0.13	6.62
Cleveland-Lorain-Elyria, OH PMSA	0.89	0.22	0.08	3.59	3.12	3.41	3.16	0.08	0.14	6.86
Columbus, OH MSA	0.74	0.78	0.00	3.85	3.51	3.97	3.23	0.00	0.00	7.36
Dallas, TX PMSA	0.80	0.22	0.18	3.30	3.75	3.76	3.09	0.07	0.00	7.06
Dayton-Springfield, OH MSA	0.91	0.19	0.06	3.59	3.37	3.62	3.44	0.00	0.00	6.89
Denver, CO PMSA	0.73	0.33	0.16	2.94	2.59	3.67	3.61	0.31	0.08	5.40
Des Moines, IA MSA	0.95	0.00	0.10	2.40	2.23	3.54	2.97	0.00	0.00	4.63
Detroit, MI PMSA	0.81	0.29	0.10	3.39	3.03	3.28	3.12	0.03	0.03	6.48
Fort Lauderdale, FL PMSA	0.87	0.28	0.28	4.12	3.56	3.93	3.48	0.00	0.00	7.71
Fort Worth-Arlington, TX PMSA	0.69	0.06	0.02	3.65	3.25	3.28	3.32	0.00	0.27	6.85
Grand Rapids-Muskegon-Holland, MI MSA	0.80	0.22	0.00	3.57	3.14	3.52	3.21	0.00	0.00	6.71
Harrisburg-Lebanon-Carlisle, PA MSA	0.89	0.46	0.05	3.03	3.22	3.22	3.33	0.00	0.00	6.25
Hartford, CT MSA	0.97	0.84	0.14	3.32	3.06	3.32	2.95	0.00	0.07	6.30
Honolulu, HI MSA	1.00	1.00	1.00	5.00	5.00	4.00	4.00	0.00	0.00	10.00
Houston, TX PMSA	0.90	0.42	0.00	2.55	3.28	2.61	3.21	0.09	0.19	5.47
Indianapolis, IN MSA	0.81	0.34	0.10	4.17	3.68	3.38	2.21	0.00	0.00	7.85
Kansas City, MO-KS MSA	0.82	0.18	0.11	3.01	2.55	3.48	3.22	0.00	0.03	5.56
Lancaster, PA MSA	0.79	0.28	0.16	3.64	3.32	3.79	4.03	0.00	0.00	6.94
Los Angeles-Long Beach, CA PMSA	0.69	0.37	0.26	3.73	3.20	4.16	3.90	0.00	0.00	6.81
Miami, FL PMSA	0.65	0.32	0.78	4.74	4.07	4.08	3.95	0.23	0.59	8.70

1995 Metro Area	Minimum Lot Size Req.	>1 Acre Minimum Lot Size Req.	Affordable Housing Req.	Multi-family Density Restrictions Importance (1-5)	Single Family Density Restrictions Importance (1-5)	Multi-family "Under-zoned" Compared to Demand (1-5)	Single Family "Under-zoned" Compared to Demand (1-5)	Single Family Development Limit Index	Multi Family Development Limit Index	Density Restriction Importance Index
Middlesex-Somerset-Hunterdon, NJ PMSA	0.83	0.29	0.58	3.90	3.32	3.76	3.99	0.00	0.00	7.22
Milwaukee-Waukesha, WI PMSA	0.77	0.31	0.10	3.86	3.04	3.88	3.66	0.00	0.11	6.79
Minneapolis-St. Paul, MN-WI MSA	0.93	0.31	0.14	3.46	3.21	3.58	3.34	0.05	0.13	6.59
Monmouth-Ocean, NJ PMSA	0.84	0.69	0.68	4.37	4.13	3.97	4.23	0.00	0.00	8.49
Nashville, TN MSA	0.94	0.74	0.00	3.60	3.38	3.54	3.33	0.00	0.00	6.98
Nassau-Suffolk, NY PMSA	0.93	0.29	0.15	4.82	4.75	4.82	3.63	0.08	0.96	9.57
New Haven-Meriden, CT PMSA	1.00	0.67	0.32	4.43	4.34	3.38	4.22	0.00	0.00	8.86
New London-Norwich, CT-RI MSA	1.00	0.85	0.00	4.23	3.63	3.65	2.32	0.00	0.00	7.86
New York, NY PMSA	0.97	0.55	0.33	4.45	4.43	4.12	3.93	0.00	0.00	8.88
Newark, NJ PMSA	0.90	0.54	0.54	3.54	3.36	3.92	3.89	0.00	0.04	6.79
Oakland, CA PMSA	0.50	0.23	0.83	2.27	2.23	3.66	3.86	0.00	0.00	4.50
Oklahoma City, OK MSA	0.91	0.38	0.18	3.49	2.81	3.54	2.61	0.00	0.00	6.30
Orange County, CA PMSA	0.87	0.23	0.47	3.29	2.73	4.19	4.34	0.15	0.23	6.02
Orlando, FL MSA	0.78	0.43	0.06	3.90	3.56	3.56	3.86	0.00	0.00	7.47
Philadelphia, PA-NJ PMSA	0.86	0.58	0.34	3.71	3.64	3.66	3.29	0.00	0.03	7.48
Phoenix-Mesa, AZ MSA	1.00	0.49	0.06	3.80	3.57	3.50	3.10	0.00	0.00	7.37
Pittsburgh, PA MSA	0.83	0.31	0.10	3.32	3.06	3.26	2.94	0.00	0.02	6.50
Portland-Vancouver, OR-WA PMSA	0.89	0.00	0.15	3.19	3.34	3.41	3.51	0.00	0.00	6.49
Providence-Fall River-Warwick, RI-MA MSA	0.95	0.84	0.11	4.53	4.54	3.92	2.98	0.45	0.00	9.00
Provo-Orem, UT MSA	0.77	0.43	0.24	3.75	4.02	3.57	3.09	0.14	0.27	7.78
Raleigh-Durham-Chapel Hill, NC MSA	0.83	0.11	0.17	3.27	3.12	2.08	1.84	0.35	0.12	6.39
Riverside-San Bernardino, CA PMSA	0.90	0.56	0.21	2.84	2.95	3.16	3.21	0.04	0.16	5.51
Rochester, NY MSA	0.87	0.48	0.37	3.10	3.04	3.19	3.13	0.14	0.28	6.15
St. Louis, MO-IL MSA	0.75	0.22	0.21	3.58	3.46	3.66	3.70	0.00	0.00	6.89
Salt Lake City-Ogden, UT MSA	0.77	0.12	0.15	3.82	2.91	3.25	3.22	0.00	0.23	6.73
San Antonio, TX MSA	0.95	0.41	0.10	3.31	3.54	4.15	3.31	0.00	0.00	6.52
San Diego, CA MSA	0.92	0.00	0.56	3.29	2.86	3.77	3.57	0.00	0.08	6.15
San Francisco, CA PMSA	0.28	0.11	0.62	3.30	2.82	3.75	3.81	0.00	0.00	5.77
Scranton--Wilkes-Barre--Hazleton, PA MSA	0.79	0.31	0.00	2.11	1.98	3.38	3.25	0.00	0.00	4.10
Seattle-Bellevue-Everett, WA PMSA	0.76	0.21	0.06	2.24	2.59	3.44	3.88	0.04	0.08	4.83
Springfield, MA MSA	0.93	0.69	0.00	2.55	2.36	3.67	3.23	0.03	0.00	5.05
Tampa-St. Petersburg-Clearwater, FL MSA	0.61	0.17	0.00	3.73	3.62	3.62	3.63	0.00	0.00	7.36

1995 Metro Area	Minimum Lot Size Req.	>1 Acre Minimum Lot Size Req.	Affordable Housing Req.	Multi-family Density Restrictions Importance (1-5)	Single Family Density Restrictions Importance (1-5)	Multi-family "Under-zoned" Compared to Demand (1-5)	Single Family "Under-zoned" Compared to Demand (1-5)	Single Family Development Limit Index	Multi Family Development Limit Index	Density Restriction Importance Index
Toledo, OH MSA	0.92	0.12	0.00	2.76	2.76	2.82	2.76	0.00	0.07	5.51
Washington, DC-MD-VA-WV PMSA	0.66	0.14	0.12	2.86	2.74	3.93	3.55	0.10	0.00	5.60
West Palm Beach-Boca Raton, FL MSA	0.87	0.44	0.09	3.69	3.56	3.95	4.14	0.00	0.00	7.24
Number of Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Min	**0.28**	**0.00**	**0.00**	**2.11**	**1.98**	**2.08**	**1.84**	**0.00**	**0.00**	**4.10**
Max	**1.00**	**1.00**	**1.00**	**5.00**	**5.00**	**4.82**	**4.34**	**0.45**	**0.96**	**10.00**
Mean	**0.84**	**0.38**	**0.21**	**3.53**	**3.31**	**3.60**	**3.39**	**0.04**	**0.09**	**6.81**
Median	**0.87**	**0.31**	**0.14**	**3.58**	**3.32**	**3.62**	**3.33**	**0.00**	**0.02**	**6.81**
Standard Deviation	**0.12**	**0.24**	**0.23**	**0.61**	**0.60**	**0.41**	**0.48**	**0.09**	**0.16**	**1.18**

Table 29 - Descriptive Statistics - Pendall Survey Indices

1995 Metro Area	Growth Management Index	Density Restrictions Index	Affordable Housing Incentive Index
Akron, OH PMSA	-1.07	0.98	0.75
Allentown-Bethlehem-Easton, PA MSA	--	--	--
Ann Arbor, MI PMSA	-0.80	0.67	1.21
Atlanta, GA MSA	-1.06	0.85	0.61
Bergen-Passaic, NJ PMSA	-1.00	0.44	-0.28
Boston, MA-NH PMSA	-0.87	1.25	-1.17
Buffalo-Niagara Falls, NY MSA	-1.17	1.79	1.13
Burlington, VT MSA	--	--	--
Charlotte-Gastonia-Rock Hill, NC-SC MSA	-0.97	0.32	0.27
Chicago, IL PMSA	-0.78	0.19	1.03
Cincinnati, OH-KY-IN PMSA	-0.57	0.97	0.83
Cleveland-Lorain-Elyria, OH PMSA	-1.09	1.58	1.58
Columbus, OH MSA	-0.83	1.36	0.98
Dallas, TX PMSA	-0.78	-0.31	0.75
Dayton-Springfield, OH MSA	--	--	--
Denver, CO PMSA	4.11	-0.64	0.12
Des Moines, IA MSA	--	--	--
Detroit, MI PMSA	-0.49	0.79	1.31
Fort Lauderdale, FL PMSA	-0.80	-1.06	-0.52
Fort Worth-Arlington, TX PMSA	-0.55	-0.22	1.22
Grand Rapids-Muskegon-Holland, MI MSA	-0.72	1.25	1.43
Harrisburg-Lebanon-Carlisle, PA MSA	--	--	--
Hartford, CT MSA	-1.02	-0.25	-0.26
Honolulu, HI MSA	--	--	--
Houston, TX PMSA	-1.17	1.69	-0.16
Indianapolis, IN MSA	-0.73	0.22	0.98
Kansas City, MO-KS MSA	-0.77	1.00	1.48
Lancaster, PA MSA	--	--	--
Los Angeles-Long Beach, CA PMSA	-0.82	-2.33	-1.53
Miami, FL PMSA	-0.12	-0.33	-0.01
Middlesex-Somerset-Hunterdon, NJ PMSA	-1.06	-0.03	-1.71
Milwaukee-Waukesha, WI PMSA	-0.32	0.76	1.52
Minneapolis-St. Paul, MN-WI MSA	0.27	0.00	0.25
Monmouth-Ocean, NJ PMSA	-0.93	-0.41	-1.43
Nashville, TN MSA	4.58	-0.14	0.05
Nassau-Suffolk, NY PMSA	-1.17	-0.40	-0.36

1995 Metro Area	Growth Management Index	Density Restrictions Index	Affordable Housing Incentive Index
New Haven-Meriden, CT PMSA	-1.17	-0.52	-0.15
New London-Norwich, CT-RI MSA	--	--	--
New York, NY PMSA	-0.90	-0.57	-0.68
Newark, NJ PMSA	-1.07	-0.01	-0.89
Oakland, CA PMSA	1.54	-2.94	-3.24
Oklahoma City, OK MSA	0.13	0.19	1.10
Orange County, CA PMSA	0.30	-2.83	-2.50
Orlando, FL MSA	-0.83	-1.35	-1.35
Philadelphia, PA-NJ PMSA	-0.89	0.89	0.89
Phoenix-Mesa, AZ MSA	0.62	-0.14	-0.61
Pittsburgh, PA MSA	-0.97	1.44	1.32
Portland-Vancouver, OR-WA PMSA	5.00	-1.23	-0.33
Providence-Fall River-Warwick, RI-MA MSA	--	--	--
Provo-Orem, UT MSA	--	--	--
Raleigh-Durham-Chapel Hill, NC MSA	2.04	0.58	-0.65
Riverside-San Bernardino, CA PMSA	--	--	--
Rochester, NY MSA	-0.91	1.78	1.50
St. Louis, MO-IL MSA	-0.95	0.50	0.91
Salt Lake City-Ogden, UT MSA	0.14	-0.62	0.19
San Antonio, TX MSA	-0.45	-0.37	-1.44
San Diego, CA MSA	-0.42	-3.32	-3.28
San Francisco, CA PMSA	1.03	-2.00	-3.13
Scranton--Wilkes-Barre--Hazleton, PA MSA	--	--	--
Seattle-Bellevue-Everett, WA PMSA	5.81	-1.40	-0.99
Springfield, MA MSA	--	--	--
Tampa-St. Petersburg-Clearwater, FL MSA	2.06	-0.24	-0.48
Toledo, OH MSA	--	--	--
Washington, DC-MD-VA-WV PMSA	1.22	-0.67	0.07
West Palm Beach-Boca Raton, FL MSA	-0.05	-0.13	-0.51
Number of Observations	**51**	**51**	**51**
Min	**-1.17**	**-3.32**	**-3.28**
Max	**5.81**	**1.79**	**1.58**
Mean	**-0.03**	**-0.06**	**-0.08**
Median	**-0.78**	**-0.03**	**0.05**
Standard Deviation	**1.66**	**1.20**	**1.27**

Table 30 - Descriptive Statistics - Household Level Variables, 2005-09

Variable	Obs	Mean	Std. Dev.	Min	Median	Max
Owner Cost to Income Ratio	1,862,196	0.95	88.98	0.00	0.22	52,416
Renter Cost to Income Ratio	778,926	1.47	70.40	0.00	0.29	18,744
Foreign-born [head]	2,641,122	0.18	0.39	0.00	0.00	1
Under Age 18 [head]	2,641,122	0.00	0.02	0.00	0.00	1
Age 65 or Older [head]	2,641,122	0.22	0.42	0.00	0.00	1
Has Bachelor's Degree [head]	2,641,122	0.37	0.48	0.00	0.00	1
Unemployed [head]	2,640,963	0.03	0.18	0.00	0.00	1
Number of own family members in household [of head]	2,641,122	2.43	1.46	1.00	2.00	20
Household contains children	2,641,122	0.41	0.49	0.00	0.00	1
Single Family Housing Unit	2,641,122	0.08	0.27	0.00	0.00	1
Housing Structure Built before 1960	2,767,498	0.37	0.48	0.00	0.00	1
Number of rooms	2,641,122	5.79	1.97	1.00	6.00	9

Table 31 - Descriptive Statistics - Metropolitan Geographic Characteristics, 2005-09

1995 Metro	Metro in Census South Region	Metro in Census Midwest Region	Metro in Census Northeast Region	Metro in Census West Region	Metro is On Sea, Ocean, Bay, or Great Lake Coast	Multi-State Metro	Metro Borders Another Metro	Metro Contains at Least One Mountain Range
Akron, OH PMSA	0	1	0	0	0	0	1	0
Allentown-Bethlehem-Easton, PA MSA	0	0	1	0	0	0	1	1
Ann Arbor, MI PMSA	0	1	0	0	0	0	1	0
Atlanta, GA MSA	1	0	0	0	0	0	1	1
Bergen-Passaic, NJ PMSA	0	0	1	0	0	0	1	1
Boston, MA-NH PMSA	0	0	1	0	1	1	1	0
Buffalo-Niagara Falls, NY MSA	0	0	1	0	1	0	1	0
Burlington, VT MSA	0	0	1	0	0	0	0	1
Charlotte-Gastonia-Rock Hill, NC-SC MSA	1	0	0	0	0	1	1	0
Chicago, IL PMSA	0	1	0	0	1	0	1	0
Cincinnati, OH-KY-IN PMSA	0	1	0	0	0	1	1	0
Cleveland-Lorain-Elyria, OH PMSA	0	1	0	0	1	0	1	0
Columbus, OH MSA	0	1	0	0	0	0	1	0
Dallas, TX PMSA	1	0	0	0	0	0	1	0
Dayton-Springfield, OH MSA	0	1	0	0	0	0	1	0
Denver, CO PMSA	0	0	0	1	0	0	1	1
Des Moines, IA MSA	0	1	0	0	0	0	1	0
Detroit, MI PMSA	0	1	0	0	1	0	1	0
Fort Lauderdale, FL PMSA	1	0	0	0	1	0	1	0
Fort Worth-Arlington, TX PMSA	1	0	0	0	0	0	1	0
Grand Rapids-Muskegon-Holland, MI MSA	0	1	0	0	1	0	1	0
Harrisburg-Lebanon-Carlisle, PA MSA	0	0	1	0	0	0	1	1
Hartford, CT MSA	0	0	1	0	0	0	1	0

1995 Metro	Metro in Census South Region	Metro in Census Midwest Region	Metro in Census Northeast Region	Metro in Census West Region	Metro is On Sea, Ocean, Bay, or Great Lake Coast	Multi-State Metro	Metro Borders Another Metro	Metro Contains at Least One Mountain Range
Honolulu, HI MSA	0	0	0	1	1	0	0	1
Houston, TX PMSA	1	0	0	0	0	0	1	0
Indianapolis, IN MSA	0	1	0	0	0	0	1	0
Kansas City, MO-KS MSA	0	1	0	0	0	1	1	0
Lancaster, PA MSA	0	0	1	0	0	0	1	0
Los Angeles-Long Beach, CA PMSA	0	0	0	1	1	0	1	1
Miami, FL PMSA	1	0	0	0	1	0	1	0
Middlesex-Somerset-Hunterdon, NJ PMSA	0	0	1	0	1	0	1	0
Milwaukee-Waukesha, WI PMSA	0	1	0	0	1	0	1	0
Minneapolis-St. Paul, MN-WI MSA	0	1	0	0	0	1	1	0
Monmouth-Ocean, NJ PMSA	0	0	1	0	1	0	1	0
Nashville, TN MSA	1	0	0	0	0	0	1	0
Nassau-Suffolk, NY PMSA	0	0	1	0	1	0	1	0
New Haven-Meriden, CT PMSA	0	0	1	0	1	0	1	0
New London-Norwich, CT-RI MSA	0	0	1	0	1	1	1	0
New York, NY PMSA	0	0	1	0	1	0	1	1
Newark, NJ PMSA	0	0	1	0	0	0	1	1
Oakland, CA PMSA	0	0	0	1	1	0	1	1
Oklahoma City, OK MSA	1	0	0	0	0	0	1	0
Orange County, CA PMSA	0	0	0	1	1	0	1	1
Orlando, FL MSA	1	0	0	0	0	0	1	0
Philadelphia, PA-NJ PMSA	0	0	1	0	0	1	1	0
Phoenix-Mesa, AZ MSA	0	0	0	1	0	0	1	1
Pittsburgh, PA MSA	0	0	1	0	0	0	1	0

1995 Metro	Metro in Census South Region	Metro in Census Midwest Region	Metro in Census Northeast Region	Metro in Census West Region	Metro is On Sea, Ocean, Bay, or Great Lake Coast	Multi-State Metro	Metro Borders Another Metro	Metro Contains at Least One Mountain Range
Portland-Vancouver, OR-WA PMSA	0	0	0	1	0	1	1	1
Providence-Fall River-Warwick, RI-MA MSA	0	0	1	0	1	1	1	0
Provo-Orem, UT MSA	0	0	0	1	0	0	1	1
Raleigh-Durham-Chapel Hill, NC MSA	1	0	0	0	0	0	1	0
Riverside-San Bernardino, CA PMSA	0	0	0	1	0	0	1	1
Rochester, NY MSA	0	0	1	0	1	0	1	0
St. Louis, MO-IL MSA	0	1	0	0	0	0	1	0
Salt Lake City-Ogden, UT MSA	0	0	0	1	0	0	1	1
San Antonio, TX MSA	1	0	0	0	0	0	1	0
San Diego, CA MSA	0	0	0	1	1	0	1	1
San Francisco, CA PMSA	0	0	0	1	1	0	1	1
Scranton--Wilkes-Barre--Hazleton, PA MSA	0	0	1	0	0	0	1	1
Seattle-Bellevue-Everett, WA PMSA	0	0	0	1	1	0	1	1
Springfield, MA MSA	0	0	1	0	0	0	1	1
Tampa-St. Petersburg-Clearwater, FL MSA	1	0	0	0	1	0	1	0
Toledo, OH MSA	0	1	0	0	1	0	1	0
Washington, DC-MD-VA-WV PMSA	1	0	0	0	1	1	1	1
West Palm Beach-Boca Raton, FL MSA	1	0	0	0	1	0	1	0
Number of Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Min	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Max	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Mean	**0.23**	**0.25**	**0.32**	**0.20**	**0.43**	**0.15**	**0.97**	**0.35**
Median	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
Standard Deviation	**0.42**	**0.43**	**0.47**	**0.40**	**0.50**	**0.36**	**0.17**	**0.48**

Table 32 - Descriptive Statistics - Metropolitan Demographic and Economic Characteristics, 2005-09

1995 Metro	Total Population	Pop. Density	Water % of Metro Area	% Hispanic	% Black	% Under Age 18	% Age 65 or Older	% Foreign-born	Median Household Income	% of Over 25 with a Bachelors Degree	Unemp. Rate
Akron, OH PMSA	700,222	773.6	2.4%	1.2%	11.6%	23.0%	13.6%	3.5%	$48,267	27.7%	7.8%
Allentown-Bethlehem-Easton, PA MSA	693,543	629.6	1.0%	11.6%	3.8%	22.9%	15.2%	6.8%	$55,237	25.2%	6.5%
Ann Arbor, MI PMSA	628,874	310.0	2.0%	3.5%	7.0%	22.9%	10.2%	7.3%	$61,770	39.1%	7.8%
Atlanta, GA MSA	5,083,618	830.1	1.4%	9.6%	31.1%	27.2%	8.1%	13.0%	$59,723	34.7%	8.0%
Bergen-Passaic, NJ PMSA	1,377,339	3,283.6	5.5%	21.6%	7.6%	23.7%	13.9%	27.9%	$72,783	37.4%	5.7%
Boston, MA-NH PMSA	3,494,470	1,728.4	14.7%	7.4%	7.0%	21.4%	13.0%	17.2%	$73,831	44.4%	6.3%
Buffalo-Niagara Falls, NY MSA	1,128,813	720.3	33.8%	3.4%	11.8%	22.2%	15.6%	5.3%	$46,448	26.7%	7.1%
Burlington, VT MSA	175,104	311.5	23.6%	1.7%	1.2%	21.4%	10.7%	5.8%	$59,005	40.7%	5.0%
Charlotte-Gastonia-Rock Hill, NC-SC MSA	1,826,129	540.8	1.9%	8.3%	21.0%	26.1%	10.1%	8.8%	$52,865	30.3%	7.8%
Chicago, IL PMSA	8,601,629	1,699.1	24.6%	19.9%	17.7%	25.8%	10.8%	18.4%	$61,502	34.1%	8.2%
Cincinnati, OH-KY-IN PMSA	1,752,226	524.3	1.6%	1.8%	12.9%	25.0%	12.1%	3.4%	$53,408	28.4%	6.8%
Cleveland-Lorain-Elyria, OH PMSA	2,203,196	813.9	49.4%	4.2%	18.5%	23.9%	14.6%	5.4%	$47,982	25.7%	8.8%
Columbus, OH MSA	1,676,690	533.8	0.9%	3.1%	14.2%	24.7%	10.2%	6.5%	$53,330	32.7%	6.8%
Dallas, TX PMSA	4,196,616	678.4	4.7%	28.1%	14.6%	28.0%	8.2%	18.9%	$56,994	31.5%	6.8%
Dayton-Springfield, OH MSA	938,089	557.2	0.6%	1.8%	14.1%	23.2%	14.5%	2.8%	$46,798	23.7%	8.1%
Denver, CO PMSA	2,344,519	623.4	0.5%	22.4%	5.5%	25.4%	9.7%	12.5%	$60,516	37.1%	6.2%
Des Moines, IA MSA	517,256	299.4	1.7%	6.0%	4.2%	25.6%	11.0%	6.4%	$57,424	33.1%	4.6%
Detroit, MI PMSA	4,423,366	1,135.1	10.0%	3.7%	22.7%	25.0%	12.4%	8.6%	$53,117	25.6%	11.6%
Fort Lauderdale, FL PMSA	1,759,132	1,459.4	8.7%	23.1%	23.8%	23.5%	13.9%	29.6%	$51,731	29.3%	7.5%
Fort Worth-Arlington, TX PMSA	2,012,704	689.8	2.0%	23.4%	11.9%	27.9%	9.1%	13.8%	$54,856	26.8%	6.8%
Grand Rapids-Muskegon-Holland, MI MSA	1,147,350	415.9	52.4%	7.9%	7.0%	26.2%	11.2%	5.9%	$50,405	26.2%	8.8%
Harrisburg-Lebanon-Carlisle, PA MSA	657,188	330.1	1.8%	4.4%	7.7%	22.3%	14.8%	4.1%	$54,586	25.7%	5.4%
Hartford, CT MSA	1,224,102	729.9	2.3%	11.4%	9.5%	23.0%	13.4%	11.5%	$68,071	33.0%	6.8%

1995 Metro	Total Population	Pop. Density	Water % of Metro Area	% Hispanic	% Black	% Under Age 18	% Age 65 or Older	% Foreign-born	Median Household Income	% of Over 25 with a Bachelors Degree	Unemp. Rate
Honolulu, HI MSA	902,564	1,504.9	71.8%	7.9%	3.1%	22.3%	14.5%	18.4%	$67,066	30.7%	4.2%
Houston, TX PMSA	4,969,306	839.4	6.1%	34.6%	17.2%	28.9%	7.9%	22.7%	$54,198	28.6%	6.8%
Indianapolis, IN MSA	1,775,105	503.9	0.5%	4.6%	13.8%	26.2%	10.9%	5.0%	$53,555	29.5%	7.4%
Kansas City, MO-KS MSA	1,951,845	361.0	1.4%	7.2%	12.0%	25.6%	11.4%	5.9%	$56,672	32.3%	6.5%
Lancaster, PA MSA	498,918	525.7	3.5%	7.2%	2.9%	25.3%	14.6%	4.0%	$54,893	23.2%	4.9%
Los Angeles-Long Beach, CA PMSA	9,785,295	2,409.7	14.5%	47.3%	8.6%	26.1%	10.3%	35.4%	$54,828	28.4%	7.7%
Miami, FL PMSA	2,457,044	1,262.6	20.0%	61.4%	18.1%	23.5%	14.1%	49.4%	$42,969	25.9%	7.6%
Middlesex-Somerset-Hunterdon, NJ PMSA	1,232,186	1,179.9	2.0%	14.4%	8.3%	24.1%	12.0%	24.0%	$84,388	41.7%	5.8%
Milwaukee-Waukesha, WI PMSA	1,546,312	1,059.2	56.1%	8.2%	15.8%	24.9%	12.4%	6.6%	$54,737	30.5%	7.0%
Minneapolis-St. Paul, MN-WI MSA	3,202,412	528.2	4.7%	4.6%	6.3%	25.1%	10.1%	8.8%	$65,040	37.3%	5.9%
Monmouth-Ocean, NJ PMSA	1,207,412	1,089.5	29.9%	7.7%	5.4%	23.9%	16.7%	10.3%	$71,230	31.8%	6.5%
Nashville, TN MSA	1,435,221	352.4	1.5%	5.7%	15.9%	24.6%	10.3%	7.1%	$53,753	30.5%	6.5%
Nassau-Suffolk, NY PMSA	2,865,169	2,389.9	57.6%	12.7%	8.6%	24.4%	13.8%	16.2%	$88,303	35.7%	5.1%
New Haven-Meriden, CT PMSA	551,971	1,283.9	4.6%	12.2%	13.2%	22.7%	13.6%	11.1%	$66,067	35.7%	7.2%
New London-Norwich, CT-RI MSA	300,843	454.3	15.4%	6.0%	4.6%	21.8%	14.3%	7.2%	$64,559	29.3%	5.7%
New York, NY PMSA	9,648,118	8,451.1	19.3%	25.9%	21.8%	23.2%	12.3%	34.0%	$55,754	34.4%	7.9%
Newark, NJ PMSA	2,040,037	1,293.1	2.3%	16.7%	21.3%	25.0%	12.2%	21.1%	$70,219	34.9%	7.2%
Oakland, CA PMSA	2,472,666	1,696.5	10.2%	21.7%	11.1%	24.2%	11.2%	27.3%	$72,560	39.0%	7.5%
Oklahoma City, OK MSA	1,177,560	277.3	1.3%	9.6%	10.0%	24.9%	11.7%	7.2%	$45,217	27.1%	5.6%
Orange County, CA PMSA	2,976,831	3,771.0	16.7%	33.2%	1.6%	25.5%	11.0%	30.0%	$73,738	35.2%	6.2%
Orlando, FL MSA	2,023,605	579.7	13.0%	22.5%	14.4%	24.3%	12.8%	15.7%	$50,616	27.3%	7.4%
Philadelphia, PA-NJ PMSA	5,283,750	1,370.5	2.6%	6.7%	19.9%	23.9%	13.2%	8.8%	$61,517	32.0%	7.6%
Phoenix-Mesa, AZ MSA	4,151,634	284.9	0.2%	30.5%	4.1%	27.3%	11.2%	16.4%	$54,780	27.3%	6.2%
Pittsburgh, PA MSA	2,291,453	495.4	1.1%	1.1%	8.0%	20.7%	17.2%	3.1%	$46,682	28.1%	6.3%
Portland-Vancouver, OR-WA PMSA	2,152,770	428.2	2.1%	10.0%	2.6%	24.2%	10.6%	12.1%	$56,276	33.0%	7.7%

1995 Metro	Total Population	Pop. Density	Water % of Metro Area	% Hispanic	% Black	% Under Age 18	% Age 65 or Older	% Foreign-born	Median Household Income	% of Over 25 with a Bachelors Degree	Unemp. Rate
Providence-Fall River-Warwick, RI-MA MSA	1,204,176	1,055.2	15.9%	10.5%	4.3%	22.3%	14.0%	13.0%	$56,361	27.7%	7.6%
Provo-Orem, UT MSA	504,990	252.7	6.7%	9.2%	0.5%	34.5%	6.4%	6.6%	$56,752	34.7%	5.2%
Raleigh-Durham-Chapel Hill, NC MSA	1,485,091	425.7	1.9%	9.0%	21.7%	25.2%	8.9%	11.2%	$57,643	42.4%	6.0%
Riverside-San Bernardino, CA PMSA	4,022,939	147.6	0.5%	44.9%	7.2%	30.1%	9.9%	21.5%	$56,870	19.3%	9.2%
Rochester, NY MSA	1,091,234	318.6	36.2%	4.9%	10.3%	23.2%	13.6%	6.1%	$51,325	30.5%	6.6%
St. Louis, MO-IL MSA	2,715,326	424.3	2.4%	2.2%	18.3%	24.5%	12.8%	4.1%	$53,696	29.0%	7.2%
Salt Lake City-Ogden, UT MSA	1,508,782	932.8	23.0%	13.9%	1.3%	30.0%	8.6%	9.7%	$58,001	29.0%	5.1%
San Antonio, TX MSA	1,841,077	553.5	0.8%	53.8%	6.3%	27.7%	10.6%	11.6%	$47,848	24.8%	6.3%
San Diego, CA MSA	2,987,543	711.3	7.2%	30.4%	4.9%	24.5%	11.2%	22.7%	$62,901	34.0%	6.4%
San Francisco, CA PMSA	1,745,868	1,719.1	43.6%	17.7%	4.6%	18.5%	13.9%	31.7%	$78,041	48.7%	6.1%
Scranton--Wilkes-Barre--Hazleton, PA MSA	613,738	274.9	1.5%	3.3%	2.0%	20.6%	17.8%	3.1%	$42,278	20.8%	6.1%
Seattle-Bellevue-Everett, WA PMSA	2,613,220	590.8	11.9%	7.3%	4.7%	22.5%	10.6%	17.0%	$66,315	40.1%	5.8%
Springfield, MA MSA	576,652	809.5	3.2%	16.0%	6.7%	22.6%	13.4%	8.6%	$49,894	27.5%	8.8%
Tampa-St. Petersburg-Clearwater, FL MSA	2,702,390	1,058.1	23.3%	14.1%	10.9%	21.9%	17.1%	11.9%	$46,462	25.5%	7.2%
Toledo, OH MSA	632,413	463.5	16.0%	5.3%	13.3%	24.0%	12.6%	3.3%	$45,195	22.3%	10.4%
Washington, DC-MD-VA-WV PMSA	5,498,564	844.7	5.9%	11.9%	25.2%	24.8%	9.7%	19.4%	$84,245	45.9%	5.3%
West Palm Beach-Boca Raton, FL MSA	1,268,601	642.6	17.3%	17.2%	15.5%	21.3%	21.3%	21.2%	$53,538	31.3%	7.7%
Number of Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Min	**175,104**	**148**	**0.2%**	**1.1%**	**0.5%**	**18.5%**	**6.4%**	**2.8%**	**$42,278**	**19.3%**	**4.2%**
Max	**9,785,295**	**8,451**	**71.8%**	**61.4%**	**31.1%**	**34.5%**	**21.3%**	**49.4%**	**$88,303**	**48.7%**	**11.6%**
Mean	**2,314,997**	**1,004**	**12.7%**	**14.2%**	**11.0%**	**24.5%**	**12.3%**	**13.4%**	**$58,271**	**31.4%**	**6.9%**
Median	**1,759,132**	**678**	**4.7%**	**9.6%**	**10.0%**	**24.3%**	**12.2%**	**11.1%**	**$55,754**	**30.5%**	**6.8%**
Standard Deviation	**2,028,963**	**1,163**	**16.5%**	**13.0%**	**6.9%**	**2.5%**	**2.6%**	**9.7%**	**$10,146**	**6.1%**	**1.3%**

Table 33 - Descriptive Statistics - Metropolitan Housing Characteristics, 2005-09

1995 Metro	Rent-Occupied Share of Occupied Housing	Med. Property Tax to Med. Home Value Ratio	Single Family Detached % of Metro Housing
Akron, OH PMSA	30.1%	1.5%	70.2%
Allentown-Bethlehem-Easton, PA MSA	26.4%	1.5%	56.2%
Ann Arbor, MI PMSA	27.2%	1.5%	66.6%
Atlanta, GA MSA	31.6%	0.9%	66.8%
Bergen-Passaic, NJ PMSA	36.0%	1.7%	50.1%
Boston, MA-NH PMSA	38.0%	2.0%	45.8%
Buffalo-Niagara Falls, NY MSA	32.6%	2.9%	58.3%
Burlington, VT MSA	32.9%	2.9%	57.1%
Charlotte-Gastonia-Rock Hill, NC-SC MSA	31.6%	0.9%	67.0%
Chicago, IL PMSA	32.3%	1.6%	49.8%
Cincinnati, OH-KY-IN PMSA	31.1%	1.3%	63.5%
Cleveland-Lorain-Elyria, OH PMSA	31.6%	1.6%	65.2%
Columbus, OH MSA	35.7%	1.5%	61.5%
Dallas, TX PMSA	38.3%	2.3%	61.3%
Dayton-Springfield, OH MSA	33.1%	1.5%	69.4%
Denver, CO PMSA	33.1%	0.7%	59.3%
Des Moines, IA MSA	28.0%	1.5%	66.1%
Detroit, MI PMSA	26.5%	1.7%	69.7%
Fort Lauderdale, FL PMSA	30.0%	1.1%	41.2%
Fort Worth-Arlington, TX PMSA	34.5%	2.5%	66.9%
Grand Rapids-Muskegon-Holland, MI MSA	23.8%	1.4%	69.2%
Harrisburg-Lebanon-Carlisle, PA MSA	28.9%	1.4%	57.0%
Hartford, CT MSA	30.9%	3.3%	58.7%
Honolulu, HI MSA	44.0%	0.3%	45.6%
Houston, TX PMSA	38.3%	2.5%	60.3%

1995 Metro	Rent-Occupied Share of Occupied Housing	Med. Property Tax to Med. Home Value Ratio	Single Family Detached % of Metro Housing
Indianapolis, IN MSA	31.6%	1.1%	68.7%
Kansas City, MO-KS MSA	30.7%	1.2%	70.4%
Lancaster, PA MSA	29.5%	1.5%	56.8%
Los Angeles-Long Beach, CA PMSA	51.4%	0.6%	49.9%
Miami, FL PMSA	41.7%	1.0%	41.7%
Middlesex-Somerset-Hunterdon, NJ PMSA	27.3%	1.7%	57.2%
Milwaukee-Waukesha, WI PMSA	36.3%	1.8%	55.5%
Minneapolis-St. Paul, MN-WI MSA	26.4%	1.0%	61.7%
Monmouth-Ocean, NJ PMSA	20.3%	1.5%	70.8%
Nashville, TN MSA	31.7%	0.7%	65.8%
Nassau-Suffolk, NY PMSA	17.0%	1.7%	79.0%
New Haven-Meriden, CT PMSA	34.8%	3.9%	54.3%
New London-Norwich, CT-RI MSA	30.3%	2.2%	65.6%
New York, NY PMSA	61.8%	0.8%	15.1%
Newark, NJ PMSA	37.9%	1.7%	51.3%
Oakland, CA PMSA	37.9%	0.7%	59.1%
Oklahoma City, OK MSA	34.7%	1.0%	71.0%
Orange County, CA PMSA	38.5%	0.6%	50.9%
Orlando, FL MSA	33.6%	0.9%	60.1%
Philadelphia, PA-NJ PMSA	29.8%	1.6%	43.4%
Phoenix-Mesa, AZ MSA	32.0%	0.6%	64.0%
Pittsburgh, PA MSA	28.7%	2.0%	66.6%
Portland-Vancouver, OR-WA PMSA	36.0%	0.9%	62.5%
Providence-Fall River-Warwick, RI-MA MSA	36.8%	2.6%	54.4%
Provo-Orem, UT MSA	30.0%	0.5%	68.6%
Raleigh-Durham-Chapel Hill, NC MSA	34.5%	0.9%	61.5%

1995 Metro	Rent-Occupied Share of Occupied Housing	Med. Property Tax to Med. Home Value Ratio	Single Family Detached % of Metro Housing
Riverside-San Bernardino, CA PMSA	32.1%	0.7%	69.1%
Rochester, NY MSA	30.0%	2.9%	65.7%
St. Louis, MO-IL MSA	27.8%	1.2%	69.0%
Salt Lake City-Ogden, UT MSA	28.2%	0.7%	68.4%
San Antonio, TX MSA	34.9%	2.3%	68.3%
San Diego, CA MSA	42.9%	0.6%	52.1%
San Francisco, CA PMSA	49.3%	0.6%	38.7%
Scranton--Wilkes-Barre--Hazleton, PA MSA	30.6%	1.5%	63.7%
Seattle-Bellevue-Everett, WA PMSA	36.9%	0.9%	58.6%
Springfield, MA MSA	37.0%	2.8%	54.8%
Tampa-St. Petersburg-Clearwater, FL MSA	30.2%	1.1%	55.4%
Toledo, OH MSA	31.7%	1.6%	68.2%
Washington, DC-MD-VA-WV PMSA	32.8%	0.8%	48.2%
West Palm Beach-Boca Raton, FL MSA	26.2%	1.0%	45.5%
Number of Observations	**65**	**65**	**65**
Min	**17.0%**	**0.3%**	**15.1%**
Max	**61.8%**	**3.9%**	**79.0%**
Mean	**33.2%**	**1.5%**	**59.3%**
Median	**32.0%**	**1.5%**	**61.3%**
Standard Deviation	**6.8%**	**0.8%**	**10.4%**

Table 34 - Descriptive Statistics – Metropolitan Cost Burdens by Race, 2005-09

	Cost Burden - All		Cost Burden - Whites		Cost Burden - Blacks		Cost Burden - Hispanics	
1995 Metro	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden
Akron, OH PMSA	27.3%	47.1%	26.1%	44.2%	39.9%	56.8%	43.6%	46.5%
Allentown-Bethlehem-Easton, PA MSA	28.4%	44.7%	27.0%	40.9%	52.5%	52.9%	42.6%	58.1%
Ann Arbor, MI PMSA	29.3%	54.6%	28.2%	52.7%	41.8%	66.3%	33.5%	48.4%
Atlanta, GA MSA	30.6%	48.1%	24.9%	38.9%	42.5%	56.0%	47.2%	51.9%
Bergen-Passaic, NJ PMSA	43.2%	50.0%	40.0%	43.2%	51.1%	55.6%	59.2%	61.4%
Boston, MA-NH PMSA	35.5%	47.4%	34.1%	44.1%	54.2%	57.6%	58.0%	58.6%
Buffalo-Niagara Falls, NY MSA	24.0%	47.5%	23.1%	42.7%	35.1%	59.1%	28.2%	60.8%
Burlington, VT MSA	32.2%	54.8%	31.5%	53.6%	70.3%	50.6%	32.7%	65.4%
Charlotte-Gastonia-Rock Hill, NC-SC MSA	25.4%	42.5%	22.3%	37.7%	37.5%	51.0%	40.0%	42.7%
Chicago, IL PMSA	36.3%	48.5%	31.8%	42.1%	44.2%	57.6%	54.2%	51.0%
Cincinnati, OH-KY-IN PMSA	24.9%	44.4%	23.5%	41.0%	41.0%	52.8%	30.7%	45.4%
Cleveland-Lorain-Elyria, OH PMSA	29.2%	47.5%	27.2%	43.1%	43.4%	55.6%	36.3%	51.9%
Columbus, OH MSA	26.3%	44.1%	25.0%	41.2%	36.9%	53.5%	34.4%	49.6%
Dallas, TX PMSA	29.2%	45.4%	24.0%	38.3%	39.4%	53.2%	42.3%	51.9%
Dayton-Springfield, OH MSA	24.4%	47.4%	22.7%	44.5%	37.2%	57.4%	26.9%	41.9%
Denver, CO PMSA	31.3%	48.6%	28.3%	45.1%	47.5%	58.5%	47.6%	56.1%
Des Moines, IA MSA	21.5%	42.3%	20.5%	39.1%	40.5%	59.3%	32.5%	56.2%
Detroit, MI PMSA	31.3%	50.6%	28.8%	45.0%	43.2%	59.8%	34.2%	47.9%
Fort Lauderdale, FL PMSA	46.0%	56.8%	40.1%	51.2%	57.6%	64.1%	56.5%	57.5%
Fort Worth-Arlington, TX PMSA	26.0%	45.0%	22.4%	39.8%	35.9%	56.5%	35.4%	47.1%
Grand Rapids-Muskegon-Holland, MI MSA	26.9%	46.1%	25.1%	42.1%	43.4%	64.7%	46.2%	45.9%
Harrisburg-Lebanon-Carlisle, PA MSA	21.0%	38.5%	20.1%	37.0%	34.9%	45.6%	36.5%	43.4%
Hartford, CT MSA	30.4%	46.1%	28.6%	41.1%	44.2%	55.4%	45.0%	55.1%

1995 Metro	Cost Burden - All: % of Owner Households with Over 30% Housing Cost Burden	Cost Burden - All: % of Renter Households with Over 30% Housing Cost Burden	Cost Burden - Whites: % of Owner Households with Over 30% Housing Cost Burden	Cost Burden - Whites: % of Renter Households with Over 30% Housing Cost Burden	Cost Burden - Blacks: % of Owner Households with Over 30% Housing Cost Burden	Cost Burden - Blacks: % of Renter Households with Over 30% Housing Cost Burden	Cost Burden - Hispanics: % of Owner Households with Over 30% Housing Cost Burden	Cost Burden - Hispanics: % of Renter Households with Over 30% Housing Cost Burden
Honolulu, HI MSA	33.9%	50.6%	38.0%	52.4%	63.5%	58.9%	50.4%	57.1%
Houston, TX PMSA	26.7%	45.9%	20.5%	37.6%	35.7%	53.1%	36.0%	50.0%
Indianapolis, IN MSA	23.6%	44.7%	21.9%	39.9%	35.5%	57.2%	38.0%	48.2%
Kansas City, MO-KS MSA	23.6%	41.9%	21.7%	38.3%	36.9%	53.2%	35.1%	48.0%
Lancaster, PA MSA	23.6%	40.4%	23.0%	37.8%	39.8%	46.3%	34.9%	54.5%
Los Angeles-Long Beach, CA PMSA	44.5%	53.9%	38.0%	49.2%	51.1%	59.5%	53.3%	57.0%
Miami, FL PMSA	49.6%	61.4%	39.7%	49.2%	53.3%	61.8%	53.0%	64.6%
Middlesex-Somerset-Hunterdon, NJ PMSA	36.8%	43.2%	34.6%	43.3%	49.4%	49.3%	53.8%	53.4%
Milwaukee-Waukesha, WI PMSA	28.9%	47.1%	26.7%	42.1%	46.4%	61.4%	43.5%	45.0%
Minneapolis-St. Paul, MN-WI MSA	29.7%	46.8%	28.4%	43.5%	53.0%	60.6%	48.4%	54.3%
Monmouth-Ocean, NJ PMSA	39.8%	52.4%	39.2%	49.8%	46.2%	59.8%	50.4%	60.2%
Nashville, TN MSA	24.6%	43.0%	22.4%	39.0%	37.5%	51.1%	38.8%	48.9%
Nassau-Suffolk, NY PMSA	43.1%	53.0%	40.5%	48.6%	52.9%	63.5%	61.7%	60.5%
New Haven-Meriden, CT PMSA	35.3%	49.8%	33.9%	47.7%	42.2%	55.2%	53.5%	57.1%
New London-Norwich, CT-RI MSA	29.6%	43.2%	28.1%	41.3%	40.6%	48.5%	38.1%	51.4%
New York, NY PMSA	39.1%	48.3%	33.8%	42.9%	48.2%	49.2%	50.0%	53.9%
Newark, NJ PMSA	40.6%	47.9%	36.1%	44.7%	54.7%	50.5%	60.3%	51.8%
Oakland, CA PMSA	42.8%	49.9%	36.2%	45.1%	57.0%	60.3%	57.3%	55.6%
Oklahoma City, OK MSA	20.8%	43.3%	19.5%	40.7%	30.4%	51.8%	27.0%	41.7%
Orange County, CA PMSA	41.6%	52.4%	37.6%	48.0%	48.2%	49.6%	53.2%	59.1%
Orlando, FL MSA	35.9%	54.6%	30.2%	47.7%	48.2%	62.3%	52.5%	62.8%
Philadelphia, PA-NJ PMSA	31.9%	48.1%	29.8%	44.2%	39.0%	54.8%	41.5%	54.3%
Phoenix-Mesa, AZ MSA	32.0%	47.0%	29.0%	44.6%	44.3%	56.0%	44.6%	51.5%
Pittsburgh, PA MSA	23.2%	42.9%	22.5%	40.8%	37.6%	53.4%	23.2%	46.7%
Portland-Vancouver, OR-WA PMSA	33.2%	47.8%	31.7%	46.5%	47.7%	56.4%	48.8%	53.8%

1995 Metro	Cost Burden - All: % of Owner Households with Over 30% Housing Cost Burden	Cost Burden - All: % of Renter Households with Over 30% Housing Cost Burden	Cost Burden - Whites: % of Owner Households with Over 30% Housing Cost Burden	Cost Burden - Whites: % of Renter Households with Over 30% Housing Cost Burden	Cost Burden - Blacks: % of Owner Households with Over 30% Housing Cost Burden	Cost Burden - Blacks: % of Renter Households with Over 30% Housing Cost Burden	Cost Burden - Hispanics: % of Owner Households with Over 30% Housing Cost Burden	Cost Burden - Hispanics: % of Renter Households with Over 30% Housing Cost Burden
Providence-Fall River-Warwick, RI-MA MSA	35.1%	44.9%	33.2%	42.1%	57.3%	51.7%	60.7%	57.0%
Provo-Orem, UT MSA	27.8%	45.5%	26.7%	45.7%	12.3%	56.9%	45.4%	42.5%
Raleigh-Durham-Chapel Hill, NC MSA	23.7%	44.9%	20.6%	39.7%	36.3%	53.3%	34.2%	47.0%
Riverside-San Bernardino, CA PMSA	44.4%	54.8%	37.3%	50.2%	54.7%	64.1%	53.6%	56.8%
Rochester, NY MSA	25.4%	51.1%	24.5%	45.4%	38.2%	67.1%	28.1%	67.6%
St. Louis, MO-IL MSA	24.0%	44.9%	21.7%	38.5%	39.6%	57.9%	25.8%	39.0%
Salt Lake City-Ogden, UT MSA	27.1%	42.5%	25.7%	40.5%	38.5%	56.2%	40.2%	49.9%
San Antonio, TX MSA	23.1%	44.0%	19.2%	38.6%	27.5%	54.0%	27.2%	46.0%
San Diego, CA MSA	43.0%	53.9%	39.1%	49.6%	49.2%	59.0%	56.2%	62.4%
San Francisco, CA PMSA	40.4%	43.9%	37.2%	39.6%	48.8%	57.7%	52.2%	54.8%
Scranton--Wilkes-Barre--Hazleton, PA MSA	25.5%	39.2%	25.5%	37.4%	24.2%	59.4%	35.7%	58.9%
Seattle-Bellevue-Everett, WA PMSA	35.3%	44.0%	33.5%	42.1%	50.0%	57.3%	48.7%	49.1%
Springfield, MA MSA	29.8%	50.9%	27.7%	46.0%	47.4%	50.5%	49.5%	63.4%
Tampa-St. Petersburg-Clearwater, FL MSA	33.8%	50.3%	31.5%	47.5%	46.8%	57.3%	44.0%	54.5%
Toledo, OH MSA	26.4%	48.1%	25.2%	44.3%	40.1%	59.8%	28.8%	45.5%
Washington, DC-MD-VA-WV PMSA	32.8%	45.7%	24.8%	40.7%	41.8%	48.9%	56.6%	53.1%
West Palm Beach-Boca Raton, FL MSA	41.5%	55.6%	38.1%	51.7%	56.8%	63.4%	53.8%	57.7%
Number of Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Min	**20.8%**	**38.5%**	**19.2%**	**37.0%**	**12.3%**	**45.6%**	**23.2%**	**39.0%**
Max	**49.6%**	**61.4%**	**40.5%**	**53.6%**	**70.3%**	**67.1%**	**61.7%**	**67.6%**
Mean	**31.6%**	**47.6%**	**28.9%**	**43.6%**	**44.0%**	**56.3%**	**43.6%**	**52.9%**
Median	**29.8%**	**47.1%**	**28.1%**	**43.1%**	**43.4%**	**56.5%**	**44.0%**	**53.4%**
Standard Deviation	**7.2%**	**4.5%**	**6.3%**	**4.3%**	**9.3%**	**4.8%**	**10.3%**	**6.5%**

Table 35 - Descriptive Statistics – Metropolitan Cost Burdens by Income Quartile, 2005-09

1995 Metro	1st Quartile		2nd Quartile		3rd Quartile		4th Quartile	
	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden
Akron, OH PMSA	70.1%	76.5%	38.8%	27.7%	18.1%	3.5%	4.2%	0.6%
Allentown-Bethlehem-Easton, PA MSA	64.9%	76.2%	39.1%	23.9%	20.7%	2.8%	6.8%	1.2%
Ann Arbor, MI PMSA	69.0%	84.3%	46.4%	20.9%	20.6%	5.8%	5.1%	0.0%
Atlanta, GA MSA	71.4%	83.0%	48.7%	26.9%	18.6%	3.1%	5.3%	0.6%
Bergen-Passaic, NJ PMSA	89.1%	84.9%	57.3%	34.9%	41.5%	5.4%	11.8%	1.0%
Boston, MA-NH PMSA	78.1%	74.8%	53.5%	39.9%	31.6%	6.3%	7.2%	0.7%
Buffalo-Niagara Falls, NY MSA	70.4%	82.4%	35.0%	22.8%	13.5%	2.4%	3.3%	0.2%
Burlington, VT MSA	75.0%	81.1%	49.1%	41.4%	24.5%	6.5%	5.3%	0.0%
Charlotte-Gastonia-Rock Hill, NC-SC MSA	61.1%	77.8%	39.8%	21.1%	14.1%	3.0%	4.6%	0.3%
Chicago, IL PMSA	74.9%	82.5%	54.0%	25.9%	29.0%	4.9%	8.3%	0.8%
Cincinnati, OH-KY-IN PMSA	67.5%	74.9%	40.3%	19.3%	14.3%	2.8%	4.4%	1.1%
Cleveland-Lorain-Elyria, OH PMSA	72.4%	78.2%	43.3%	26.2%	19.9%	3.3%	4.7%	0.8%
Columbus, OH MSA	68.8%	80.0%	45.1%	22.1%	18.0%	2.1%	4.3%	0.5%
Dallas, TX PMSA	72.7%	81.7%	47.8%	23.9%	18.4%	4.4%	5.2%	0.1%
Dayton-Springfield, OH MSA	66.7%	78.2%	36.6%	27.4%	14.5%	2.1%	3.3%	1.2%
Denver, CO PMSA	69.8%	79.1%	50.1%	25.5%	23.4%	4.9%	5.6%	0.6%
Des Moines, IA MSA	60.6%	77.8%	34.8%	9.4%	10.4%	2.5%	1.9%	0.0%
Detroit, MI PMSA	73.5%	81.2%	43.7%	29.3%	20.3%	3.9%	5.8%	0.9%
Fort Lauderdale, FL PMSA	79.4%	90.2%	58.1%	62.8%	42.5%	17.4%	16.3%	2.4%
Fort Worth-Arlington, TX PMSA	67.6%	80.3%	40.5%	23.8%	13.8%	3.6%	4.4%	0.4%
Grand Rapids-Muskegon-Holland, MI MSA	66.5%	76.7%	37.9%	19.0%	16.5%	2.1%	3.8%	0.4%
Harrisburg-Lebanon-Carlisle, PA MSA	53.9%	70.3%	29.5%	14.4%	14.6%	1.5%	3.3%	0.0%
Hartford, CT MSA	73.9%	75.9%	46.5%	20.8%	22.4%	3.0%	4.0%	1.1%

1995 Metro	1st Quartile		2nd Quartile		3rd Quartile		4th Quartile	
	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden
Honolulu, HI MSA	59.7%	78.3%	46.8%	47.7%	33.9%	19.7%	12.9%	4.6%
Houston, TX PMSA	67.2%	82.6%	43.5%	24.8%	15.8%	4.9%	3.8%	0.6%
Indianapolis, IN MSA	65.1%	78.0%	36.4%	18.7%	12.0%	2.3%	4.0%	1.4%
Kansas City, MO-KS MSA	63.6%	73.6%	36.9%	18.4%	13.1%	3.7%	3.2%	1.3%
Lancaster, PA MSA	58.5%	72.3%	33.7%	17.9%	15.1%	5.2%	4.3%	1.7%
Los Angeles-Long Beach, CA PMSA	72.3%	89.0%	63.3%	55.4%	49.6%	16.5%	20.6%	3.2%
Miami, FL PMSA	86.2%	85.6%	68.9%	71.1%	49.2%	22.9%	18.3%	4.8%
Middlesex-Somerset-Hunterdon, NJ PMSA	76.5%	80.0%	52.9%	20.9%	29.8%	1.7%	7.0%	0.2%
Milwaukee-Waukesha, WI PMSA	76.1%	81.2%	44.7%	21.7%	21.1%	3.4%	5.4%	0.6%
Minneapolis-St. Paul, MN-WI MSA	66.4%	72.8%	47.3%	16.9%	20.2%	3.6%	5.1%	0.7%
Monmouth-Ocean, NJ PMSA	75.6%	80.3%	50.1%	42.7%	35.7%	6.0%	10.1%	1.5%
Nashville, TN MSA	62.8%	74.8%	36.7%	21.3%	14.0%	3.7%	4.5%	0.6%
Nassau-Suffolk, NY PMSA	80.6%	80.6%	56.0%	35.1%	35.2%	9.2%	8.6%	1.1%
New Haven-Meriden, CT PMSA	82.4%	79.3%	53.4%	34.8%	29.3%	4.1%	6.0%	0.0%
New London-Norwich, CT-RI MSA	62.7%	71.4%	45.6%	25.0%	24.1%	5.7%	4.8%	3.2%
New York, NY PMSA	85.8%	83.8%	59.5%	54.6%	42.8%	15.4%	14.0%	2.8%
Newark, NJ PMSA	88.0%	79.7%	61.1%	27.5%	36.6%	3.8%	8.9%	0.1%
Oakland, CA PMSA	66.6%	84.4%	57.8%	38.8%	46.5%	7.9%	17.5%	0.3%
Oklahoma City, OK MSA	57.1%	77.6%	33.4%	24.0%	10.7%	2.6%	2.9%	1.3%
Orange County, CA PMSA	65.6%	88.5%	57.9%	50.1%	42.8%	9.7%	16.4%	1.0%
Orlando, FL MSA	67.8%	89.2%	50.3%	51.2%	29.7%	11.5%	9.7%	1.5%
Philadelphia, PA-NJ PMSA	71.9%	80.1%	42.4%	27.6%	23.2%	5.4%	6.8%	0.5%
Phoenix-Mesa, AZ MSA	64.8%	82.3%	47.7%	35.0%	24.5%	6.7%	8.0%	0.7%
Pittsburgh, PA MSA	64.4%	72.4%	30.7%	24.0%	14.7%	5.1%	4.1%	1.5%

1995 Metro	1st Quartile: % of Owner Households with Over 30% Housing Cost Burden	1st Quartile: % of Renter Households with Over 30% Housing Cost Burden	2nd Quartile: % of Owner Households with Over 30% Housing Cost Burden	2nd Quartile: % of Renter Households with Over 30% Housing Cost Burden	3rd Quartile: % of Owner Households with Over 30% Housing Cost Burden	3rd Quartile: % of Renter Households with Over 30% Housing Cost Burden	4th Quartile: % of Owner Households with Over 30% Housing Cost Burden	4th Quartile: % of Renter Households with Over 30% Housing Cost Burden
Portland-Vancouver, OR-WA PMSA	68.5%	82.5%	53.8%	26.0%	28.3%	4.7%	8.1%	0.8%
Providence-Fall River-Warwick, RI-MA MSA	78.0%	72.2%	52.2%	33.7%	32.8%	5.4%	7.7%	1.2%
Provo-Orem, UT MSA	60.1%	71.8%	45.5%	19.0%	19.3%	7.9%	5.8%	1.9%
Raleigh-Durham-Chapel Hill, NC MSA	64.0%	79.1%	37.9%	16.7%	12.9%	3.2%	3.8%	1.2%
Riverside-San Bernardino, CA PMSA	67.8%	85.8%	58.3%	53.4%	46.0%	17.9%	20.2%	1.2%
Rochester, NY MSA	72.7%	81.9%	37.0%	27.1%	15.4%	3.8%	3.8%	1.3%
St. Louis, MO-IL MSA	62.9%	75.6%	35.1%	20.0%	13.4%	3.1%	3.6%	0.7%
Salt Lake City-Ogden, UT MSA	60.5%	72.5%	41.5%	15.6%	17.8%	3.3%	4.6%	1.3%
San Antonio, TX MSA	60.8%	79.2%	32.6%	29.8%	12.4%	4.4%	4.0%	1.0%
San Diego, CA MSA	67.1%	88.8%	56.6%	51.2%	47.4%	15.6%	20.0%	1.9%
San Francisco, CA PMSA	65.2%	80.2%	54.3%	42.2%	44.4%	9.0%	17.4%	0.4%
Scranton--Wilkes-Barre--Hazleton, PA MSA	68.3%	68.5%	33.1%	20.2%	14.8%	2.1%	3.6%	0.4%
Seattle-Bellevue-Everett, WA PMSA	69.9%	78.1%	55.3%	23.7%	31.7%	4.2%	8.9%	0.6%
Springfield, MA MSA	76.2%	76.8%	47.8%	38.8%	24.3%	3.4%	5.2%	0.7%
Tampa-St. Petersburg-Clearwater, FL MSA	64.7%	86.6%	42.9%	46.1%	28.7%	10.7%	10.7%	2.1%
Toledo, OH MSA	70.8%	78.3%	39.9%	24.9%	16.3%	2.9%	4.1%	0.3%
Washington, DC-MD-VA-WV PMSA	72.3%	75.8%	50.2%	26.3%	24.4%	5.6%	6.5%	0.4%
West Palm Beach-Boca Raton, FL MSA	76.6%	86.5%	51.4%	57.0%	35.4%	18.4%	12.1%	4.4%
Number of Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Min	**53.9%**	**68.5%**	**29.5%**	**9.4%**	**10.4%**	**1.5%**	**1.9%**	**0.0%**
Max	**89.1%**	**90.2%**	**68.9%**	**71.1%**	**49.6%**	**22.9%**	**20.6%**	**4.8%**
Mean	**69.7%**	**79.5%**	**46.1%**	**30.6%**	**24.9%**	**6.2%**	**7.5%**	**1.1%**
Median	**68.5%**	**79.3%**	**46.4%**	**26.0%**	**21.1%**	**4.4%**	**5.3%**	**0.8%**
Standard Deviation	**7.5%**	**5.0%**	**9.0%**	**13.2%**	**11.2%**	**5.0%**	**4.9%**	**1.1%**

Table 36 - Descriptive Statistics – Median Home Value to Median Household Income Ratios by Quartile, 2005-09

1995 Metro	Median Home Value to Median Household Income Ratio by Quartile			
	1st Quartile Median Home Value to Median Hshd. Income Ratio	2nd Quartile Median Home Value to Median Hshd. Income Ratio	3rd Quartile Median Home Value to Median Hshd. Income Ratio	4th Quartile Median Home Value to Median Hshd. Income Ratio
Akron, OH PMSA	5.9	3.6	2.8	2.9
Allentown-Bethlehem-Easton, PA MSA	6.5	3.8	3.2	2.8
Ann Arbor, MI PMSA	7.4	4.5	4.1	4.2
Atlanta, GA MSA	5.9	3.5	3.5	4.3
Bergen-Passaic, NJ PMSA	17.5	8.1	6.3	4.7
Boston, MA-NH PMSA	19.9	8.5	6.5	5.0
Buffalo-Niagara Falls, NY MSA	4.1	2.7	2.2	2.0
Burlington, VT MSA	7.6	5.0	4.7	4.9
Charlotte-Gastonia-Rock Hill, NC-SC MSA	5.7	3.3	3.2	3.5
Chicago, IL PMSA	7.8	4.7	4.2	4.1
Cincinnati, OH-KY-IN PMSA	6.3	3.4	3.2	2.7
Cleveland-Lorain-Elyria, OH PMSA	6.9	3.7	3.4	2.9
Columbus, OH MSA	6.1	3.4	3.2	2.7
Dallas, TX PMSA	5.0	3.1	2.8	2.3
Dayton-Springfield, OH MSA	5.2	3.1	2.6	2.4
Denver, CO PMSA	8.5	4.7	4.2	4.2
Des Moines, IA MSA	5.1	3.2	2.2	2.2
Detroit, MI PMSA	5.7	4.0	3.1	2.7
Fort Lauderdale, FL PMSA	7.1	5.6	5.0	4.7
Fort Worth-Arlington, TX PMSA	4.1	2.6	2.2	2.1
Grand Rapids-Muskegon-Holland, MI MSA	6.0	3.5	2.9	3.1
Harrisburg-Lebanon-Carlisle, PA MSA	4.6	3.9	3.2	3.0
Hartford, CT MSA	8.5	4.3	4.0	2.9
Honolulu, HI MSA	12.8	11.8	7.0	5.7

1995 Metro	Median Home Value to Median Household Income Ratio by Quartile 1st Quartile Median Home Value to Median Hshd. Income Ratio	2nd Quartile Median Home Value to Median Hshd. Income Ratio	3rd Quartile Median Home Value to Median Hshd. Income Ratio	4th Quartile Median Home Value to Median Hshd. Income Ratio
Houston, TX PMSA	4.4	2.6	2.4	2.4
Indianapolis, IN MSA	4.4	2.7	2.7	2.8
Kansas City, MO-KS MSA	4.8	3.2	3.1	2.7
Lancaster, PA MSA	5.7	3.7	3.2	3.0
Los Angeles-Long Beach, CA PMSA	17.7	15.2	8.4	6.0
Miami, FL PMSA	13.5	6.8	5.7	5.2
Middlesex-Somerset-Hunterdon, NJ PMSA	8.6	5.4	5.8	4.6
Milwaukee-Waukesha, WI PMSA	8.5	5.4	3.8	2.8
Minneapolis-St. Paul, MN-WI MSA	7.6	4.3	4.1	4.3
Monmouth-Ocean, NJ PMSA	9.2	6.6	6.8	5.2
Nashville, TN MSA	5.8	3.4	3.3	3.6
Nassau-Suffolk, NY PMSA	12.6	6.4	5.4	4.3
New Haven-Meriden, CT PMSA	10.4	5.6	4.0	4.2
New London-Norwich, CT-RI MSA	8.3	5.3	4.1	4.3
New York, NY PMSA	22.9	16.3	8.4	5.6
Newark, NJ PMSA	11.3	6.4	6.4	4.7
Oakland, CA PMSA	17.1	11.4	9.0	5.7
Oklahoma City, OK MSA	3.9	2.7	2.3	2.0
Orange County, CA PMSA	14.9	10.9	8.9	5.6
Orlando, FL MSA	6.4	5.6	5.2	5.2
Philadelphia, PA-NJ PMSA	6.8	4.8	4.2	4.1
Phoenix-Mesa, AZ MSA	6.3	5.3	4.8	4.8
Pittsburgh, PA MSA	4.0	2.7	2.2	2.0
Portland-Vancouver, OR-WA PMSA	10.7	6.3	4.7	4.7
Providence-Fall River-Warwick, RI-MA MSA	15.5	6.6	4.7	4.8
Provo-Orem, UT MSA	6.6	4.9	4.8	5.0

1995 Metro	Median Home Value to Median Household Income Ratio by Quartile 1st Quartile Median Home Value to Median Hshd. Income Ratio	2nd Quartile Median Home Value to Median Hshd. Income Ratio	3rd Quartile Median Home Value to Median Hshd. Income Ratio	4th Quartile Median Home Value to Median Hshd. Income Ratio
Raleigh-Durham-Chapel Hill, NC MSA	6.2	3.6	3.5	4.3
Riverside-San Bernardino, CA PMSA	9.4	8.2	6.0	4.8
Rochester, NY MSA	4.2	2.9	2.1	1.9
St. Louis, MO-IL MSA	4.6	3.3	3.2	2.8
Salt Lake City-Ogden, UT MSA	6.5	4.7	4.7	4.9
San Antonio, TX MSA	4.0	2.6	2.5	2.3
San Diego, CA MSA	14.3	12.9	7.4	5.7
San Francisco, CA PMSA	31.3	14.8	9.4	0.0
Scranton--Wilkes-Barre--Hazleton, PA MSA	4.8	3.4	2.8	2.7
Seattle-Bellevue-Everett, WA PMSA	10.6	6.7	7.1	5.7
Springfield, MA MSA	10.4	6.0	4.0	3.0
Tampa-St. Petersburg-Clearwater, FL MSA	5.6	4.5	3.6	3.9
Toledo, OH MSA	5.1	3.2	2.6	2.5
Washington, DC-MD-VA-WV PMSA	9.8	6.7	5.6	4.4
West Palm Beach-Boca Raton, FL MSA	8.2	5.5	4.8	4.3
Number of Observations	**65**	**65**	**65**	**65**
Min	**3.9**	**2.6**	**2.1**	**0.0**
Max	**31.3**	**16.3**	**9.4**	**6.0**
Mean	**8.7**	**5.5**	**4.4**	**3.8**
Median	**6.8**	**4.7**	**4.0**	**4.1**
Standard Deviation	**5.1**	**3.2**	**1.9**	**1.3**

Table 37 - Descriptive Statistics – 5 Year Change in Metropolitan Demographic and Economic Characteristics, 2005-09 to 2010-14

1995 Metro	Total Population	Pop. Density	% Hispanic	% Black	% Under Age 18	% Age 65 or Older	% Foreign-born	Median Household Income	% of Over 25 with a Bachelors Degree	Unemp. Rate
Akron, OH PMSA	2,795	3.1	0.5%	0.2%	-1.4%	1.4%	0.7%	$2,453	1.2%	1.8%
Allentown-Bethlehem-Easton, PA MSA	25,093	22.8	3.5%	0.7%	-0.9%	0.9%	1.3%	$2,119	1.2%	2.6%
Ann Arbor, MI PMSA	5,101	2.5	0.6%	0.0%	-1.2%	2.3%	0.1%	$682	1.6%	0.6%
Atlanta, GA MSA	196,333	32.1	1.1%	1.7%	-1.3%	1.6%	0.7%	-$1,741	1.2%	2.7%
Bergen-Passaic, NJ PMSA	48,520	115.7	3.3%	-0.2%	-0.7%	0.6%	1.6%	$3,031	2.0%	2.5%
Boston, MA-NH PMSA	41,158	20.4	1.7%	0.8%	-0.9%	0.9%	1.4%	$5,412	2.5%	1.6%
Buffalo-Niagara Falls, NY MSA	6,854	4.4	1.0%	0.0%	-1.2%	0.6%	0.7%	$4,234	2.9%	0.8%
Burlington, VT MSA	7,717	13.7	0.2%	0.7%	-1.5%	1.7%	1.1%	$4,509	3.6%	0.6%
Charlotte-Gastonia-Rock Hill, NC-SC MSA	197,564	58.5	1.7%	1.2%	-0.9%	1.0%	1.0%	$1,105	2.4%	2.7%
Chicago, IL PMSA	41,009	8.1	2.0%	-0.9%	-1.5%	1.1%	0.5%	$1,287	2.4%	2.3%
Cincinnati, OH-KY-IN PMSA	-7,428	-2.2	0.7%	0.2%	-0.6%	0.9%	0.6%	$1,682	2.7%	1.7%
Cleveland-Lorain-Elyria, OH PMSA	-35,360	-13.1	0.8%	0.4%	-1.4%	1.3%	0.1%	$1,178	2.5%	1.1%
Columbus, OH MSA	118,306	37.7	0.8%	1.2%	-0.4%	0.9%	1.0%	$3,533	2.0%	0.7%
Dallas, TX PMSA	308,798	49.9	0.8%	1.0%	-0.8%	1.2%	0.2%	$4,231	2.2%	0.8%
Dayton-Springfield, OH MSA	473	0.3	0.6%	0.4%	-0.7%	1.4%	0.7%	-$59	1.6%	1.8%
Denver, CO PMSA	252,483	67.1	0.6%	0.0%	-1.0%	1.1%	-0.1%	$4,448	2.8%	1.3%
Des Moines, IA MSA	47,062	27.2	1.1%	0.8%	0.2%	0.3%	1.4%	$4,670	2.8%	1.0%
Detroit, MI PMSA	-163,132	-41.9	0.4%	-0.1%	-1.5%	1.6%	0.4%	-$699	2.4%	1.1%
Fort Lauderdale, FL PMSA	56,137	46.6	3.3%	2.8%	-1.6%	0.8%	2.2%	-$157	0.9%	3.8%
Fort Worth-Arlington, TX PMSA	194,750	66.7	2.1%	1.1%	-0.8%	1.2%	0.4%	$3,211	1.6%	1.0%
Grand Rapids-Muskegon-Holland, MI MSA	21,420	7.8	0.8%	0.3%	-0.9%	1.3%	0.0%	$1,855	2.5%	0.3%
Harrisburg-Lebanon-Carlisle, PA MSA	33,150	16.7	1.8%	0.5%	-0.3%	0.9%	1.1%	$2,769	1.7%	1.6%
Hartford, CT MSA	30,283	18.1	2.2%	0.4%	-1.4%	1.2%	1.1%	$3,175	2.6%	2.6%
Honolulu, HI MSA	73,126	121.9	1.0%	-0.8%	-0.5%	0.6%	1.0%	$6,515	1.8%	1.2%
Houston, TX PMSA	578,358	97.7	2.6%	0.2%	-1.3%	1.0%	1.1%	$4,426	1.7%	1.0%
Indianapolis, IN MSA	103,275	29.3	1.7%	1.0%	-0.5%	0.7%	1.3%	$740	1.6%	1.5%
Kansas City, MO-KS MSA	53,517	9.9	1.4%	0.6%	-0.3%	1.1%	0.7%	$1,874	1.7%	0.9%
Lancaster, PA MSA	27,921	29.4	2.1%	0.5%	-0.8%	1.1%	0.5%	$2,227	1.4%	1.8%

1995 Metro	Total Population	Pop. Density	% Hispanic	% Black	% Under Age 18	% Age 65 or Older	% Foreign-born	Median Household Income	% of Over 25 with a Bachelors Degree	Unemp. Rate
Los Angeles-Long Beach, CA PMSA	188,908	46.5	0.8%	-0.5%	-2.5%	1.2%	-0.5%	$1,042	1.5%	3.3%
Miami, FL PMSA	143,817	73.9	3.9%	-1.1%	-2.3%	0.5%	2.1%	$130	0.5%	3.7%
Middlesex-Somerset-Hunterdon, NJ PMSA	47,310	45.3	2.0%	0.0%	-1.3%	1.1%	3.0%	$3,930	2.7%	2.0%
Milwaukee-Waukesha, WI PMSA	19,056	13.1	1.7%	0.5%	-0.8%	0.8%	0.3%	$622	2.4%	1.4%
Minneapolis-St. Paul, MN-WI MSA	153,670	25.3	0.9%	1.2%	-0.6%	1.3%	1.1%	$3,355	2.1%	0.7%
Monmouth-Ocean, NJ PMSA	3,703	3.3	1.7%	-0.5%	-0.7%	1.2%	0.3%	$2,805	2.7%	2.6%
Nashville, TN MSA	124,892	30.7	1.3%	0.1%	-0.5%	0.9%	0.8%	$2,248	2.7%	1.1%
Nassau-Suffolk, NY PMSA	-14,195	-11.8	3.8%	0.2%	-1.6%	1.2%	1.8%	$4,764	2.0%	1.9%
New Haven-Meriden, CT PMSA	14,963	34.8	2.4%	0.5%	-1.7%	1.5%	0.4%	$99	1.1%	2.6%
New London-Norwich, CT-RI MSA	6,275	9.5	2.5%	0.4%	-1.1%	1.6%	1.0%	$1,769	0.9%	2.5%
New York, NY PMSA	86,973	76.2	1.8%	-0.7%	-1.4%	0.5%	1.2%	$3,187	1.8%	2.1%
Newark, NJ PMSA	46,430	29.4	2.7%	-0.2%	-1.2%	0.9%	1.6%	$2,222	1.7%	3.5%
Oakland, CA PMSA	167,874	115.2	1.8%	-0.8%	-1.4%	1.3%	0.7%	$3,672	2.0%	2.2%
Oklahoma City, OK MSA	103,611	24.4	2.4%	0.2%	0.1%	0.4%	1.0%	$5,122	1.7%	0.5%
Orange County, CA PMSA	109,500	138.7	0.9%	-0.1%	-1.8%	1.4%	0.3%	$2,260	2.1%	2.6%
Orlando, FL MSA	203,230	58.2	4.3%	0.8%	-1.5%	0.3%	0.7%	-$1,766	1.1%	3.1%
Philadelphia, PA-NJ PMSA	83,937	21.8	1.7%	0.2%	-1.2%	0.7%	1.2%	$2,469	2.4%	2.5%
Phoenix-Mesa, AZ MSA	185,908	12.8	-0.7%	0.7%	-1.7%	2.1%	-1.9%	-$1,370	1.6%	2.9%
Pittsburgh, PA MSA	-1,003	-0.2	0.4%	0.3%	-1.1%	0.5%	0.4%	$5,460	3.2%	1.1%
Portland-Vancouver, OR-WA PMSA	124,832	24.8	1.2%	0.1%	-1.2%	1.7%	0.5%	$2,784	1.9%	1.9%
Providence-Fall River-Warwick, RI-MA MSA	-3,624	-3.2	1.7%	0.5%	-1.4%	1.0%	0.3%	$1,157	1.7%	2.3%
Provo-Orem, UT MSA	35,435	17.7	1.8%	0.1%	0.6%	0.4%	0.6%	$4,078	2.2%	1.6%
Raleigh-Durham-Chapel Hill, NC MSA	190,235	54.5	1.8%	0.1%	-0.8%	1.5%	0.8%	$2,658	1.4%	2.0%
Riverside-San Bernardino, CA PMSA	322,546	11.8	3.6%	-0.2%	-2.4%	1.2%	0.1%	-$1,444	0.5%	4.8%
Rochester, NY MSA	25,765	7.5	1.5%	0.4%	-1.4%	1.4%	0.4%	$1,300	1.4%	1.2%
St. Louis, MO-IL MSA	19,636	3.1	0.6%	0.3%	-1.2%	1.1%	0.4%	$1,985	2.8%	1.7%
Salt Lake City-Ogden, UT MSA	108,841	67.3	1.8%	0.1%	-0.2%	0.6%	0.4%	$4,297	1.7%	1.5%
San Antonio, TX MSA	248,137	74.6	1.4%	0.2%	-1.3%	0.6%	0.7%	$4,953	1.9%	1.3%
San Diego, CA MSA	195,600	46.6	2.3%	-0.1%	-1.7%	0.8%	0.7%	$1,095	1.1%	2.7%
San Francisco, CA PMSA	79,843	78.6	1.7%	-0.7%	-0.6%	0.7%	1.0%	$6,993	1.5%	1.3%

1995 Metro	Total Population	Pop. Density	% Hispanic	% Black	% Under Age 18	% Age 65 or Older	% Foreign-born	Median Household Income	% of Over 25 with a Bachelors Degree	Unemp. Rate
Scranton--Wilkes-Barre--Hazleton, PA MSA	15,995	7.2	3.0%	0.7%	-0.8%	0.3%	1.7%	$3,544	1.9%	1.8%
Seattle-Bellevue-Everett, WA PMSA	210,079	47.5	1.8%	0.3%	-0.7%	1.2%	1.9%	$5,433	2.0%	1.8%
Springfield, MA MSA	16,352	23.0	2.6%	0.0%	-1.2%	0.9%	0.6%	$3,912	2.1%	1.3%
Tampa-St. Petersburg-Clearwater, FL MSA	148,845	58.3	2.9%	0.5%	-1.1%	0.8%	0.8%	$537	1.4%	3.1%
Toledo, OH MSA	-23,566	-17.3	0.9%	0.6%	-0.9%	1.2%	0.1%	-$464	2.6%	0.8%
Washington, DC-MD-VA-WV PMSA	489,499	75.2	2.3%	-0.6%	-1.2%	1.0%	2.2%	$7,560	1.8%	1.6%
West Palm Beach-Boca Raton, FL MSA	90,473	45.8	2.7%	1.8%	-1.3%	0.8%	2.0%	-$660	1.4%	3.1%
Number of Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Min	**-163,132**	**-42**	**-0.7%**	**-1.1%**	**-2.5%**	**0.3%**	**-1.9%**	**-$1,766**	**0.5%**	**0.3%**
Max	**578,358**	**139**	**4.3%**	**2.8%**	**0.6%**	**2.3%**	**3.0%**	**$7,560**	**3.6%**	**4.8%**
Mean	**95,924**	**34**	**1.7%**	**0.3%**	**-1.1%**	**1.0%**	**0.8%**	**$2,468**	**1.9%**	**1.9%**
Median	**53,517**	**25**	**1.7%**	**0.3%**	**-1.2%**	**1.0%**	**0.7%**	**$2,453**	**1.9%**	**1.8%**
Standard Deviation	**119,926**	**36**	**1.0%**	**0.7%**	**0.6%**	**0.4%**	**0.7%**	**$2,142**	**0.6%**	**0.9%**

Table 38 - Descriptive Statistics – 5 Year Change in Metropolitan Housing Characteristics, 2005-09 to 2010-14

1995 Metro	Rent-Occupied Share of Occupied Housing	Med. Property Tax to Med. Home Value Ratio	Single Family Detached % of Metro Housing
Akron, OH PMSA	2.5%	0.3%	-0.8%
Allentown-Bethlehem-Easton, PA MSA	3.3%	0.4%	-1.1%
Ann Arbor, MI PMSA	2.8%	0.3%	0.5%
Atlanta, GA MSA	4.2%	0.2%	0.0%
Bergen-Passaic, NJ PMSA	2.7%	0.7%	-0.7%
Boston, MA-NH PMSA	2.6%	-1.0%	-0.5%
Buffalo-Niagara Falls, NY MSA	1.2%	0.3%	1.4%
Burlington, VT MSA	1.8%	-1.3%	-1.7%
Charlotte-Gastonia-Rock Hill, NC-SC MSA	2.9%	0.2%	0.2%
Chicago, IL PMSA	3.0%	0.8%	0.4%
Cincinnati, OH-KY-IN PMSA	2.4%	0.3%	0.4%
Cleveland-Lorain-Elyria, OH PMSA	2.1%	0.1%	0.3%
Columbus, OH MSA	3.3%	0.3%	-0.3%
Dallas, TX PMSA	2.4%	0.0%	0.6%
Dayton-Springfield, OH MSA	2.8%	0.2%	0.4%
Denver, CO PMSA	3.8%	0.0%	-0.4%
Des Moines, IA MSA	1.7%	0.1%	0.8%
Detroit, MI PMSA	4.0%	0.4%	0.2%
Fort Lauderdale, FL PMSA	5.5%	0.4%	0.2%
Fort Worth-Arlington, TX PMSA	2.0%	-0.1%	0.3%
Grand Rapids-Muskegon-Holland, MI MSA	3.1%	0.3%	-0.2%
Harrisburg-Lebanon-Carlisle, PA MSA	2.1%	0.1%	0.2%
Hartford, CT MSA	1.9%	-1.4%	0.5%
Honolulu, HI MSA	1.1%	0.0%	-0.1%
Houston, TX PMSA	1.5%	-0.1%	1.0%
Indianapolis, IN MSA	2.8%	-0.2%	-0.2%
Kansas City, MO-KS MSA	3.1%	0.2%	-0.8%
Lancaster, PA MSA	1.2%	0.2%	-0.9%
Los Angeles-Long Beach, CA PMSA	2.2%	0.3%	-0.2%

1995 Metro	Rent-Occupied Share of Occupied Housing	Med. Property Tax to Med. Home Value Ratio	Single Family Detached % of Metro Housing
Miami, FL PMSA	3.4%	0.4%	-0.9%
Middlesex-Somerset-Hunterdon, NJ PMSA	2.4%	0.4%	-0.5%
Milwaukee-Waukesha, WI PMSA	2.8%	0.0%	-0.3%
Minneapolis-St. Paul, MN-WI MSA	3.3%	0.3%	-0.9%
Monmouth-Ocean, NJ PMSA	1.8%	0.4%	0.4%
Nashville, TN MSA	3.1%	0.0%	-0.4%
Nassau-Suffolk, NY PMSA	3.2%	0.6%	-0.9%
New Haven-Meriden, CT PMSA	2.6%	-2.2%	-1.0%
New London-Norwich, CT-RI MSA	2.6%	-0.7%	0.5%
New York, NY PMSA	1.9%	0.2%	-0.6%
Newark, NJ PMSA	1.5%	0.8%	-0.1%
Oakland, CA PMSA	4.2%	0.3%	-0.6%
Oklahoma City, OK MSA	1.2%	0.1%	0.8%
Orange County, CA PMSA	3.3%	0.2%	0.0%
Orlando, FL MSA	4.3%	0.3%	-1.1%
Philadelphia, PA-NJ PMSA	2.5%	0.2%	-0.5%
Phoenix-Mesa, AZ MSA	5.7%	0.4%	1.1%
Pittsburgh, PA MSA	1.6%	-0.1%	0.7%
Portland-Vancouver, OR-WA PMSA	3.2%	0.3%	-0.8%
Providence-Fall River-Warwick, RI-MA MSA	3.0%	-1.3%	-1.0%
Provo-Orem, UT MSA	2.7%	0.1%	-1.8%
Raleigh-Durham-Chapel Hill, NC MSA	1.4%	0.1%	0.6%
Riverside-San Bernardino, CA PMSA	4.4%	0.4%	0.1%
Rochester, NY MSA	2.1%	0.5%	-0.3%
St. Louis, MO-IL MSA	2.5%	0.3%	0.6%
Salt Lake City-Ogden, UT MSA	2.5%	0.1%	-1.4%
San Antonio, TX MSA	3.4%	-0.5%	0.0%
San Diego, CA MSA	3.7%	0.3%	-0.4%
San Francisco, CA PMSA	2.1%	0.2%	0.3%
Scranton--Wilkes-Barre--Hazleton, PA MSA	1.3%	0.0%	1.1%
Seattle-Bellevue-Everett, WA PMSA	3.1%	0.3%	-0.5%

1995 Metro	Rent-Occupied Share of Occupied Housing	Med. Property Tax to Med. Home Value Ratio	Single Family Detached % of Metro Housing
Springfield, MA MSA	1.3%	-1.4%	1.0%
Tampa-St. Petersburg-Clearwater, FL MSA	4.6%	0.2%	0.0%
Toledo, OH MSA	4.4%	0.2%	0.2%
Washington, DC-MD-VA-WV PMSA	3.3%	0.2%	-1.0%
West Palm Beach-Boca Raton, FL MSA	3.7%	0.4%	0.7%
Number of Observations	**65**	**65**	**65**
Min	**1.1%**	**-2.2%**	**-1.8%**
Max	**5.7%**	**0.8%**	**1.4%**
Mean	**2.8%**	**0.1%**	**-0.1%**
Median	**2.7%**	**0.2%**	**-0.1%**
Standard Deviation	**1.0%**	**0.6%**	**0.7%**

Table 39 - Descriptive Statistics – 5 Year Change in Metropolitan Cost Burdens by Race, 2005-09 to 2010-14

1995 Metro	Cost Burden - All		Cost Burden - Whites		Cost Burden - Blacks		Cost Burden - Hispanics	
	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden	% of White Owner Households with Over 30% Housing Cost Burden	% of White Renter Households with Over 30% Housing Cost Burden	% of Black Owner Households with Over 30% Housing Cost Burden	% of Black Renter Households with Over 30% Housing Cost Burden	% of Hispanic Owner Households with Over 30% Housing Cost Burden	% of Hispanic Renter Households with Over 30% Housing Cost Burden
Akron, OH PMSA	-4.7%	0.2%	-4.4%	0.1%	-4.9%	0.4%	-25.3%	-7.5%
Allentown-Bethlehem-Easton, PA MSA	-0.4%	6.7%	-0.7%	5.3%	-15.3%	8.1%	1.7%	7.7%
Ann Arbor, MI PMSA	-4.9%	-3.8%	-4.7%	-4.2%	-4.5%	-10.2%	1.3%	7.8%
Atlanta, GA MSA	-1.9%	2.8%	-1.5%	2.4%	-5.2%	1.2%	-7.1%	6.2%
Bergen-Passaic, NJ PMSA	-1.6%	3.2%	-1.1%	3.8%	3.5%	1.8%	-7.7%	1.4%
Boston, MA-NH PMSA	-4.3%	0.3%	-4.2%	0.3%	-7.5%	-1.6%	-14.5%	-2.5%
Buffalo-Niagara Falls, NY MSA	-3.4%	0.7%	-3.7%	0.5%	-1.0%	-0.7%	-1.9%	-0.4%
Burlington, VT MSA	-5.3%	-5.5%	-5.1%	-4.4%	-59.3%	7.9%	-11.3%	-12.9%
Charlotte-Gastonia-Rock Hill, NC-SC MSA	-0.7%	4.7%	-0.7%	2.6%	-2.2%	5.1%	-3.1%	8.6%
Chicago, IL PMSA	-1.9%	1.4%	-0.8%	1.3%	-2.3%	1.8%	-7.7%	2.5%
Cincinnati, OH-KY-IN PMSA	-1.7%	1.5%	-1.4%	0.4%	-5.3%	5.5%	-5.8%	1.8%
Cleveland-Lorain-Elyria, OH PMSA	-3.0%	3.1%	-3.5%	3.1%	-4.4%	2.5%	-1.7%	-3.0%
Columbus, OH MSA	-2.5%	2.7%	-2.6%	2.1%	-3.5%	3.0%	-5.8%	-1.0%
Dallas, TX PMSA	-4.3%	-0.2%	-2.9%	1.0%	-7.5%	0.0%	-7.6%	-1.8%
Dayton-Springfield, OH MSA	-2.0%	-2.6%	-1.3%	-1.4%	-6.0%	-3.4%	-5.7%	4.0%
Denver, CO PMSA	-5.5%	0.1%	-4.4%	0.2%	-11.2%	0.8%	-13.2%	-1.5%
Des Moines, IA MSA	-2.4%	-3.8%	-2.4%	-1.7%	5.5%	-2.8%	-2.7%	-11.0%
Detroit, MI PMSA	-4.8%	0.9%	-4.4%	1.6%	-7.3%	-0.5%	-3.3%	0.5%
Fort Lauderdale, FL PMSA	-3.9%	1.9%	-2.4%	0.9%	-6.9%	2.8%	-10.5%	2.4%
Fort Worth-Arlington, TX PMSA	-3.5%	1.2%	-2.4%	0.9%	-6.0%	-0.7%	-7.1%	1.1%
Grand Rapids-Muskegon-Holland, MI MSA	-4.5%	2.2%	-3.9%	1.9%	-7.2%	1.3%	-13.9%	5.6%
Harrisburg-Lebanon-Carlisle, PA MSA	2.8%	6.0%	3.3%	5.8%	-9.2%	11.4%	-1.1%	-2.9%
Hartford, CT MSA	-1.0%	1.7%	-0.8%	2.3%	-3.3%	0.3%	-3.0%	4.1%
Honolulu, HI MSA	1.1%	1.8%	0.9%	4.2%	3.6%	-0.3%	-6.2%	2.0%

1995 Metro	Cost Burden - All: % of Owner Households with Over 30% Housing Cost Burden	Cost Burden - All: % of Renter Households with Over 30% Housing Cost Burden	Cost Burden - Whites: % of White Owner Households with Over 30% Housing Cost Burden	Cost Burden - Whites: % of White Renter Households with Over 30% Housing Cost Burden	Cost Burden - Blacks: % of Black Owner Households with Over 30% Housing Cost Burden	Cost Burden - Blacks: % of Black Renter Households with Over 30% Housing Cost Burden	Cost Burden - Hispanics: % of Hispanic Owner Households with Over 30% Housing Cost Burden	Cost Burden - Hispanics: % of Hispanic Renter Households with Over 30% Housing Cost Burden
Houston, TX PMSA	-2.6%	0.0%	-1.3%	0.8%	-5.2%	0.2%	-5.2%	-1.3%
Indianapolis, IN MSA	-2.5%	4.9%	-2.3%	5.8%	-5.4%	2.2%	-4.9%	5.7%
Kansas City, MO-KS MSA	-1.3%	3.0%	-1.0%	3.0%	-4.4%	2.0%	-6.0%	2.5%
Lancaster, PA MSA	2.6%	8.9%	1.9%	7.5%	-4.5%	9.4%	6.7%	8.9%
Los Angeles-Long Beach, CA PMSA	-3.5%	3.7%	-2.2%	3.0%	-1.5%	3.9%	-6.0%	4.9%
Miami, FL PMSA	-6.1%	2.3%	-4.2%	2.5%	-7.0%	3.5%	-7.0%	1.4%
Middlesex-Somerset-Hunterdon, NJ PMSA	-0.9%	3.3%	0.2%	2.6%	-7.2%	2.3%	-5.0%	6.0%
Milwaukee-Waukesha, WI PMSA	-1.2%	3.7%	-1.3%	2.9%	-1.4%	1.7%	-2.4%	8.3%
Minneapolis-St. Paul, MN-WI MSA	-5.8%	0.6%	-5.3%	0.7%	-12.9%	-1.2%	-16.1%	-2.9%
Monmouth-Ocean, NJ PMSA	-1.3%	4.6%	-1.0%	4.0%	-3.2%	2.6%	-5.5%	9.1%
Nashville, TN MSA	-0.5%	4.3%	-0.1%	4.6%	-4.1%	2.7%	-1.3%	8.3%
Nassau-Suffolk, NY PMSA	-0.9%	2.2%	-0.7%	2.1%	-3.7%	-0.3%	-7.5%	1.3%
New Haven-Meriden, CT PMSA	-0.9%	5.4%	-1.0%	1.4%	4.0%	8.7%	-7.8%	7.6%
New London-Norwich, CT-RI MSA	0.8%	1.5%	0.8%	1.6%	4.2%	7.9%	12.9%	-0.9%
New York, NY PMSA	0.0%	3.9%	0.2%	2.9%	0.4%	4.5%	-4.0%	4.3%
Newark, NJ PMSA	-1.0%	3.9%	-0.3%	0.7%	0.2%	6.6%	-9.4%	2.4%
Oakland, CA PMSA	-7.8%	1.4%	-5.2%	1.3%	-10.1%	0.2%	-12.7%	3.1%
Oklahoma City, OK MSA	-0.4%	1.1%	-0.7%	0.8%	0.4%	1.6%	3.3%	7.4%
Orange County, CA PMSA	-4.8%	1.3%	-3.1%	0.6%	-6.9%	-0.4%	-9.2%	3.1%
Orlando, FL MSA	-2.4%	1.7%	-1.6%	0.7%	-5.1%	1.4%	-6.3%	1.2%
Philadelphia, PA-NJ PMSA	-0.6%	3.6%	-0.5%	3.1%	-1.5%	2.4%	-1.1%	5.2%
Phoenix-Mesa, AZ MSA	-4.4%	1.0%	-3.2%	0.2%	-8.9%	1.6%	-8.4%	1.7%
Pittsburgh, PA MSA	-3.9%	0.1%	-3.7%	-0.3%	-10.4%	-1.0%	2.6%	-1.2%
Portland-Vancouver, OR-WA PMSA	-2.9%	2.5%	-2.3%	2.3%	-12.0%	7.7%	-9.6%	2.5%
Providence-Fall River-Warwick, RI-MA MSA	-1.4%	3.7%	-1.1%	3.6%	-9.1%	0.9%	-9.0%	1.1%
Provo-Orem, UT MSA	-2.5%	4.0%	-2.7%	1.4%	29.2%	-15.2%	-4.4%	15.1%

1995 Metro	Cost Burden - All		Cost Burden - Whites		Cost Burden - Blacks		Cost Burden - Hispanics	
	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden	% of White Owner Households with Over 30% Housing Cost Burden	% of White Renter Households with Over 30% Housing Cost Burden	% of Black Owner Households with Over 30% Housing Cost Burden	% of Black Renter Households with Over 30% Housing Cost Burden	% of Hispanic Owner Households with Over 30% Housing Cost Burden	% of Hispanic Renter Households with Over 30% Housing Cost Burden
Raleigh-Durham-Chapel Hill, NC MSA	-1.0%	1.1%	-0.9%	0.2%	-2.3%	1.0%	0.8%	9.9%
Riverside-San Bernardino, CA PMSA	-5.8%	3.6%	-3.3%	4.7%	-8.9%	2.8%	-9.7%	2.8%
Rochester, NY MSA	-2.6%	2.4%	-2.9%	2.3%	-3.8%	-2.6%	-0.3%	-6.9%
St. Louis, MO-IL MSA	-1.1%	1.5%	-0.8%	2.0%	-2.0%	-0.8%	-3.4%	8.7%
Salt Lake City-Ogden, UT MSA	-1.4%	5.7%	-1.9%	3.7%	-9.2%	5.4%	-0.2%	9.7%
San Antonio, TX MSA	-1.1%	0.5%	-0.6%	0.8%	-1.6%	-5.2%	-2.2%	1.1%
San Diego, CA MSA	-5.9%	0.9%	-4.5%	2.2%	-5.1%	-0.1%	-10.8%	-0.4%
San Francisco, CA PMSA	-3.5%	3.2%	-3.0%	3.6%	-2.2%	-0.6%	-6.0%	2.0%
Scranton--Wilkes-Barre--Hazleton, PA MSA	0.1%	4.7%	-0.2%	5.1%	12.4%	-9.7%	-2.0%	-4.0%
Seattle-Bellevue-Everett, WA PMSA	-4.0%	2.0%	-3.9%	2.3%	-3.0%	0.1%	-4.7%	4.9%
Springfield, MA MSA	-2.3%	1.1%	-1.8%	1.6%	-12.6%	0.5%	-4.8%	-3.8%
Tampa-St. Petersburg-Clearwater, FL MSA	-3.4%	3.0%	-3.1%	1.5%	-6.0%	5.5%	-6.1%	5.2%
Toledo, OH MSA	-3.6%	0.7%	-3.7%	0.3%	-1.7%	2.3%	-6.1%	1.5%
Washington, DC-MD-VA-WV PMSA	-5.6%	1.0%	-3.5%	-0.5%	-5.4%	3.0%	-15.3%	0.9%
West Palm Beach-Boca Raton, FL MSA	-5.0%	1.3%	-3.7%	0.5%	-11.2%	1.2%	-10.6%	2.5%
Number of Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Min	**-7.8%**	**-5.5%**	**-5.3%**	**-4.4%**	**-59.3%**	**-15.2%**	**-25.3%**	**-12.9%**
Max	**2.8%**	**8.9%**	**3.3%**	**7.5%**	**29.2%**	**11.4%**	**12.9%**	**15.1%**
Mean	**-2.6%**	**2.1%**	**-2.1%**	**1.8%**	**-4.9%**	**1.4%**	**-5.7%**	**2.3%**
Median	**-2.5%**	**1.9%**	**-2.2%**	**1.6%**	**-4.9%**	**1.4%**	**-5.8%**	**2.4%**
Standard Deviation	**2.1%**	**2.4%**	**1.8%**	**2.1%**	**9.4%**	**4.4%**	**5.7%**	**5.0%**

Table 40 - Descriptive Statistics – 5 Year Change in Metropolitan Cost Burdens by Income Quartile, 2005-09 to 2010-14

	1st Quartile		2nd Quartile		3rd Quartile		4th Quartile	
1995 Metro	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden	% of Owner Households with Over 30% Housing Cost Burden	% Renter Households with Over 30% Housing Cost Burden	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden
Akron, OH PMSA	-0.6%	3.6%	-5.4%	3.7%	-4.8%	-0.4%	-1.6%	0.3%
Allentown-Bethlehem-Easton, PA MSA	7.6%	3.8%	0.7%	17.1%	-0.5%	2.9%	-2.5%	-0.4%
Ann Arbor, MI PMSA	-3.5%	0.4%	-9.8%	10.7%	-4.2%	-1.1%	-2.1%	0.5%
Atlanta, GA MSA	1.8%	3.7%	-0.2%	19.4%	0.6%	4.4%	-0.9%	0.6%
Bergen-Passaic, NJ PMSA	2.9%	1.7%	7.3%	10.9%	-3.6%	2.3%	-3.8%	-0.9%
Boston, MA-NH PMSA	1.7%	1.4%	-3.5%	2.3%	-8.0%	1.5%	-2.8%	-0.3%
Buffalo-Niagara Falls, NY MSA	-2.8%	0.8%	-4.9%	7.6%	-2.0%	1.1%	-0.6%	1.0%
Burlington, VT MSA	0.1%	-4.7%	-12.4%	-0.9%	-7.1%	-0.7%	-2.6%	0.0%
Charlotte-Gastonia-Rock Hill, NC-SC MSA	3.9%	6.2%	-0.4%	13.4%	0.2%	3.4%	-1.1%	1.5%
Chicago, IL PMSA	4.7%	3.0%	-0.6%	11.1%	-2.7%	2.7%	-2.1%	0.4%
Cincinnati, OH-KY-IN PMSA	3.6%	4.1%	-2.1%	7.8%	-0.8%	2.0%	-1.9%	-0.6%
Cleveland-Lorain-Elyria, OH PMSA	2.4%	3.1%	-1.4%	14.8%	-1.9%	2.2%	-1.1%	0.7%
Columbus, OH MSA	0.7%	3.2%	-4.9%	14.1%	-1.5%	1.8%	-0.4%	0.9%
Dallas, TX PMSA	-3.0%	3.8%	-6.2%	5.8%	-4.1%	1.0%	-1.6%	0.6%
Dayton-Springfield, OH MSA	1.2%	1.6%	-1.1%	0.7%	-1.3%	2.0%	-0.8%	0.0%
Denver, CO PMSA	-1.0%	3.9%	-7.0%	8.7%	-8.0%	0.6%	-2.3%	1.1%
Des Moines, IA MSA	0.3%	-0.8%	-5.6%	6.4%	-2.3%	-1.1%	-0.6%	0.0%
Detroit, MI PMSA	1.0%	2.7%	-6.2%	10.7%	-5.5%	2.6%	-2.2%	-0.1%
Fort Lauderdale, FL PMSA	1.3%	0.1%	0.5%	4.0%	-5.3%	5.9%	-5.6%	0.5%
Fort Worth-Arlington, TX PMSA	-1.7%	5.4%	-4.8%	9.5%	-1.4%	1.7%	-0.8%	0.4%
Grand Rapids-Muskegon-Holland, MI MSA	0.3%	4.6%	-5.7%	10.4%	-4.1%	2.9%	-0.8%	0.2%
Harrisburg-Lebanon-Carlisle, PA MSA	11.4%	6.8%	6.4%	9.2%	-0.3%	3.2%	0.5%	0.9%

1995 Metro	1st Quartile: % of Owner Households with Over 30% Housing Cost Burden	1st Quartile: % of Renter Households with Over 30% Housing Cost Burden	2nd Quartile: % of Owner Households with Over 30% Housing Cost Burden	2nd Quartile: % Renter Households with Over 30% Housing Cost Burden	3rd Quartile: % of Owner Households with Over 30% Housing Cost Burden	3rd Quartile: % of Renter Households with Over 30% Housing Cost Burden	4th Quartile: % of Owner Households with Over 30% Housing Cost Burden	4th Quartile: % of Renter Households with Over 30% Housing Cost Burden
Hartford, CT MSA	5.5%	3.2%	0.5%	5.7%	-3.9%	0.1%	-1.0%	-0.5%
Honolulu, HI MSA	5.1%	0.4%	0.1%	8.9%	1.5%	6.3%	-1.7%	1.2%
Houston, TX PMSA	0.0%	3.7%	-2.0%	9.9%	-2.0%	0.9%	-0.8%	-0.2%
Indianapolis, IN MSA	3.5%	8.2%	-0.6%	16.7%	-1.6%	1.9%	-1.2%	-0.1%
Kansas City, MO-KS MSA	3.9%	7.1%	-1.8%	9.7%	-0.3%	-0.1%	-0.4%	-1.1%
Lancaster, PA MSA	8.7%	10.5%	6.1%	12.9%	1.2%	2.5%	-0.2%	0.9%
Los Angeles-Long Beach, CA PMSA	2.8%	1.0%	-1.5%	11.3%	-4.4%	6.5%	-4.8%	0.1%
Miami, FL PMSA	-3.6%	0.5%	-4.4%	8.5%	-7.2%	10.4%	-6.0%	1.3%
Middlesex-Somerset-Hunterdon, NJ PMSA	6.9%	4.2%	-2.1%	7.0%	-3.2%	1.1%	-1.5%	0.0%
Milwaukee-Waukesha, WI PMSA	5.3%	5.8%	1.9%	8.4%	-2.1%	1.2%	-1.3%	0.8%
Minneapolis-St. Paul, MN-WI MSA	0.0%	4.9%	-10.2%	6.0%	-6.7%	0.7%	-1.5%	-0.4%
Monmouth-Ocean, NJ PMSA	3.4%	3.8%	0.2%	9.0%	-4.0%	3.5%	-2.6%	-0.8%
Nashville, TN MSA	1.1%	5.4%	2.1%	12.7%	-0.5%	1.6%	-0.6%	1.9%
Nassau-Suffolk, NY PMSA	3.6%	1.6%	1.3%	6.0%	-2.6%	-2.6%	-2.2%	-0.9%
New Haven-Meriden, CT PMSA	4.6%	2.4%	2.4%	12.0%	-3.5%	3.3%	-0.7%	0.5%
New London-Norwich, CT-RI MSA	10.2%	4.0%	1.7%	5.3%	-2.2%	-3.9%	-2.2%	-3.2%
New York, NY PMSA	-0.6%	0.9%	2.0%	10.3%	0.6%	6.0%	-1.0%	0.5%
Newark, NJ PMSA	4.6%	3.7%	3.9%	11.0%	-0.2%	-0.1%	-1.4%	0.3%
Oakland, CA PMSA	1.4%	1.4%	-4.0%	7.1%	-11.9%	2.3%	-7.3%	0.2%
Oklahoma City, OK MSA	2.1%	2.5%	-2.7%	9.4%	1.9%	3.2%	0.0%	0.5%
Orange County, CA PMSA	3.9%	0.7%	-3.4%	9.0%	-6.1%	6.3%	-5.5%	0.1%
Orlando, FL MSA	3.9%	1.9%	-2.6%	11.2%	-2.0%	3.6%	-2.4%	0.5%
Philadelphia, PA-NJ PMSA	2.7%	0.8%	1.8%	12.7%	-0.6%	3.2%	-1.5%	-0.2%
Phoenix-Mesa, AZ MSA	2.7%	4.0%	-6.3%	8.9%	-6.1%	2.4%	-2.8%	1.0%
Pittsburgh, PA MSA	-3.0%	1.7%	-4.4%	5.0%	-4.2%	-0.6%	-1.4%	-0.4%
Portland-Vancouver, OR-WA PMSA	2.8%	4.4%	-4.0%	10.2%	-4.5%	3.1%	-3.2%	0.4%

1995 Metro	1st Quartile: % of Owner Households with Over 30% Housing Cost Burden	1st Quartile: % of Renter Households with Over 30% Housing Cost Burden	2nd Quartile: % of Owner Households with Over 30% Housing Cost Burden	2nd Quartile: % Renter Households with Over 30% Housing Cost Burden	3rd Quartile: % of Owner Households with Over 30% Housing Cost Burden	3rd Quartile: % of Renter Households with Over 30% Housing Cost Burden	4th Quartile: % of Owner Households with Over 30% Housing Cost Burden	4th Quartile: % of Renter Households with Over 30% Housing Cost Burden
Providence-Fall River-Warwick, RI-MA MSA	6.2%	3.9%	2.2%	7.6%	-2.8%	1.4%	-2.6%	0.7%
Provo-Orem, UT MSA	1.4%	4.7%	-2.2%	10.1%	-5.0%	0.0%	-1.2%	0.4%
Raleigh-Durham-Chapel Hill, NC MSA	1.1%	3.1%	0.0%	7.2%	-2.1%	0.4%	-1.4%	-1.0%
Riverside-San Bernardino, CA PMSA	4.1%	3.8%	-2.3%	10.7%	-9.3%	6.1%	-8.1%	1.4%
Rochester, NY MSA	-0.6%	4.1%	1.3%	7.4%	-1.7%	0.1%	-0.6%	1.1%
St. Louis, MO-IL MSA	3.2%	4.6%	-1.4%	9.5%	-0.3%	1.5%	-0.5%	-0.2%
Salt Lake City-Ogden, UT MSA	2.6%	8.8%	0.0%	11.6%	-3.1%	2.3%	-0.7%	-0.2%
San Antonio, TX MSA	0.2%	1.8%	1.3%	8.4%	0.0%	2.1%	-1.1%	-0.5%
San Diego, CA MSA	1.6%	0.5%	-1.6%	7.4%	-9.5%	2.1%	-7.8%	0.2%
San Francisco, CA PMSA	3.0%	1.5%	-3.5%	9.0%	-4.5%	3.7%	-5.2%	-0.4%
Scranton--Wilkes-Barre--Hazleton, PA MSA	4.3%	3.8%	2.9%	11.7%	0.3%	0.8%	-1.2%	2.1%
Seattle-Bellevue-Everett, WA PMSA	1.8%	3.8%	-4.5%	9.4%	-7.3%	2.1%	-3.8%	-0.3%
Springfield, MA MSA	3.4%	0.5%	-0.6%	5.5%	-4.9%	0.9%	-2.7%	0.5%
Tampa-St. Petersburg-Clearwater, FL MSA	2.6%	2.7%	-1.7%	11.4%	-5.7%	4.1%	-3.8%	0.7%
Toledo, OH MSA	-0.5%	4.1%	-4.8%	6.2%	-2.1%	3.0%	-0.9%	-0.3%
Washington, DC-MD-VA-WV PMSA	-1.6%	4.8%	-8.3%	6.8%	-8.4%	1.1%	-2.7%	-0.4%
West Palm Beach-Boca Raton, FL MSA	0.5%	2.6%	-4.2%	7.3%	-7.8%	-0.3%	-3.9%	-1.0%
Number of Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Min	**-3.6%**	**-4.7%**	**-12.4%**	**-0.9%**	**-11.9%**	**-3.9%**	**-8.1%**	**-3.2%**
Max	**11.4%**	**10.5%**	**7.3%**	**19.4%**	**1.9%**	**10.4%**	**0.5%**	**2.1%**
Mean	**2.3%**	**3.2%**	**-1.9%**	**9.1%**	**-3.4%**	**2.1%**	**-2.2%**	**0.2%**
Median	**2.4%**	**3.6%**	**-1.7%**	**9.0%**	**-2.8%**	**2.0%**	**-1.5%**	**0.2%**
Standard Deviation	**3.0%**	**2.4%**	**3.8%**	**3.6%**	**3.0%**	**2.3%**	**1.9%**	**0.8%**

Table 41 - Descriptive Statistics – 5 Year Chg. in Metro. Med. Home Value to Med. Household Income Ratio by Quartile, 2005-09 to 2010-14

1995 Metro	Median Home Value to Median Household Income Ratio by Quartile			
	1st Quartile Median Home Value to Median Hshd. Income Ratio	2nd Quartile Home Value to Median Hshd. Income Ratio	3rd Quartile Median Home Value to Median Hshd. Income Ratio	4th Quartile Median Home Value to Median Hshd. Income Ratio
Akron, OH PMSA	-1.7	-0.7	-0.4	-0.7
Allentown-Bethlehem-Easton, PA MSA	-1.2	-0.1	-0.3	-0.3
Ann Arbor, MI PMSA	-3.7	-1.3	-1.7	-1.9
Atlanta, GA MSA	-1.5	-0.2	-0.7	-1.7
Bergen-Passaic, NJ PMSA	-4.9	-1.7	-1.7	-0.9
Boston, MA-NH PMSA	-8.8	-3.1	-2.4	-1.4
Buffalo-Niagara Falls, NY MSA	-0.5	0.0	0.1	0.0
Burlington, VT MSA	-0.8	-0.9	-1.4	-2.2
Charlotte-Gastonia-Rock Hill, NC-SC MSA	-0.8	0.0	-0.4	-0.7
Chicago, IL PMSA	-1.4	-0.7	-1.1	-1.4
Cincinnati, OH-KY-IN PMSA	-1.6	-0.4	-0.8	-0.4
Cleveland-Lorain-Elyria, OH PMSA	-2.1	-0.7	-0.8	-0.6
Columbus, OH MSA	-1.7	-0.4	-0.7	-0.4
Dallas, TX PMSA	-1.0	-0.1	-0.4	-0.1
Dayton-Springfield, OH MSA	-1.0	-0.1	-0.2	-0.3
Denver, CO PMSA	-2.0	-0.3	-0.8	-1.1
Des Moines, IA MSA	-1.3	-0.4	0.0	-0.2
Detroit, MI PMSA	-3.2	-1.7	-0.9	-0.5
Fort Lauderdale, FL PMSA	-2.5	-1.9	-1.5	-1.5
Fort Worth-Arlington, TX PMSA	-0.7	-0.2	0.0	0.1
Grand Rapids-Muskegon-Holland, MI MSA	-2.8	-0.8	-0.6	-0.9
Harrisburg-Lebanon-Carlisle, PA MSA	-0.4	-0.5	-0.3	-0.3
Hartford, CT MSA	-1.3	-0.3	-0.8	-0.5
Honolulu, HI MSA	-1.6	-4.0	-0.4	-0.1
Houston, TX PMSA	-0.2	0.2	-0.2	-0.3

1995 Metro	Median Home Value to Median Household Income Ratio by Quartile			
	1st Quartile Median Home Value to Median Hshd. Income Ratio	2nd Quartile Home Value to Median Hshd. Income Ratio	3rd Quartile Median Home Value to Median Hshd. Income Ratio	4th Quartile Median Home Value to Median Hshd. Income Ratio
Indianapolis, IN MSA	-0.5	-0.1	-0.3	-0.4
Kansas City, MO-KS MSA	-1.2	-0.2	-0.6	-0.5
Lancaster, PA MSA	-0.9	-0.1	-0.3	-0.4
Los Angeles-Long Beach, CA PMSA	-4.6	-6.7	-1.8	-0.3
Miami, FL PMSA	-6.7	-2.1	-1.7	-1.2
Middlesex-Somerset-Hunterdon, NJ PMSA	-0.8	-0.9	-2.4	-1.7
Milwaukee-Waukesha, WI PMSA	-2.7	-1.5	-0.7	-0.2
Minneapolis-St. Paul, MN-WI MSA	-1.8	-0.9	-1.3	-1.7
Monmouth-Ocean, NJ PMSA	-2.1	-1.7	-2.9	-1.8
Nashville, TN MSA	-0.3	0.3	-0.3	-0.6
Nassau-Suffolk, NY PMSA	-3.5	-1.4	-1.7	-1.0
New Haven-Meriden, CT PMSA	-2.1	-1.0	-0.6	-1.2
New London-Norwich, CT-RI MSA	-1.4	-1.1	-0.8	-1.3
New York, NY PMSA	-7.0	-6.3	-1.5	-0.2
Newark, NJ PMSA	-0.7	-0.9	-2.2	-1.2
Oakland, CA PMSA	-7.2	-4.4	-3.3	-1.2
Oklahoma City, OK MSA	-0.8	-0.2	0.0	0.1
Orange County, CA PMSA	-3.1	-3.0	-3.0	-0.9
Orlando, FL MSA	-2.7	-2.4	-2.2	-2.5
Philadelphia, PA-NJ PMSA	-0.9	-0.8	-1.1	-1.5
Phoenix-Mesa, AZ MSA	-2.0	-1.8	-2.0	-1.9
Pittsburgh, PA MSA	-0.9	-0.3	0.0	0.0
Portland-Vancouver, OR-WA PMSA	-2.9	-1.5	-0.9	-1.4
Providence-Fall River-Warwick, RI-MA MSA	-5.8	-1.7	-1.0	-1.7
Provo-Orem, UT MSA	-0.4	-1.1	-1.7	-2.0
Raleigh-Durham-Chapel Hill, NC MSA	-0.8	0.1	-0.4	-1.6
Riverside-San Bernardino, CA PMSA	-4.4	-3.9	-2.3	-1.6
Rochester, NY MSA	-0.2	-0.2	0.1	0.1

1995 Metro	Median Home Value to Median Household Income Ratio by Quartile			
	1st Quartile Median Home Value to Median Hshd. Income Ratio	2nd Quartile Home Value to Median Hshd. Income Ratio	3rd Quartile Median Home Value to Median Hshd. Income Ratio	4th Quartile Median Home Value to Median Hshd. Income Ratio
St. Louis, MO-IL MSA	-0.8	-0.4	-0.6	-0.5
Salt Lake City-Ogden, UT MSA	-0.2	-0.9	-1.4	-2.0
San Antonio, TX MSA	-0.7	0.0	-0.2	0.0
San Diego, CA MSA	-3.9	-6.0	-1.9	-0.4
San Francisco, CA PMSA	-10.8	-5.0	-2.1	--
Scranton--Wilkes-Barre--Hazleton, PA MSA	-0.5	-0.5	-0.1	-0.2
Seattle-Bellevue-Everett, WA PMSA	-2.3	-1.7	-3.0	-1.7
Springfield, MA MSA	-1.2	-1.3	-0.6	-0.3
Tampa-St. Petersburg-Clearwater, FL MSA	-2.1	-1.4	-0.8	-1.4
Toledo, OH MSA	-1.9	-0.6	-0.3	-0.6
Washington, DC-MD-VA-WV PMSA	-3.0	-2.5	-2.0	-1.0
West Palm Beach-Boca Raton, FL MSA	-4.1	-1.7	-1.3	-1.0
Number of Observations	**65**	**65**	**65**	**64**
Min	**-10.8**	**-6.7**	**-3.3**	**-2.5**
Max	**-0.2**	**0.3**	**0.1**	**0.1**
Mean	**-2.3**	**-1.4**	**-1.1**	**-0.9**
Median	**-1.6**	**-0.9**	**-0.8**	**-0.8**
Standard Deviation	**2.1**	**1.6**	**0.9**	**0.7**

Table 42 - Descriptive Statistics – Central City Demographic and Economic Characteristics, 2005-09

1995 Metro	Total Population	Pop. Density	Water % of Metro Area	% Hispanic	% Black	% Under Age 18	% Age 65 or Older	% Foreign-born	Median Household Income	% of Over 25 with a Bachelors Degree	Unemp. Rate
Akron, OH PMSA	208,800	3,366.0	0.5%	1.8%	29.9%	23.7%	12.5%	3.8%	34,952	19.8%	11.7%
Allentown-Bethlehem-Easton, PA MSA	179,972	4,910.9	2.2%	31.1%	7.2%	24.5%	13.7%	10.2%	39,981	20.3%	9.1%
Ann Arbor, MI PMSA	113,656	4,084.0	3.0%	3.0%	6.9%	14.9%	7.8%	16.8%	51,001	71.9%	6.3%
Atlanta, GA MSA	515,843	3,874.1	0.6%	5.3%	49.7%	20.1%	8.5%	7.8%	50,243	45.7%	9.1%
Bergen-Passaic, NJ PMSA	--	--	--	--	--	--	--	--	--	--	--
Boston, MA-NH PMSA	909,566	8,718.3	37.0%	15.1%	17.8%	17.8%	10.6%	25.8%	54,225	43.7%	7.9%
Buffalo-Niagara Falls, NY MSA	325,047	5,967.4	21.4%	7.3%	33.9%	24.2%	13.1%	5.9%	30,532	19.8%	11.7%
Burlington, VT MSA	38,630	3,748.2	33.5%	1.8%	2.1%	14.5%	10.0%	8.1%	38,598	41.4%	7.3%
Charlotte-Gastonia-Rock Hill, NC-SC MSA	909,665	1,910.6	0.6%	10.5%	30.6%	25.7%	9.4%	12.0%	50,171	35.2%	8.4%
Chicago, IL PMSA	3,396,788	8,446.0	2.1%	27.7%	30.4%	24.7%	9.9%	20.8%	48,408	31.6%	10.1%
Cincinnati, OH-KY-IN PMSA	332,572	4,266.9	2.0%	2.2%	41.7%	22.2%	11.7%	4.1%	33,855	30.2%	10.1%
Cleveland-Lorain-Elyria, OH PMSA	564,302	4,627.6	4.3%	10.0%	42.0%	25.4%	12.9%	4.3%	30,031	13.4%	15.5%
Columbus, OH MSA	837,564	3,260.3	2.5%	4.2%	23.1%	23.2%	9.3%	8.7%	43,131	30.8%	7.9%
Dallas, TX PMSA	1,581,967	3,192.7	8.8%	40.4%	20.3%	26.3%	8.3%	25.3%	42,411	28.9%	7.8%
Dayton-Springfield, OH MSA	249,845	2,654.9	1.1%	1.9%	30.8%	23.1%	13.0%	2.4%	31,643	16.2%	12.5%
Denver, CO PMSA	582,447	3,806.8	1.1%	33.8%	9.7%	22.7%	10.4%	17.4%	45,438	39.3%	6.9%
Des Moines, IA MSA	196,521	2,430.1	2.1%	10.5%	8.8%	24.7%	11.7%	9.5%	44,022	23.9%	6.5%
Detroit, MI PMSA	1,102,477	5,771.3	4.4%	7.3%	67.1%	28.4%	10.8%	8.1%	31,327	13.6%	20.7%
Fort Lauderdale, FL PMSA	183,374	5,274.6	9.9%	12.4%	30.9%	20.1%	13.9%	21.0%	50,886	31.1%	8.0%
Fort Worth-Arlington, TX PMSA	1,049,294	2,408.3	2.6%	30.5%	17.5%	28.9%	8.0%	18.0%	49,742	26.3%	7.4%
Grand Rapids-Muskegon-Holland, MI MSA	266,723	3,547.0	6.9%	15.7%	19.2%	24.6%	11.2%	10.5%	38,683	25.3%	11.6%
Harrisburg-Lebanon-Carlisle, PA MSA	89,928	5,043.7	17.3%	14.6%	29.7%	24.2%	13.1%	6.4%	34,393	18.3%	10.2%
Hartford, CT MSA	171,627	2,938.9	3.3%	30.8%	29.5%	25.1%	10.0%	17.8%	38,481	19.4%	13.1%

1995 Metro	Total Population	Pop. Density	Water % of Metro Area	% Hispanic	% Black	% Under Age 18	% Age 65 or Older	% Foreign-born	Median Household Income	% of Over 25 with a Bachelors Degree	Unemp. Rate
Honolulu, HI MSA	902,564	1,502.4	71.8%	7.9%	3.1%	22.3%	14.5%	18.4%	67,066	30.7%	4.2%
Houston, TX PMSA	2,313,853	3,364.4	4.1%	41.2%	22.6%	27.1%	8.8%	27.4%	42,976	27.7%	7.7%
Indianapolis, IN MSA	854,907	2,122.4	1.6%	6.8%	25.0%	25.3%	11.1%	6.5%	42,832	26.9%	9.7%
Kansas City, MO-KS MSA	768,379	1,467.9	1.6%	11.6%	24.0%	25.8%	10.3%	8.4%	47,522	29.3%	8.3%
Lancaster, PA MSA	55,302	7,653.6	1.7%	33.3%	14.0%	26.1%	9.2%	8.8%	32,845	16.4%	10.9%
Los Angeles-Long Beach, CA PMSA	4,542,085	7,139.3	5.3%	46.8%	10.2%	25.1%	9.9%	37.2%	49,229	29.4%	8.2%
Miami, FL PMSA	506,157	11,636.7	38.9%	64.9%	15.9%	20.0%	16.4%	55.4%	32,468	26.0%	7.2%
Middlesex-Somerset-Hunterdon, NJ PMSA	--	--	--	--	--	--	--	--	--	--	--
Milwaukee-Waukesha, WI PMSA	670,963	5,548.4	0.8%	14.5%	33.6%	26.7%	9.8%	9.2%	39,167	22.6%	10.3%
Minneapolis-St. Paul, MN-WI MSA	657,841	6,208.9	6.8%	9.2%	15.2%	22.3%	8.9%	14.9%	45,786	41.0%	8.3%
Monmouth-Ocean, NJ PMSA	92,433	2,373.3	4.4%	7.0%	2.3%	22.7%	16.3%	8.5%	71,009	27.5%	6.8%
Nashville, TN MSA	689,920	1,300.6	4.0%	7.7%	25.9%	22.3%	10.3%	10.2%	45,538	33.1%	7.1%
Nassau-Suffolk, NY PMSA	--	--	--	--	--	--	--	--	--	--	--
New Haven-Meriden, CT PMSA	182,706	4,301.8	4.1%	24.9%	25.8%	23.2%	10.3%	14.5%	43,271	27.9%	9.8%
New London-Norwich, CT-RI MSA	62,719	1,862.4	15.8%	15.0%	12.6%	21.6%	12.1%	13.3%	47,695	20.5%	8.4%
New York, NY PMSA	8,359,840	26,759.1	34.7%	27.4%	23.3%	22.9%	12.1%	35.9%	50,344	33.2%	8.2%
Newark, NJ PMSA	277,070	11,455.4	7.4%	31.8%	49.4%	26.2%	9.2%	26.8%	35,507	11.8%	12.4%
Oakland, CA PMSA	569,750	7,412.2	35.2%	20.7%	22.2%	20.8%	11.1%	26.6%	54,321	42.6%	8.6%
Oklahoma City, OK MSA	681,942	822.3	3.2%	12.6%	12.1%	24.4%	11.3%	9.8%	41,995	28.7%	6.2%
Orange County, CA PMSA	866,188	6,048.3	1.1%	52.7%	1.8%	28.4%	7.6%	41.5%	66,891	28.4%	7.1%
Orlando, FL MSA	227,961	2,226.3	7.5%	22.2%	26.8%	23.4%	9.3%	17.7%	43,196	31.3%	8.5%
Philadelphia, PA-NJ PMSA	1,610,375	11,259.6	6.6%	12.6%	42.2%	24.4%	12.4%	11.1%	36,177	21.4%	12.3%
Phoenix-Mesa, AZ MSA	2,402,068	2,738.9	0.3%	34.3%	4.3%	26.8%	10.0%	19.7%	51,760	27.9%	6.2%
Pittsburgh, PA MSA	313,118	5,655.3	5.1%	2.2%	25.0%	17.2%	14.9%	7.0%	35,732	33.2%	8.1%
Portland-Vancouver, OR-WA PMSA	709,814	3,946.0	7.7%	8.9%	5.4%	21.0%	10.8%	12.8%	48,031	36.6%	8.3%

1995 Metro	Total Population	Pop. Density	Water % of Metro Area	% Hispanic	% Black	% Under Age 18	% Age 65 or Older	% Foreign-born	Median Household Income	% of Over 25 with a Bachelors Degree	Unemp. Rate
Providence-Fall River-Warwick, RI-MA MSA	508,132	3,914.5	16.4%	18.0%	7.5%	23.0%	12.4%	19.5%	44,680	23.2%	9.3%
Provo-Orem, UT MSA	209,902	3,500.4	4.0%	12.6%	0.6%	25.3%	6.7%	9.9%	43,195	38.2%	5.8%
Raleigh-Durham-Chapel Hill, NC MSA	646,982	2,383.9	0.8%	9.9%	30.4%	22.6%	8.3%	13.8%	50,821	48.5%	6.4%
Riverside-San Bernardino, CA PMSA	750,095	2,349.4	0.6%	42.6%	7.9%	28.5%	11.8%	21.4%	51,825	21.5%	9.1%
Rochester, NY MSA	208,001	5,813.2	3.7%	13.5%	38.5%	25.0%	9.5%	7.7%	30,540	24.6%	10.7%
St. Louis, MO-IL MSA	549,294	3,497.6	4.7%	2.7%	39.8%	23.4%	12.7%	4.9%	37,118	23.9%	11.1%
Salt Lake City-Ogden, UT MSA	289,834	1,987.5	0.5%	22.4%	2.8%	25.7%	9.7%	16.1%	43,208	31.5%	6.3%
San Antonio, TX MSA	1,371,083	2,716.1	1.2%	60.2%	6.1%	27.9%	10.5%	13.2%	43,586	23.6%	6.5%
San Diego, CA MSA	1,455,681	3,935.0	16.3%	28.8%	6.1%	22.9%	10.7%	25.6%	61,783	39.2%	6.1%
San Francisco, CA PMSA	797,271	17,009.3	79.8%	14.2%	6.4%	14.3%	14.2%	34.4%	70,040	51.1%	6.6%
Scranton--Wilkes-Barre--Hazleton, PA MSA	113,543	3,516.4	1.7%	6.4%	5.3%	20.3%	17.4%	4.8%	32,521	17.3%	6.6%
Seattle-Bellevue-Everett, WA PMSA	813,554	5,447.0	34.4%	6.7%	6.1%	17.2%	11.3%	19.2%	60,647	51.5%	6.0%
Springfield, MA MSA	263,621	1,971.6	3.8%	28.4%	12.6%	25.2%	12.0%	8.9%	38,963	22.8%	11.0%
Tampa-St. Petersburg-Clearwater, FL MSA	687,865	3,427.1	43.0%	14.5%	22.4%	22.0%	14.0%	13.0%	43,054	28.9%	7.3%
Toledo, OH MSA	345,979	3,710.3	3.6%	6.2%	22.8%	23.1%	12.0%	3.3%	35,370	18.8%	13.5%
Washington, DC-MD-VA-WV PMSA	876,091	7,334.2	6.0%	10.4%	40.3%	19.0%	11.1%	14.9%	65,741	51.4%	7.1%
West Palm Beach-Boca Raton, FL MSA	184,584	2,181.2	5.3%	16.0%	17.2%	19.1%	18.6%	22.9%	56,646	38.1%	7.7%
Number of Observations	**62**	**62**	**62**	**62**	**62**	**62**	**62**	**62**	**62**	**62**	**62**
Min	**38,630**	**822**	**0.3%**	**1.8%**	**0.6%**	**14.3%**	**6.7%**	**2.4%**	**$30,031**	**11.8%**	**4.2%**
Max	**8,359,840**	**26,759**	**79.8%**	**64.9%**	**67.1%**	**28.9%**	**18.6%**	**55.4%**	**$71,009**	**71.9%**	**20.7%**
Mean	**841,872**	**4,899**	**10.7%**	**18.5%**	**20.9%**	**23.2%**	**11.3%**	**15.5%**	**$45,052**	**29.9%**	**8.9%**
Median	**567,026**	**3,778**	**4.1%**	**13.9%**	**21.2%**	**23.4%**	**10.9%**	**13.1%**	**$43,240**	**28.6%**	**8.2%**
Standard Deviation	**1,248,184**	**4,053**	**16.4%**	**14.9%**	**14.4%**	**3.3%**	**2.4%**	**10.3%**	**$10,219**	**11.0%**	**2.7%**

Table 43 - Descriptive Statistics – Central City Housing Characteristics and Cost Burdens, 2005-09

1995 Metro	Rent-Occupied Share of Occupied Housing	Med. Property Tax to Med. Home Value Ratio	Single Family Detached % of Metro Housing	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden
Akron, OH PMSA	41.9%	4.1%	67.5%	31.2%	55.7%
Allentown-Bethlehem-Easton, PA MSA	46.3%	6.5%	30.0%	31.9%	55.0%
Ann Arbor, MI PMSA	53.3%	9.5%	41.3%	26.7%	61.2%
Atlanta, GA MSA	48.7%	5.9%	42.3%	36.0%	50.8%
Bergen-Passaic, NJ PMSA	--	--	--	--	--
Boston, MA-NH PMSA	59.8%	5.2%	17.1%	40.7%	51.3%
Buffalo-Niagara Falls, NY MSA	53.2%	5.1%	36.2%	28.3%	56.9%
Burlington, VT MSA	59.8%	9.8%	32.6%	39.2%	61.0%
Charlotte-Gastonia-Rock Hill, NC-SC MSA	40.5%	3.5%	60.3%	28.0%	46.3%
Chicago, IL PMSA	48.7%	6.5%	30.2%	42.2%	52.7%
Cincinnati, OH-KY-IN PMSA	57.5%	5.6%	38.4%	31.2%	50.2%
Cleveland-Lorain-Elyria, OH PMSA	49.0%	4.5%	50.8%	35.1%	56.0%
Columbus, OH MSA	48.4%	4.5%	49.0%	28.3%	48.0%
Dallas, TX PMSA	54.4%	6.9%	45.0%	32.4%	48.4%
Dayton-Springfield, OH MSA	48.1%	4.1%	60.8%	27.6%	58.3%
Denver, CO PMSA	46.2%	2.8%	47.6%	34.7%	50.4%
Des Moines, IA MSA	34.7%	4.2%	64.8%	26.6%	49.9%
Detroit, MI PMSA	43.2%	5.7%	66.0%	42.5%	63.6%
Fort Lauderdale, FL PMSA	40.2%	6.2%	37.3%	44.7%	57.2%
Fort Worth-Arlington, TX PMSA	40.5%	6.5%	64.1%	28.2%	48.9%
Grand Rapids-Muskegon-Holland, MI MSA	38.9%	4.2%	60.7%	29.4%	56.7%
Harrisburg-Lebanon-Carlisle, PA MSA	54.7%	4.9%	20.3%	24.4%	50.1%
Hartford, CT MSA	63.7%	8.6%	24.0%	41.5%	56.2%

1995 Metro	Rent-Occupied Share of Occupied Housing	Med. Property Tax to Med. Home Value Ratio	Single Family Detached % of Metro Housing	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden
Honolulu, HI MSA	44.0%	2.0%	45.6%	34.6%	55.6%
Houston, TX PMSA	52.2%	6.7%	46.9%	28.5%	49.3%
Indianapolis, IN MSA	41.2%	3.2%	60.3%	26.5%	50.4%
Kansas City, MO-KS MSA	37.9%	3.7%	66.1%	26.6%	48.7%
Lancaster, PA MSA	56.0%	6.3%	15.8%	31.4%	53.8%
Los Angeles-Long Beach, CA PMSA	59.4%	6.5%	40.8%	48.1%	57.1%
Miami, FL PMSA	62.1%	10.8%	24.2%	52.3%	63.7%
Middlesex-Somerset-Hunterdon, NJ PMSA	--	--	--	--	--
Milwaukee-Waukesha, WI PMSA	50.2%	8.0%	42.6%	37.2%	53.5%
Minneapolis-St. Paul, MN-WI MSA	46.2%	4.8%	47.6%	34.4%	52.0%
Monmouth-Ocean, NJ PMSA	14.9%	5.8%	80.9%	38.6%	58.5%
Nashville, TN MSA	42.2%	3.2%	53.8%	28.0%	48.6%
Nassau-Suffolk, NY PMSA	--	--	--	--	--
New Haven-Meriden, CT PMSA	58.0%	8.8%	29.1%	40.4%	57.3%
New London-Norwich, CT-RI MSA	51.6%	6.7%	38.5%	37.8%	47.5%
New York, NY PMSA	65.9%	5.3%	10.0%	39.8%	50.5%
Newark, NJ PMSA	74.7%	12.2%	11.8%	56.2%	53.2%
Oakland, CA PMSA	55.4%	8.2%	44.2%	45.0%	53.6%
Oklahoma City, OK MSA	40.1%	2.9%	66.1%	22.0%	49.7%
Orange County, CA PMSA	48.9%	5.1%	42.3%	44.3%	56.4%
Orlando, FL MSA	58.9%	5.0%	35.7%	39.1%	55.8%
Philadelphia, PA-NJ PMSA	43.9%	3.6%	8.9%	33.6%	55.5%
Phoenix-Mesa, AZ MSA	37.5%	2.7%	56.9%	34.0%	50.3%
Pittsburgh, PA MSA	47.9%	5.0%	44.6%	27.6%	52.1%

1995 Metro	Rent-Occupied Share of Occupied Housing	Med. Property Tax to Med. Home Value Ratio	Single Family Detached % of Metro Housing	% of Owner Households with Over 30% Housing Cost Burden	% of Renter Households with Over 30% Housing Cost Burden
Portland-Vancouver, OR-WA PMSA	45.2%	5.4%	56.9%	36.2%	51.9%
Providence-Fall River-Warwick, RI-MA MSA	50.8%	6.1%	36.3%	40.3%	49.2%
Provo-Orem, UT MSA	47.0%	2.5%	50.8%	27.6%	51.3%
Raleigh-Durham-Chapel Hill, NC MSA	46.8%	3.9%	49.3%	25.7%	49.7%
Riverside-San Bernardino, CA PMSA	39.4%	4.4%	57.2%	44.2%	59.1%
Rochester, NY MSA	57.5%	7.6%	44.4%	31.6%	61.9%
St. Louis, MO-IL MSA	44.9%	3.7%	50.7%	28.3%	51.2%
Salt Lake City-Ogden, UT MSA	46.6%	3.0%	53.2%	28.3%	46.1%
San Antonio, TX MSA	39.6%	6.2%	65.8%	25.5%	48.8%
San Diego, CA MSA	48.9%	5.1%	46.9%	41.9%	54.5%
San Francisco, CA PMSA	62.1%	6.9%	17.5%	39.9%	43.6%
Scranton--Wilkes-Barre--Hazleton, PA MSA	46.3%	5.0%	46.8%	31.5%	48.8%
Seattle-Bellevue-Everett, WA PMSA	49.4%	5.5%	47.0%	35.4%	45.5%
Springfield, MA MSA	46.7%	6.4%	44.5%	34.6%	57.9%
Tampa-St. Petersburg-Clearwater, FL MSA	40.2%	4.3%	53.7%	38.4%	54.9%
Toledo, OH MSA	41.7%	4.6%	63.1%	29.7%	54.9%
Washington, DC-MD-VA-WV PMSA	53.4%	4.0%	19.0%	31.0%	45.3%
West Palm Beach-Boca Raton, FL MSA	35.7%	6.2%	43.4%	43.6%	58.3%
Number of Observations	**62**	**62**	**62**	**62**	**62**
Min	**14.9%**	**2.0%**	**8.9%**	**22.0%**	**43.6%**
Max	**74.7%**	**12.2%**	**80.9%**	**56.2%**	**63.7%**
Mean	**48.4%**	**5.5%**	**44.3%**	**34.7%**	**53.1%**
Median	**48.0%**	**5.2%**	**45.3%**	**34.2%**	**52.4%**
Standard Deviation	**9.3%**	**2.0%**	**16.1%**	**7.2%**	**4.7%**

Table 44 - Descriptive Statistics – Central City Wharton Survey Individual Measures and Author-Constructed Indices

1995 Metro Area	Wharton Residential Land Use Regulation Index	Supply Restr. Index	Density Restr. Index	Local Assembly Index	Local Project Approval Index	State Political Involve-ment Index	State Court Involve-ment Index	Local Zoning Approval Index	Local Project Approval Index	Open Space Index	Exactions Index	Approval Delay Index
Akron, OH PMSA	0.4	0	0	0	-0.1	-1.11	1	2	6	0	1	7.78
Allentown-Bethlehem-Easton, PA MSA	0.82	0	0	0	-0.17	0.66	1	3	2	1	1	11.33
Ann Arbor, MI PMSA	2.79	0	1	0	4.85	0.59	2	2	2	1	1	10.67
Atlanta, GA MSA	0.71	0	1	0	0.38	0.11	2	2	1	1	1	6.44
Bergen-Passaic, NJ PMSA	--	--	--	--	--	--	--	--	--	--	--	--
Boston, MA-NH PMSA	0.59	0	0	0	0.96	1.35	2	2	2.04	0.14	0.14	7.72
Buffalo-Niagara Falls, NY MSA	-1.21	0	0	0	-0.17	-1	2	1	1	0	1	1.67
Burlington, VT MSA	--	--	--	--	--	--	--	--	--	--	--	--
Charlotte-Gastonia-Rock Hill, NC-SC MSA	-0.82	0	0	0	-0.45	-0.21	2	1	1	0	0	4.67
Chicago, IL PMSA	-1.11	0	0	0	-0.22	-0.93	2	1.06	0	0.06	0.06	4.93
Cincinnati, OH-KY-IN PMSA	-0.53	0	0	0	0.04	-1.11	1	2	2	0	1	6
Cleveland-Lorain-Elyria, OH PMSA	-1.28	0	0	0	-0.31	-1.11	1	2	1	0	0	2.17
Columbus, OH MSA	0.43	0	0	0	3.73	-1.11	1	1	0	1	1	4.33
Dallas, TX PMSA	-0.13	0	0	0	3.78	-0.47	2	3	0.08	0.08	1	1.83
Dayton-Springfield, OH MSA	-1.12	0	0.13	0	-0.87	-1.11	1	1.75	0.25	0.75	0.38	2.83
Denver, CO PMSA	0.48	0	0	0	0.24	0.57	2	1	0	1	1	10.67
Des Moines, IA MSA	-0.91	0	0	0	0.11	-1.11	2	2	2	0	1	2.67
Detroit, MI PMSA	-0.11	0	0	0	0.17	0.59	2	2	1	0	1	7.36
Fort Lauderdale, FL PMSA	--	--	--	--	--	--	--	--	--	--	--	--
Fort Worth-Arlington, TX PMSA	-0.04	0	0	0	1.84	-0.47	2	2	0.65	1	1	3.22
Grand Rapids-Muskegon-Holland, MI MSA	-0.62	0	0	0	-0.15	0.59	2	2.88	1	0	1	3.79
Harrisburg-Lebanon-Carlisle, PA MSA	0.64	0	1	0	-0.31	0.66	1	1	1	1	0	5.67
Hartford, CT MSA	--	--	--	--	--	--	--	--	--	--	--	--
Honolulu, HI MSA	2.3	0	1	0	1.79	0.19	2	1	1	1	1	17.28

1995 Metro Area	Wharton Residential Land Use Regulation Index	Supply Restr. Index	Density Restr. Index	Local Assembly Index	Local Project Approval Index	State Political Involve-ment Index	State Court Involve-ment Index	Local Zoning Approval Index	Local Project Approval Index	Open Space Index	Exactions Index	Approval Delay Index
Houston, TX PMSA	0.13	0	0	0	0.7	-0.47	2	0.06	1	0.97	1	6.66
Indianapolis, IN MSA	-1.16	0	0	0	-0.68	-1.68	3	2.07	1.07	0	1	6.73
Kansas City, MO-KS MSA	-0.61	0	0	0	0.03	-1.71	3	2.76	1.7	0.94	1	5.65
Lancaster, PA MSA	0.02	0	0	0	-1.43	0.66	1	2	2	1	1	6.67
Los Angeles-Long Beach, CA PMSA	1.93	0	0	0	2.39	1.02	3	2.89	3.67	1	1	11.88
Miami, FL PMSA	0.5	0	0	0	0.28	0.54	2	2	1.83	0.83	1	8.38
Middlesex-Somerset-Hunterdon, NJ PMSA	--	--	--	--	--	--	--	--	--	--	--	--
Milwaukee-Waukesha, WI PMSA	-1.04	0	0	0	-0.87	0.45	3	2	0	0	1	4.28
Minneapolis-St. Paul, MN-WI MSA	0	0	0	0	-0.21	0.54	2	1.58	1.58	0	0	5.48
Monmouth-Ocean, NJ PMSA	--	--	--	--	--	--	--	--	--	--	--	--
Nashville, TN MSA	-0.95	0	0	0	0.11	-0.32	3	2	1	0	1	2.67
Nassau-Suffolk, NY PMSA	--	--	--	--	--	--	--	--	--	--	--	--
New Haven-Meriden, CT PMSA	-0.91	0	0	0	-0.64	0	2	2	1.68	0	0	2.89
New London-Norwich, CT-RI MSA	-1.1	0	0	0	-0.59	0	2	1	1	0	0	1.71
New York, NY PMSA	0.03	0	0	0	-0.24	-1	2	2	1.01	0.01	0.01	14.99
Newark, NJ PMSA	-0.41	0	0	0	-1.22	1.42	1	2	1	0	1	5.33
Oakland, CA PMSA	--	--	--	--	--	--	--	--	--	--	--	--
Oklahoma City, OK MSA	-0.63	0	0.84	0	-0.34	-0.99	2	1.96	0.35	0.16	0.2	4.43
Orange County, CA PMSA	0.29	0	0.23	0	0.18	1.02	3	2	0.61	0.61	1	7.74
Orlando, FL MSA	-0.08	0	0	0	-0.31	0.54	2	2	3	0	1	5.33
Philadelphia, PA-NJ PMSA	-0.03	0	0	0	0.32	0.66	1	1	0	0	1	8.33
Phoenix-Mesa, AZ MSA	0.96	0	0.71	0	1.12	1.18	3	1.92	1.58	0.71	1	6.07
Pittsburgh, PA MSA	0.64	1	1	0	-0.45	0.66	1	2	2	1	1	2.5
Portland-Vancouver, OR-WA PMSA	0.1	0	0	0	0.24	1.38	2	2.55	0.77	1	1	3.87

1995 Metro Area	Wharton Residential Land Use Regulation Index	Supply Restr. Index	Density Restr. Index	Local Assembly Index	Local Project Approval Index	State Political Involve-ment Index	State Court Involve-ment Index	Local Zoning Approval Index	Local Project Approval Index	Open Space Index	Exactions Index	Approval Delay Index
Providence-Fall River-Warwick, RI-MA MSA	0.98	0	0	0	2.7	1.91	2	3	2.32	0.33	0.33	4.09
Provo-Orem, UT MSA	-0.48	0	0	0	0.25	0.2	3	1	1	0	1	4.78
Raleigh-Durham-Chapel Hill, NC MSA	1.12	0	0.37	0	2.16	-0.21	2	2.37	2.37	1	1	7.6
Riverside-San Bernardino, CA PMSA	1.06	0	0.85	0	0.38	1.02	3	2	2	1	1	6.84
Rochester, NY MSA	-1.12	0	0	0	-0.31	-1	2	2	2	0	0	2.15
St. Louis, MO-IL MSA	-1.21	0	0	0	0.86	-1.73	3	2.85	0.3	0.15	1	3.18
Salt Lake City-Ogden, UT MSA	0.02	0.1	0.62	0	0.07	0.2	3	2	1.9	0.1	0.62	5.06
San Antonio, TX MSA	2.35	0	0	0	6.79	-0.47	2	2	3	1	1	7.89
San Diego, CA MSA	1.56	0	0	0	1.63	1.02	3	1.03	1.05	0.98	0.98	14.64
San Francisco, CA PMSA	1.95	0	0	0	2.62	1.02	3	2	1	1	0	16.67
Scranton--Wilkes-Barre--Hazleton, PA MSA	-0.28	0	0	0	-0.02	0.66	1	1.36	1	0.36	1	3.68
Seattle-Bellevue-Everett, WA PMSA	2.11	0	0	0	1.78	2.42	2	1.14	1.72	1	0.14	14.12
Springfield, MA MSA	0.01	0	0.35	0	-0.11	1.35	2	1.82	1.17	0	0.65	4.89
Tampa-St. Petersburg-Clearwater, FL MSA	0.66	0	0.84	0	0.02	0.54	2	2	1	0.64	0.49	8.35
Toledo, OH MSA	-1.67	0	0	0	-1.08	-1.11	1	1.92	0	0	0.08	2.39
Washington, DC-MD-VA-WV PMSA	0	0	0	0	-0.45	0	0	1	2	1	1	8.06
West Palm Beach-Boca Raton, FL MSA	--	--	--	--	--	--	--	--	--	--	--	--
Number of Observations	**56**	**56**	**56**	**56**	**56**	**56**	**56**	**56**	**56**	**56**	**56**	**56**
Min	**-1.67**	**0**	**0**	**0**	**-1.43**	**-1.73**	**0**	**0.06**	**0**	**0**	**0**	**1.67**
Max	**2.79**	**1**	**1**	**0**	**6.79**	**2.42**	**3**	**3**	**6**	**1**	**1**	**17.28**
Mean	**0.11**	**0.02**	**0.18**	**0**	**0.55**	**0.09**	**1.96**	**1.84**	**1.35**	**0.46**	**0.72**	**6.41**
Median	**0.01**	**0**	**0**	**0**	**0.06**	**0.2**	**2**	**2**	**1**	**0.24**	**1**	**5.56**
Standard Deviation	**1.05**	**0.13**	**0.35**	**0**	**1.54**	**0.97**	**0.74**	**0.63**	**1.04**	**0.46**	**0.42**	**3.82**

Table 45 - Descriptive Statistics – Suburban Wharton Survey Individual Measures and Author-Constructed Indices

1995 Metro Area	Wharton Residential Land Use Regulation Index	Supply Restr. Index	Density Restr. Index	Local Assembly Index	Local Project Approval Index	State Political Involvement Index	State Court Involvement Index	Local Zoning Approval Index	Local Project Approval Index	Open Space Index	Exactions Index	Approval Delay Index
Akron, OH PMSA	0.04	0.71	0.13	0	-0.16	-1.11	1	2	1.31	0.72	0.5	9.17
Allentown-Bethlehem-Easton, PA MSA	-0.01	0.22	0.13	0	-0.81	0.66	1	2.17	1.54	0.58	0.6	5.47
Ann Arbor, MI PMSA	0.32	0	0.3	0	0.3	0.59	2	2.15	1.56	0.47	0.68	6.73
Atlanta, GA MSA	0.03	0.45	0.27	0	0.42	0.11	2	2.19	1.39	0.6	0.59	4.77
Bergen-Passaic, NJ PMSA	0.67	0.27	0.29	0	0.81	1.42	1	1.81	1.52	0.33	0.74	5.76
Boston, MA-NH PMSA	1.72	0.17	0.63	0.59	0.4	1.32	2.04	1.74	2.01	0.32	0.3	9.48
Buffalo-Niagara Falls, NY MSA	-0.16	0.77	0	0	-0.25	-1	2	2.07	2.14	0.75	0.75	5.17
Burlington, VT MSA	1.18	0.95	0.46	0.13	-0.34	0.76	3	1.99	1.61	0.71	0.78	12.41
Charlotte-Gastonia-Rock Hill, NC-SC MSA	-0.37	0.33	0.16	0	0.07	-0.21	2	1.93	1.1	0.27	0.4	3.28
Chicago, IL PMSA	0.02	0.33	0.13	0	0.33	-0.93	2	2.34	1.64	0.75	0.91	6.91
Cincinnati, OH-KY-IN PMSA	-0.61	0.3	0.27	0	-0.11	-0.93	1.48	2.18	1.42	0.17	0.64	4.16
Cleveland-Lorain-Elyria, OH PMSA	-0.15	0.38	0.16	0	0.05	-1.11	1	1.83	1.89	0.53	0.65	6.58
Columbus, OH MSA	0.25	0	0.46	0	0.98	-1.11	1	1.86	1.57	0.92	0.77	5.62
Dallas, TX PMSA	-0.23	0.13	0.16	0	0.01	-0.47	2	2.29	1.32	0.83	0.89	5.01
Dayton-Springfield, OH MSA	-0.45	0	0.14	0	0.2	-1.11	1	2.28	1.27	0.7	0.72	4.57
Denver, CO PMSA	0.87	0.64	0.23	0	0.75	0.57	2	2.32	2.16	0.76	0.84	8.13
Des Moines, IA MSA	-0.83	0	0	0	-0.12	-1.11	2	1.97	1.71	0.46	0.63	3.14
Detroit, MI PMSA	0.06	0.13	0.22	0	-0.2	0.59	2	1.94	1.41	0.43	0.53	6.38
Fort Lauderdale, FL PMSA	0.72	0	0.2	0	0.63	0.54	2	1.96	1.75	0.95	0.95	8.12
Fort Worth-Arlington, TX PMSA	-0.29	0.61	0.04	0	0	-0.47	2	2.23	1.64	0.53	1	4.78
Grand Rapids-Muskegon-Holland, MI MSA	-0.1	0	0.14	0	-0.12	0.59	2	1.94	1.27	0.54	0.92	4.91
Harrisburg-Lebanon-Carlisle, PA MSA	0.53	0.05	0.26	0	-0.13	0.66	1	1.65	2.13	0.84	0.7	6.09

1995 Metro Area	Wharton Residential Land Use Regulation Index	Supply Restr. Index	Density Restr. Index	Local Assembly Index	Local Project Approval Index	State Political Involve-ment Index	State Court Involve-ment Index	Local Zoning Approval Index	Local Project Approval Index	Open Space Index	Exactions Index	Approval Delay Index
Hartford, CT MSA	0.48	0.15	0.72	0	0	0	2	1.51	1.95	0.81	0.34	6.06
Honolulu, HI MSA	--	--	--	--	--	--	--	--	--	--	--	--
Houston, TX PMSA	-0.34	0.47	0.37	0	0.04	-0.47	2	1.23	1.48	0.38	0.61	2.97
Indianapolis, IN MSA	-0.68	0.06	0.2	0	0.17	-1.68	3	1.62	1.18	0.69	0.9	4.4
Kansas City, MO-KS MSA	-0.8	0.06	0.13	0	-0.14	-1.71	3	2.31	1.58	0.6	0.86	4.82
Lancaster, PA MSA	0.31	0.14	0.21	0	-0.54	0.66	1	1.99	1.51	0.74	0.91	7.47
Los Angeles-Long Beach, CA PMSA	0.49	0	0.2	0	0.02	1.02	3	1.88	1.72	0.64	0.71	8.38
Miami, FL PMSA	0.99	1.31	0.26	0	0.77	0.54	2	2.25	1.83	1	1	7.76
Middlesex-Somerset-Hunterdon, NJ PMSA	1.19	0	0.19	0	1.29	1.42	1	1.5	1.48	0.53	0.81	9.15
Milwaukee-Waukesha, WI PMSA	0.48	0.28	0.18	0	0.1	0.45	3	2	2.05	0.7	0.9	8.33
Minneapolis-St. Paul, MN-WI MSA	0.37	0.31	0.12	0	-0.01	0.53	2.08	1.27	1.25	0.92	0.88	5.17
Monmouth-Ocean, NJ PMSA	1.58	0.05	0.58	0	1.56	1.42	1	2.38	1.72	0.55	0.72	10.3
Nashville, TN MSA	-0.37	0	0.38	0	-0.19	-0.32	3	1.88	1.46	0.26	0.88	5.04
Nassau-Suffolk, NY PMSA	0.7	2.06	0.29	0	0.43	-1	2	2.24	2.01	0.32	0.51	11.54
New Haven-Meriden, CT PMSA	0.25	0	0.72	0	0.09	0	2	2.48	1.8	0.67	0.59	4.93
New London-Norwich, CT-RI MSA	0.46	0	0.8	0	-0.59	0	2	1.68	2.1	0.94	0.2	6.65
New York, NY PMSA	0.69	0	0.45	0	0.06	-1	2	1.6	2.79	0.64	0.69	11.56
Newark, NJ PMSA	0.7	0.07	0.39	0	0.52	1.42	1	1.98	1.87	0.31	0.52	6.17
Oakland, CA PMSA	0.62	0	0.13	0	-0.28	1.02	3	1.89	1.38	0.81	1	10.61
Oklahoma City, OK MSA	-0.36	0	0.23	0	0.04	-0.99	2	2.13	1.79	0.82	0.82	3.53
Orange County, CA PMSA	0.35	0.44	0.1	0	-0.31	1.02	3	2.04	1.67	0.91	0.88	6.77
Orlando, FL MSA	0.34	0	0.34	0	0.31	0.54	2	1.95	1.58	0.66	1	5.85
Philadelphia, PA-NJ PMSA	1.14	0.08	0.59	0	0.63	0.66	1	1.98	2.1	0.61	0.64	9.54
Phoenix-Mesa, AZ MSA	0.65	0	0.3	0	0.12	1.18	3	2.23	1.56	1	1	7.39

1995 Metro Area	Wharton Residential Land Use Regulation Index	Supply Restr. Index	Density Restr. Index	Local Assembly Index	Local Project Approval Index	State Political Involve-ment Index	State Court Involve-ment Index	Local Zoning Approval Index	Local Project Approval Index	Open Space Index	Exactions Index	Approval Delay Index
Pittsburgh, PA MSA	0.09	0.04	0.27	0	-0.2	0.66	1	2.03	1.66	0.49	0.69	4.88
Portland-Vancouver, OR-WA PMSA	0.28	0	0	0	0.19	1.17	2	1.74	1.15	0.52	1	7.06
Providence-Fall River-Warwick, RI-MA MSA	1.88	0.68	0.87	0.09	0.83	1.79	2	1.25	1.37	0.62	0.38	11.24
Provo-Orem, UT MSA	0.26	0.99	0.25	0	-0.15	0.2	3	1.57	1.99	0.55	1	6.49
Raleigh-Durham-Chapel Hill, NC MSA	0.38	0.54	0	0	1.14	-0.21	2	2	1.74	0.8	1	6.49
Riverside-San Bernardino, CA PMSA	0.53	0.27	0.36	0	0.02	1.02	3	1.92	1.54	0.71	0.92	7.2
Rochester, NY MSA	-0.02	0.57	0.44	0	-0.43	-1	2	1.99	2	0.72	0.77	6.56
St. Louis, MO-IL MSA	-0.76	0.11	0.13	0	0.04	-1.51	2.73	2.05	1.62	0.43	0.78	4.22
Salt Lake City-Ogden, UT MSA	0.02	0.44	0.04	0	-0.17	0.2	3	1.94	2.02	0.62	0.95	6.08
San Antonio, TX MSA	-0.26	0	0.27	0	0.47	-0.47	2	2.08	1.55	0.46	0.85	3.82
San Diego, CA MSA	0.37	0.17	0	0	-0.07	1.02	3	1.75	1.6	0.83	0.91	7.54
San Francisco, CA PMSA	0.68	0	0.08	0	0.26	1.02	3	1.83	1.64	0.72	0.6	9.99
Scranton--Wilkes-Barre--Hazleton, PA MSA	0.03	0	0.28	0	-0.53	0.66	1	2.29	1.88	0.46	0.75	5.07
Seattle-Bellevue-Everett, WA PMSA	0.92	0.2	0.16	0	-0.02	2.42	2	1.63	1.06	0.69	0.95	8.17
Springfield, MA MSA	0.84	0.07	0.49	0.44	-0.24	1.35	2	1.6	1.62	0.09	0.27	6.66
Tampa-St. Petersburg-Clearwater, FL MSA	-0.32	0	0	0	-0.45	0.54	2	2.5	0.85	0.54	0.78	5.87
Toledo, OH MSA	-0.43	0.16	0.08	0	0.22	-1.11	1	1.88	1.48	0.63	1	4.26
Washington, DC-MD-VA-WV PMSA	0.45	0.2	0.07	0	0.29	0.4	2	1.58	1.74	0.46	0.71	9.05
West Palm Beach-Boca Raton, FL MSA	0.31	0	0.32	0	0.19	0.54	2	1.83	1.25	0.8	0.86	5.76
Number of Observations	**64**	**64**	**64**	**64**	**64**	**64**	**64**	**64**	**64**	**64**	**64**	**64**
Min	**-0.83**	**0**	**0**	**0**	**-0.81**	**-1.71**	**1**	**1.23**	**0.85**	**0.09**	**0.2**	**2.97**
Max	**1.88**	**2.06**	**0.87**	**0.59**	**1.56**	**2.42**	**3**	**2.5**	**2.79**	**1**	**1**	**12.41**
Mean	**0.28**	**0.26**	**0.26**	**0.02**	**0.13**	**0.18**	**1.99**	**1.94**	**1.64**	**0.62**	**0.75**	**6.68**
Median	**0.31**	**0.13**	**0.22**	**0**	**0.04**	**0.54**	**2**	**1.97**	**1.62**	**0.64**	**0.77**	**6.44**
Standard Deviation	**0.59**	**0.37**	**0.2**	**0.09**	**0.45**	**0.96**	**0.69**	**0.29**	**0.33**	**0.2**	**0.2**	**2.23**

Table 46 - Descriptive Statistics – Suburban Wharton Survey Individual Measures and Author-Constructed Indices

1995 Metro Area	Minimum Lot Size Req.	>1 Acre Minimum Lot Size Req.	Affordable Housing Req.	Multi-family Density Restrictions Importance (1-5)	Single Family Density Restrictions Importance (1-5)	Multi-family "Under-zoned" Compared to Demand (1-5)	Single Family "Under-zoned" Compared to Demand (1-5)	Single Family Development Limit Index	Multi Family Development Limit Index	Density Restriction Importance Index
Akron, OH PMSA	0.77	0.18	0.05	3.01	3.66	3.86	3.42	0.11	0.30	6.81
Allentown-Bethlehem-Easton, PA MSA	0.72	0.28	0.00	3.20	2.97	3.15	3.12	0.00	0.15	6.17
Ann Arbor, MI PMSA	0.85	0.46	0.00	4.03	3.95	3.29	2.97	0.00	0.00	7.97
Atlanta, GA MSA	0.89	0.56	0.14	4.19	3.98	3.21	3.20	0.00	0.24	8.17
Bergen-Passaic, NJ PMSA	0.87	0.41	0.59	3.80	3.42	3.80	3.42	0.00	0.12	7.14
Boston, MA-NH PMSA	0.98	0.73	0.38	3.70	3.38	4.41	3.58	0.04	0.04	6.98
Buffalo-Niagara Falls, NY MSA	1.00	0.00	0.25	3.22	3.03	3.05	2.77	0.00	0.43	6.24
Burlington, VT MSA	0.91	0.80	0.28	3.70	3.50	3.77	3.67	0.32	0.32	6.98
Charlotte-Gastonia-Rock Hill, NC-SC MSA	0.91	0.35	0.12	3.20	2.43	3.40	2.88	0.00	0.16	5.63
Chicago, IL PMSA	0.86	0.21	0.13	4.04	3.66	3.76	3.57	0.06	0.09	7.68
Cincinnati, OH-KY-IN PMSA	0.91	0.47	0.08	3.39	3.35	3.82	3.79	0.00	0.13	6.58
Cleveland-Lorain-Elyria, OH PMSA	0.88	0.21	0.08	3.63	3.14	3.43	3.16	0.08	0.14	6.92
Columbus, OH MSA	0.77	0.86	0.00	3.90	3.53	3.97	3.19	0.00	0.00	7.43
Dallas, TX PMSA	0.81	0.22	0.18	3.27	3.75	3.80	3.12	0.08	0.00	7.04
Dayton-Springfield, OH MSA	0.89	0.15	0.07	3.67	3.40	3.70	3.53	0.00	0.00	7.07
Denver, CO PMSA	0.73	0.33	0.13	2.94	2.58	3.70	3.60	0.32	0.09	5.38
Des Moines, IA MSA	0.94	0.00	0.11	2.35	2.35	3.49	3.16	0.00	0.00	4.69
Detroit, MI PMSA	0.81	0.23	0.09	3.43	3.06	3.31	3.14	0.04	0.04	6.56
Fort Lauderdale, FL PMSA	0.87	0.28	0.28	4.12	3.56	3.93	3.48	0.00	0.00	7.71
Fort Worth-Arlington, TX PMSA	0.68	0.06	0.00	3.66	3.26	3.31	3.33	0.00	0.28	6.86
Grand Rapids-Muskegon-Holland, MI MSA	0.78	0.24	0.00	3.57	3.20	3.58	3.17	0.00	0.00	6.77
Harrisburg-Lebanon-Carlisle, PA MSA	0.89	0.43	0.05	2.95	3.23	3.14	3.30	0.00	0.00	6.18
Hartford, CT MSA	0.97	0.69	0.14	3.32	3.06	3.32	2.95	0.00	0.07	6.30
Honolulu, HI MSA	--	--	--	--	--	--	--	--	--	--
Houston, TX PMSA	0.90	0.43	0.00	2.77	3.49	3.00	3.49	0.10	0.21	5.97
Indianapolis, IN MSA	0.78	0.42	0.00	4.12	3.56	3.42	2.21	0.00	0.00	7.69

1995 Metro Area	Minimum Lot Size Req.	>1 Acre Minimum Lot Size Req.	Affordable Housing Req.	Multi-family Density Restrictions Importance (1-5)	Single Family Density Restrictions Importance (1-5)	Multi-family "Under-zoned" Compared to Demand (1-5)	Single Family "Under-zoned" Compared to Demand (1-5)	Single Family Development Limit Index	Multi Family Development Limit Index	Density Restriction Importance Index
Kansas City, MO-KS MSA	0.85	0.13	0.12	3.05	2.60	3.45	3.26	0.00	0.03	5.64
Lancaster, PA MSA	0.77	0.32	0.17	3.91	3.51	3.86	4.11	0.00	0.00	7.45
Los Angeles-Long Beach, CA PMSA	0.70	0.38	0.25	3.74	3.20	4.16	3.89	0.00	0.00	6.82
Miami, FL PMSA	0.63	0.38	0.79	4.74	4.25	3.89	3.73	0.26	0.65	8.99
Middlesex-Somerset-Hunterdon, NJ PMSA	0.83	0.29	0.58	3.90	3.32	3.76	3.99	0.00	0.00	7.22
Milwaukee-Waukesha, WI PMSA	0.76	0.32	0.10	3.88	3.06	3.90	3.67	0.00	0.11	6.82
Minneapolis-St. Paul, MN-WI MSA	0.93	0.19	0.14	3.46	3.21	3.58	3.34	0.05	0.14	6.59
Monmouth-Ocean, NJ PMSA	0.84	0.69	0.68	4.37	4.13	3.97	4.23	0.00	0.00	8.49
Nashville, TN MSA	0.93	0.86	0.00	3.57	3.34	3.51	3.28	0.00	0.00	6.91
Nassau-Suffolk, NY PMSA	0.93	0.25	0.15	4.82	4.75	4.82	3.63	0.08	0.96	9.57
New Haven-Meriden, CT PMSA	1.00	0.62	0.40	4.41	4.30	3.41	4.37	0.00	0.00	8.82
New London-Norwich, CT-RI MSA	1.00	0.85	0.00	4.24	3.62	3.63	2.21	0.00	0.00	7.85
New York, NY PMSA	0.96	0.60	0.35	4.59	4.55	4.18	3.98	0.00	0.00	9.14
Newark, NJ PMSA	0.90	0.50	0.55	3.58	3.39	3.94	3.94	0.00	0.04	6.87
Oakland, CA PMSA	0.50	0.23	0.83	2.27	2.23	3.66	3.86	0.00	0.00	4.50
Oklahoma City, OK MSA	0.90	0.31	0.21	3.62	2.88	3.72	2.79	0.00	0.00	6.51
Orange County, CA PMSA	0.84	0.19	0.50	3.07	2.41	4.33	4.56	0.17	0.27	5.48
Orlando, FL MSA	0.77	0.45	0.06	3.94	3.59	3.58	3.91	0.00	0.00	7.54
Philadelphia, PA-NJ PMSA	0.85	0.51	0.35	3.73	3.66	3.64	3.23	0.00	0.03	7.49
Phoenix-Mesa, AZ MSA	1.00	0.50	0.06	3.87	3.69	3.50	3.09	0.00	0.00	7.56
Pittsburgh, PA MSA	0.81	0.30	0.10	3.40	3.14	3.27	2.95	0.00	0.02	6.54
Portland-Vancouver, OR-WA PMSA	0.91	0.00	0.14	3.32	3.47	3.43	3.46	0.00	0.00	6.75
Providence-Fall River-Warwick, RI-MA MSA	0.95	0.49	0.12	4.53	4.54	3.89	2.87	0.49	0.00	8.99
Provo-Orem, UT MSA	0.76	0.43	0.26	3.67	4.03	3.68	3.10	0.15	0.29	7.69
Raleigh-Durham-Chapel Hill, NC MSA	0.80	0.00	0.20	3.14	3.14	2.00	1.99	0.41	0.14	6.27
Riverside-San Bernardino, CA PMSA	0.93	0.57	0.23	2.86	2.97	3.09	3.11	0.04	0.17	5.54
Rochester, NY MSA	0.86	0.16	0.34	3.18	3.12	3.27	3.21	0.14	0.29	6.29
St. Louis, MO-IL MSA	0.78	0.24	0.23	3.58	3.45	3.71	3.77	0.00	0.00	6.93

1995 Metro Area	Minimum Lot Size Req.	>1 Acre Minimum Lot Size Req.	Affordable Housing Req.	Multi-family Density Restrictions Importance (1-5)	Single Family Density Restrictions Importance (1-5)	Multi-family "Under-zoned" Compared to Demand (1-5)	Single Family "Under-zoned" Compared to Demand (1-5)	Single Family Development Limit Index	Multi Family Development Limit Index	Density Restriction Importance Index
Salt Lake City-Ogden, UT MSA	0.74	0.09	0.17	3.82	2.91	3.37	3.14	0.00	0.22	6.73
San Antonio, TX MSA	0.95	0.16	0.10	3.27	3.52	4.15	3.30	0.00	0.00	6.43
San Diego, CA MSA	0.91	0.00	0.55	3.18	2.71	4.02	3.80	0.00	0.09	5.89
San Francisco, CA PMSA	0.29	0.12	0.61	3.27	2.77	3.69	3.76	0.00	0.00	5.67
Scranton--Wilkes-Barre--Hazleton, PA MSA	0.90	0.20	0.00	1.84	1.84	3.44	3.29	0.00	0.00	3.68
Seattle-Bellevue-Everett, WA PMSA	0.75	0.22	0.06	2.28	2.67	3.48	3.85	0.04	0.08	4.95
Springfield, MA MSA	0.92	0.64	0.00	2.41	2.18	3.57	3.10	0.03	0.00	4.73
Tampa-St. Petersburg-Clearwater, FL MSA	0.61	0.00	0.00	3.81	3.68	3.74	3.75	0.00	0.00	7.50
Toledo, OH MSA	0.91	0.15	0.00	3.00	3.00	2.69	2.75	0.00	0.08	6.00
Washington, DC-MD-VA-WV PMSA	0.65	0.14	0.12	2.83	2.70	3.95	3.55	0.10	0.00	5.53
West Palm Beach-Boca Raton, FL MSA	0.87	0.44	0.09	3.69	3.56	3.95	4.14	0.00	0.00	7.24
Number of Observations	**64**	**64**	**64**	**64**	**64**	**64**	**64**	**64**	**64**	**64**
Min	**0.29**	**0.00**	**0.00**	**1.84**	**1.84**	**2.00**	**1.99**	**0.00**	**0.00**	**3.68**
Max	**1.00**	**0.86**	**0.83**	**4.82**	**4.75**	**4.82**	**4.56**	**0.49**	**0.96**	**9.57**
Mean	**0.84**	**0.34**	**0.20**	**3.52**	**3.31**	**3.62**	**3.39**	**0.05**	**0.10**	**6.79**
Median	**0.86**	**0.31**	**0.13**	**3.58**	**3.34**	**3.65**	**3.34**	**0.00**	**0.02**	**6.82**
Standard Deviation	**0.12**	**0.23**	**0.21**	**0.61**	**0.58**	**0.42**	**0.49**	**0.10**	**0.17**	**1.15**

Table 47 - Descriptive Statistics – Suburban Pendall Survey Individual Measures and Author-Constructed Index

1995 Metro Area	Max. Res. Density (1 -5)	Vote Required for Multi Family Rezoning	No Density Bonus or Incl. Incentive	Dev. Moratorium in Place	Res. Pace Restriction	Mobile Homes Not Allowed	Growth Management Index
Akron, OH PMSA	2.81	0.46	0.95	0.07	0.05	0.73	-1.07
Allentown-Bethlehem-Easton, PA MSA	--	--	--	--	--	--	--
Ann Arbor, MI PMSA	2.56	0.28	0.95	0	0	0	-0.89
Atlanta, GA MSA	2.75	0.33	1	0.07	0	0.26	-1.06
Bergen-Passaic, NJ PMSA	2.72	0.38	0.77	0	0	1	-1
Boston, MA-NH PMSA	2.29	0.8	0.64	0.02	0.13	0.89	-1
Buffalo-Niagara Falls, NY MSA	2.01	0.53	1	0	0.02	0.68	-1.17
Burlington, VT MSA	--	--	--	--	--	--	--
Charlotte-Gastonia-Rock Hill, NC-SC MSA	2.88	0.36	0.8	0.24	0.1	0.16	-0.97
Chicago, IL PMSA	3.26	0.26	0.95	0	0.01	0.82	-0.78
Cincinnati, OH-KY-IN PMSA	2.9	0.43	1	0	0	0.57	-0.57
Cleveland-Lorain-Elyria, OH PMSA	2.61	0.59	0.98	0.02	0	0.78	-1.09
Columbus, OH MSA	2.17	0.43	1	0.05	0	0.4	-0.81
Dallas, TX PMSA	3.8	0.16	1	0.05	0	0.47	-1
Dayton-Springfield, OH MSA	--	--	--	--	--	--	--
Denver, CO PMSA	4.11	0.21	0.94	0.09	0.4	0.43	4.23
Des Moines, IA MSA	--	--	--	--	--	--	--
Detroit, MI PMSA	2.79	0.34	0.98	0	0	0.29	-0.48
Fort Lauderdale, FL PMSA	4.18	0.16	0.8	0	0	0.5	-0.79
Fort Worth-Arlington, TX PMSA	3.64	0.12	1	0	0	0.43	-0.47
Grand Rapids-Muskegon-Holland, MI MSA	2.28	0.47	0.97	0.05	0	0.1	-0.72
Harrisburg-Lebanon-Carlisle, PA MSA	--	--	--	--	--	--	--
Hartford, CT MSA	2.15	0	0.66	0.11	0	0.65	-1.02

1995 Metro Area	Max. Res. Density (1 -5)	Vote Required for Multi Family Rezoning	No Density Bonus or Incl. Incentive	Dev. Moratorium in Place	Res. Pace Restriction	Mobile Homes Not Allowed	Growth Management Index
Honolulu, HI MSA	--	--	--	--	--	--	--
Houston, TX PMSA	3.55	0.75	1	0	0	0.16	-1.17
Indianapolis, IN MSA	2.87	0.12	0.95	0	0.09	0.3	-1.17
Kansas City, MO-KS MSA	2.91	0.4	1	0.03	0	0.48	-0.76
Lancaster, PA MSA	--	--	--	--	--	--	--
Los Angeles-Long Beach, CA PMSA	4.25	0.18	0.29	0.02	0	0.36	-0.81
Miami, FL PMSA	4.72	0.45	1	0.1	0	0.82	-0.05
Middlesex-Somerset-Hunterdon, NJ PMSA	2.56	0.37	0.54	0	0	0.76	-1.06
Milwaukee-Waukesha, WI PMSA	2.67	0.28	0.95	0.06	0.07	0.68	-0.3
Minneapolis-St. Paul, MN-WI MSA	3.14	0.25	0.85	0.12	0.01	0.46	0.27
Monmouth-Ocean, NJ PMSA	2.59	0.29	0.58	0	0	0.6	-0.91
Nashville, TN MSA	3.15	0.21	0.87	0	0	0.15	4.68
Nassau-Suffolk, NY PMSA	3.61	0.36	0.71	0.45	0	0.78	-1.17
New Haven-Meriden, CT PMSA	3.47	0.34	0.78	0	0	0.75	-1.17
New London-Norwich, CT-RI MSA	--	--	--	--	--	--	--
New York, NY PMSA	2.69	0.4	0.4	0.3	0	0.82	-0.88
Newark, NJ PMSA	2.75	0.32	0.56	0.03	0	1	-1.07
Oakland, CA PMSA	4.28	0.28	0	0.05	0.15	0.29	1.8
Oklahoma City, OK MSA	3.39	0.41	1	0	0	0.34	0.07
Orange County, CA PMSA	4.28	0.16	0.08	0	0.1	0.05	0.42
Orlando, FL MSA	3.39	0.12	0.52	0.05	0	0.15	-0.82
Philadelphia, PA-NJ PMSA	2.6	0.44	0.87	0.03	0.01	0.37	-0.94
Phoenix-Mesa, AZ MSA	3.68	0.4	0.91	0	0	0.07	0.7
Pittsburgh, PA MSA	2.47	0.53	1	0	0	0.23	-0.97

1995 Metro Area	Max. Res. Density (1 -5)	Vote Required for Multi Family Rezoning	No Density Bonus or Incl. Incentive	Dev. Moratorium in Place	Res. Pace Restriction	Mobile Homes Not Allowed	Growth Management Index
Portland-Vancouver, OR-WA PMSA	4.27	0.12	0.82	0.1	0	0.03	5
Providence-Fall River-Warwick, RI-MA MSA	--	--	--	--	--	--	--
Provo-Orem, UT MSA	--	--	--	--	--	--	--
Raleigh-Durham-Chapel Hill, NC MSA	2.55	0.43	0.73	0	0	0	2.04
Riverside-San Bernardino, CA PMSA	--	--	--	--	--	--	--
Rochester, NY MSA	2.16	0.59	0.98	0.02	0.02	0.3	-0.9
St. Louis, MO-IL MSA	2.72	0.18	0.97	0	0.02	0.57	-0.94
Salt Lake City-Ogden, UT MSA	3.82	0.2	0.81	0.12	0	0.23	0.28
San Antonio, TX MSA	4.44	0.44	1	0	0	0	-0.37
San Diego, CA MSA	4.55	0.22	0	0.05	0	0.14	-0.59
San Francisco, CA PMSA	4.16	0.48	0.12	0	0.07	0.15	1.1
Scranton--Wilkes-Barre--Hazleton, PA MSA	--	--	--	--	--	--	--
Seattle-Bellevue-Everett, WA PMSA	4.04	0.21	0.56	0.1	0	0.15	5.77
Springfield, MA MSA	--	--	--	--	--	--	--
Tampa-St. Petersburg-Clearwater, FL MSA	3.86	0.55	0.83	0	0	0.09	2.45
Toledo, OH MSA	--	--	--	--	--	--	--
Washington, DC-MD-VA-WV PMSA	3.61	0.21	0.78	0.13	0.04	0.31	1.31
West Palm Beach-Boca Raton, FL MSA	3.54	0.42	0.77	0.11	0	0.36	0.06
Number of Observations	**51**	**51**	**51**	**51**	**51**	**51**	**51**
Min	**2.01**	**0**	**0**	**0**	**0**	**0**	**-1.17**
Max	**4.72**	**0.8**	**1**	**0.45**	**0.4**	**1**	**5.77**
Mean	**3.23**	**0.34**	**0.78**	**0.05**	**0.03**	**0.41**	**-0.01**
Median	**3.14**	**0.34**	**0.87**	**0.02**	**0**	**0.36**	**-0.79**
Standard Deviation	**0.74**	**0.16**	**0.28**	**0.08**	**0.06**	**0.29**	**1.7**

Table 48 – IV Tobit Regression Results – Household Housing Cost to Income Ratio – Wharton Supply Restriction Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Instrumented	Single Family Development Limit Index						Multi Family Development Limit Index					
Racial Group	All Races		Black Interaction		Hisp. Interaction		All Races		Black Interaction		Hisp. Interaction	
Tenure	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters
Instruments	Pop. in 1910 and 1920						Pop. in 1910 and 1930					
Endogenous?	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No
Wald Test of Exogeneity P Value	0.4802	0.5828	0.6374	0.929	0.6396	0.7421	0.1735	0.1117	0.0953	0.0699	0.0326	0.2489
Supply Restrictions												
Single Family Dvmt. Limit Index	-0.0525	-0.0723	0.00391	-0.205	-0.00517	-0.00271	-0.00752	-0.00398	-0.00190	***0.00431***	-0.00252	0.00219
	(-0.73)	(-0.53)	(0.30)	(-0.09)	(-0.74)	(-0.16)	(-1.32)	(-0.64)	(-1.01)	(1.79)	(-1.28)	(0.96)
*Afr. American [head]*Single Family Dvmt. Limit Index*	0.0304	0.0440	-0.103	1.239	-0.000160	-0.00370	-0.00294	-0.00617	-0.00868	**-0.0190***	-0.00350	**-0.00890***
	(0.62)	(0.44)	(-0.49)	(0.09)	(-0.02)	(-0.23)	(-0.97)	(-1.21)	(-1.56)	(-2.15)	(-1.36)	(-2.03)
*Hispanic [head]*Single Family Dvmt. Limit Index*	0.0365	0.0595	-0.00816	0.223	0.0400	0.0383	-0.000943	0.00729	-0.000810	0.00336	0.0179	0.0126
	(0.66)	(0.58)	(-0.47)	(0.09)	(0.46)	(0.38)	(-0.16)	(1.55)	(-0.20)	(0.90)	(1.42)	(1.55)
Multi Family Dvmt. Limit Index	0.0247	0.0359	0.00470	0.0642	***0.00506***	0.00329	0.0342	***0.0389***	0.00379	-0.00738	**0.00876***	0.00666
	(0.82)	(0.55)	(1.58)	(0.09)	(1.87)	(0.62)	(1.58)	(1.71)	(1.37)	(-1.04)	(2.25)	(1.28)
*Afr. American [head]*Multi Family Dvmt. Limit Index*	-0.00964	-0.00863	0.0261	-0.414	-0.00320	0.00620	-0.0149	-0.0135	0.0115	***0.0431***	***-0.00626***	0.00265
	(-0.89)	(-0.26)	(0.42)	(-0.09)	(-1.28)	(0.75)	(-1.32)	(-0.86)	(1.29)	(1.78)	(-1.81)	(0.32)
*Hispanic [head]*Multi Family Dvmt. Limit Index*	-0.0110	-0.0169	-0.00527	-0.0430	-0.0259	-0.0198	-0.0189	-0.0229	-0.00416	0.00759	**-0.0382***	-0.0205
	(-1.04)	(-0.54)	(-0.96)	(-0.09)	(-0.57)	(-0.37)	(-1.28)	(-1.45)	(-0.95)	(0.91)	(-2.02)	(-1.21)
Observations	**187,242**	**79,292**	**187,242**	**79,292**	**187,242**	**79,292**	**187,242**	**79,292**	**187,242**	**79,292**	**187,242**	**79,292**
Groups	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**

Explanatory variables standardized, t statistics in parentheses. Model uses metropoltian-area clustered standard errors.

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 49 - IV Tobit Regression Results – Household Housing Cost to Income Ratio – Wharton Density Restriction Measures

Model Number	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Instrumented	Density Restrictions Importance Index						>1 Acre Minimum Lot Size Requirement					
Racial Group	All Races		Black Interaction		Hisp. Interaction		All Races		Black Interaction		Hisp. Interaction	
Tenure	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters
Instruments	Pop. in 1970 and 1980; Num. of Zon. Jur.						Coastal metro; Num. of Zon. Jur.					
Endogenous?	No	No	No	Yes	Yes	Yes	No	No	No	No	Yes	No
Wald Test of Exogeneity P Value	0.5845	0.4085	0.1023	0.0234	0.0296	0.0022	0.1653	0.5558	0.5332	0.5418	0.032	0.2598
Density Restrictions												
Density Restrictions Imp. Index	0.0599	0.0767	0.00303	**0.00909***	0.000199	0.00235	0.00604	0.000886	0.00219	0.00394	0.00120	0.0142
	(0.56)	(0.87)	(0.88)	(2.07)	(0.05)	(0.49)	(1.30)	(0.08)	(0.66)	(0.91)	(0.37)	(1.29)
*Afr. American [head]*Density Restrictions Imp. Index*	-0.0182	-0.0324	-0.0136	**-0.0293***	0.00163	-0.00654	-0.00303	-0.00703	-0.00225	0.00125	0.000176	-0.0195
	(-0.55)	(-1.12)	(-1.40)	(-2.34)	(0.38)	(-0.77)	(-0.67)	(-0.77)	(-0.45)	(0.06)	(0.04)	(-1.45)
*Hispanic [head]*Density Restrictions Imp. Index*	-0.0193	-0.0208	-0.000603	-0.00235	***0.0202***	**0.0177****	-0.00113	0.00558	0.000638	0.00519	0.00568	-0.0316
	(-0.52)	(-0.69)	(-0.16)	(-0.45)	(1.90)	(2.75)	(-0.28)	(0.84)	(0.18)	(0.91)	(0.78)	(-0.81)
>1 Acre Minimum Lot Size Req.	-0.0112	-0.0121	-0.000182	-0.000165	0.000674	0.00280	-0.0132	0.0178	-0.000121	0.00691	0.00215	-0.0132
	(-0.54)	(-0.72)	(-0.07)	(-0.04)	(0.26)	(0.80)	(-1.24)	(0.59)	(-0.05)	(0.74)	(0.84)	(-0.84)
Afr. American [head]>1 Acre Min. Lot Size Req.*	0.00359	0.00454	0.00360	0.00618	-0.00222	-0.00492	0.00499	-0.0119	0.00258	-0.0314	-0.00361	0.0133
	(0.34)	(0.35)	(0.59)	(0.62)	(-0.55)	(-0.86)	(0.82)	(-0.74)	(0.30)	(-0.64)	(-0.82)	(0.72)
Hispanic [head]>1 Acre Min.Lot Size Req.*	0.00273	0.0239	-0.00497	0.0127*	-0.00967	0.00321	0.000711	0.00269	-0.00517	0.00515	**-0.0359***	0.104
	(0.16)	(1.28)	(-1.03)	(2.09)	(-1.39)	(0.50)	(0.11)	(0.22)	(-1.06)	(0.51)	(-2.20)	(1.22)
Constant	**0.406*****	**0.541*****	**0.350*****	**0.472*****	**0.352*****	**0.476*****	**0.346*****	**0.479*****	**0.350*****	**0.478*****	**0.351*****	**0.471*****
	(3.78)	(6.14)	(31.28)	(38.99)	(31.51)	(38.31)	(27.69)	(31.41)	(31.29)	(32.17)	(31.31)	(38.58)
Observations	**187,242**	**79,292**	**187,242**	**79,292**	**187,242**	**79,292**	**187,242**	**79,292**	**187,242**	**79,292**	**187,242**	**79,292**
Groups	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**

Explanatory variables standardized, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 50 - IV Tobit Regression Results – Household Housing Cost to Income Ratio – Pendall Supply Restriction Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Instrumented	Development Moratorium in Place						Residential Pace Restriction					
Racial Group	All Races		Black Interaction		Hisp. Interaction		All Races		Black Interaction		Hisp. Interaction	
Tenure	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters
Instruments	Coastal metro; Num. of Zon. Jur.						Pop. in 1980; Num. of Zon. Jur.; Coastal metro					
Endogenous?	Yes	No	No	No	No	No	No	No	No	No	No	No
Wald Test of Exogeneity P Value	0.2598	0.1577	0.1868	0.5611	0.1997	0.948	0.4518	0.5899	0.3028	0.773	0.9522	0.353
Supply Restrictions												
Dvmt. Moratorium in Place	0.0235*	0.0319	0.00161	0.00383	0.00293	0.00526	0.00921	0.00760	0.00234	0.00548	0.00236	0.00542
	(2.24)	(1.62)	(0.71)	(0.88)	(1.42)	(1.42)	(0.81)	(1.16)	(1.16)	(1.70)	(1.17)	(1.74)
*Afr. American [head]*Dvmt. Moratorium in Place*	-0.0103**	-0.0280***	0.00521	-0.0127	-0.00599***	-0.0202***	-0.00677	-0.0216***	-0.00574**	-0.0204***	-0.00535**	-0.0203***
	(-2.73)	(-3.99)	(0.58)	(-0.86)	(-3.36)	(-4.45)	(-1.65)	(-4.22)	(-2.82)	(-4.71)	(-3.13)	(-4.92)
*Hispanic [head]*Dvmt. Moratorium in Place*	-0.00369	-0.00663	0.00304	0.00341	-0.00683	0.00219	0.00405	0.00132	0.00205	0.00151	0.00202	0.00222
	(-0.76)	(-1.21)	(0.75)	(0.68)	(-0.89)	(0.20)	(0.67)	(0.26)	(0.54)	(0.38)	(0.48)	(0.48)
Residential Pace Restriction	-0.000216	0.00731*	-0.00175	0.00585**	-0.00175	0.00600**	0.0481	0.0286	-0.00219	0.00652*	-0.00178	0.00285
	(-0.10)	(2.44)	(-1.33)	(2.84)	(-1.36)	(3.02)	(0.72)	(0.68)	(-1.74)	(2.12)	(-1.08)	(0.64)
*Afr. American [head]*Residential Pace Restriction*	0.00226	-0.00130	0.00181	0.0000297	0.00251	-0.0000491	-0.0231	-0.0118	0.0129	-0.00370	0.00256	0.00332
	(0.90)	(-0.55)	(0.48)	(0.01)	(1.02)	(-0.02)	(-0.63)	(-0.53)	(1.20)	(-0.26)	(0.87)	(0.62)
*Hispanic [head]*Residential Pace Restriction*	0.00422*	0.00411	0.00393*	0.00405	0.00432**	0.00406	-0.0192	-0.00622	0.00442**	0.00356	0.00471	0.0212
	(2.48)	(1.74)	(2.38)	(1.88)	(2.93)	(1.91)	(-0.57)	(-0.34)	(2.87)	(1.19)	(0.37)	(1.07)
Mobile Homes Not Allowed	0.00821	-0.00544	0.00953**	-0.00145	0.00889**	-0.00211	0.00515	-0.00543	0.00920**	-0.00222	0.00920**	-0.00208
	(1.89)	(-0.85)	(3.00)	(-0.29)	(2.82)	(-0.43)	(0.44)	(-0.61)	(2.92)	(-0.45)	(2.96)	(-0.42)
*Afr. American [head]*Mobile Homes Not Allowed*	0.00585*	0.00175	0.00168	-0.00362	0.00440	-0.00147	0.00890	0.00133	0.00475	-0.00150	0.00426	-0.00186
	(2.14)	(0.34)	(0.49)	(-0.57)	(1.93)	(-0.32)	(1.49)	(0.18)	(1.86)	(-0.32)	(1.85)	(-0.41)
*Hispanic [head]*Mobile Homes Not Allowed*	0.0120***	0.0108*	0.00976**	0.00713	0.0131***	0.00740	0.0158	0.0103	0.00990**	0.00777	0.00997**	0.00695
	(3.29)	(2.02)	(2.63)	(1.38)	(3.56)	(1.30)	(1.80)	(1.40)	(2.71)	(1.53)	(2.75)	(1.33)
Observations	171,643	73,353	171,643	73,353	171,643	73,353	171,643	73,353	171,643	73,353	171,643	73,353
Groups	51	51	51	51	51	51	51	51	51	51	51	51

Explantory variables standardized, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 51 - IV Tobit Regression Results – Household Housing Cost to Income Ratio – Pendall Supply Restriction Measures Continued

Model Number	(13)	(14)	(15)	(16)	(17)	(18)
Instrumented			**Mobile Homes Not Allowed**			
Racial Group	**All Races**		**Black Interaction**		**Hisp. Interaction**	
Tenure	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**
Instruments			Pop. in 1980; Num. of Zon. Jur.; Coastal metro			
Endogenous?	No	No	No	No	No	No
Wald Test of Exogeneity P Value	0.1095	0.1044	0.1132	0.4492	0.705	0.8858
Mobile Homes Not Allowed	**0.0308***	0.0346	**0.00965****	-0.00338	**0.00902****	-0.00235
	(2.14)	(1.49)	(3.06)	(-0.70)	(2.91)	(-0.44)
*Afr. American [head]*Mobile Homes Not Allowed*	-0.000461	-0.0120	-0.00121	0.00336	***0.00450***	-0.00123
	(-0.11)	(-1.48)	(-0.26)	(0.57)	(1.89)	(-0.27)
*Hispanic [head]*Mobile Homes Not Allowed*	0.00389	-0.00349	**0.00926***	0.00924	**0.0119***	0.00849
	(0.64)	(-0.37)	(2.37)	(1.60)	(2.15)	(1.19)
Observations	**171,643**	**73,353**	**171,643**	**73,353**	**171,643**	**73,353**
Groups	**51**	**51**	**51**	**51**	**51**	**51**

Explanatory variables standardized, t statistics in parentheses. Model uses metropolitan-area clustered standard errors.
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 52 - IV Tobit Regression Results – Household Housing Cost to Income Ratio – Pendall Density Restriction Measures

Model Number	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
Instrumented	Vote Required for Multifamily Rezoning						No Density Bonus or Incl. Zoning					
Racial Group	All Races		Black Interaction		Hisp. Interaction		All Races		Black Interaction		Hisp. Interaction	
Tenure	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters
Instruments	Num. of Zon. Jur.; Coastal metro						Pop. in 1970 and 1980					
Endogenous?	No	No	No	No	No	No	Yes	Yes	No	No	No	No
Wald Test of Exogeneity P Value	0.1133	0.2981	0.4604	0.4591	0.3108	0.7915	0.0768	0.0545	0.1144	0.4102	0.6041	0.1048
Density Restrictions												
Vote Required for Multifamily Rezoning	0.0340	0.0386	-0.00570	-0.00804	-0.00135	-0.00277	0.0133	0.0122	-0.00262	-0.00149	-0.00266	-0.00138
	(1.39)	(0.97)	(-1.36)	(-0.87)	(-0.59)	(-0.52)	(1.33)	(1.38)	(-1.42)	(-0.47)	(-1.45)	(-0.42)
*Afr. American [head]*Vote Required for Rezoning*	-0.0159	-0.0139	0.0212	0.0244	***-0.00444***	0.00236	***-0.00458***	0.000626	-0.00376	0.000942	-0.00294	0.00158
	(-1.52)	(-0.83)	(0.64)	(0.78)	(-1.79)	(0.43)	(-1.89)	(0.16)	(-1.49)	(0.26)	(-1.52)	(0.45)
*Hispanic [head]*Vote Required for Rezoning*	-0.0140	-0.00986	0.00232	0.0114	-0.0127	0.00935	-0.00102	0.00556	-0.000664	0.00530	-0.00248	0.00244
	(-1.10)	(-0.64)	(0.43)	(1.18)	(-1.04)	(0.58)	(-0.26)	(1.21)	(-0.20)	(1.25)	(-0.51)	(0.48)
No Density Bonus or Incl. Zoning	-0.0379*	-0.0417	-0.00844**	-0.0118*	-0.00916**	-0.0125**	***-0.0563***	-0.0540*	-0.0101***	-0.0144**	-0.00986**	-0.0161**
	(-2.05)	(-1.46)	(-2.69)	(-2.53)	(-3.08)	(-2.71)	(-1.96)	(-2.40)	(-3.29)	(-2.81)	(-2.92)	(-2.75)
*Afr. American [head]*No Density Bonus or Incl. Zoning*	0.00329	0.00585	-0.00268	0.00241	0.0000466	0.00383	0.00872	***0.0118***	0.0105	0.0114	0.000816	0.00709
	(0.85)	(1.12)	(-0.43)	(0.41)	(0.01)	(0.92)	(1.56)	(1.82)	(1.30)	(1.03)	(0.27)	(1.49)
*Hispanic [head]*No Density Bonus or Incl. Zoning*	-0.00483	-0.000763	-0.00788**	-0.00180	-0.00427	-0.00300	-0.000170	0.00501	-0.00697**	-0.000600	-0.00276	0.00956
	(-1.29)	(-0.18)	(-2.81)	(-0.57)	(-0.81)	(-0.74)	(-0.04)	(0.94)	(-2.70)	(-0.18)	(-0.27)	(1.11)
Maximum Allowable Density	0.0215	0.00914	0.0103**	-0.00403	0.0117***	-0.00231	0.00826	-0.00678	0.0107**	-0.00257	0.0110**	-0.00285
	(1.60)	(0.61)	(3.14)	(-0.67)	(3.48)	(-0.37)	(0.84)	(-0.74)	(3.20)	(-0.51)	(3.28)	(-0.56)
*Afr. American [head]*Maximum Allowable Density*	-0.00172	***-0.0118***	0.00579	0.00139	-0.00173	***-0.00691***	0.00510	-0.00135	0.00172	-0.00446	-0.000549	-0.00510
	(-0.44)	(-1.92)	(0.51)	(0.10)	(-0.64)	(-1.65)	(1.10)	(-0.25)	(0.51)	(-0.79)	(-0.20)	(-1.09)
*Hispanic [head]*Maximum Allowable Density*	-0.00419	-0.0102	-0.00630	-0.00450	-0.0105*	-0.00650	0.00181	-0.000216	-0.00717*	-0.00694	-0.00655	-0.00395
	(-0.98)	(-1.28)	(-1.53)	(-0.62)	(-2.49)	(-0.77)	(0.27)	(-0.03)	(-2.33)	(-1.04)	(-1.47)	(-0.55)
Observations	171,831	73,402	171,831	73,402	171,831	73,402	171,831	73,402	171,831	73,402	171,831	73,402
Groups	51	51	51	51	51	51	51	51	51	51	51	51

Explanatory variables standardized, t statistics in parentheses. Model uses metropolitan-area clustered standard errors
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 53 - IV Tobit Regression Results – Household Housing Cost to Income Ratio – Pendall Density Restriction Measures Continued

Model Number	**(31)**	**(32)**	**(33)**	**(34)**	**(35)**	**(36)**
Instrumented	**Maximum Allowable Density**					
Racial Group	**All Races**		**Black Interaction**		**Hisp. Interaction**	
Tenure	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**
Instruments	Num. of Zon. Jur.; Coastal metro; Year of statehood for state with largest metro share					
Endogenous?	Yes	Yes	No	No	No	No
Wald Test of Exogeneity P Value	0.0017	0.0002	0.112	0.1465	0.5822	0.3268
Maximum Allowable Density	-0.00584	**-0.0305***	**0.0107****	-0.00404	**0.0113*****	-0.000302
	(-0.92)	(-2.49)	(3.22)	(-0.73)	(3.42)	(-0.05)
*Afr. American [head]*Maximum Allowable Density*	0.00122	-0.00224	0.00468	0.00242	-0.00132	**-0.00939***
	(0.45)	(-0.46)	(0.90)	(0.29)	(-0.46)	(-2.10)
*Hispanic [head]*Maximum Allowable Density*	***-0.00578***	-0.00261	**-0.00678***	-0.00468	***-0.00973***	-0.0142
	(-1.67)	(-0.40)	(-1.98)	(-0.65)	(-1.96)	(-1.36)
Observations	**171,643**	**73,353**	**171,643**	**73,353**	**171,643**	**73,353**
Groups	**51**	**51**	**51**	**51**	**51**	**51**

Explanatory variables standardized, t statistics in parentheses. Model uses metropolitan-area clustered standard errors.
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 54 – Wharton IV Regression Results by Income Quartile – Owners and Renters – All Income Quartiles

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Instrumented	**Single Family Development Limit Index**		**Multi Family Development Limit Index**		**Density Restrictions Importance Index**		**1 Acre or More Minimum Lot Size**	
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Group	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**
Supply & Density Restrictions Endogenous?	**No**	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**No**
Durbin score chi^2 p value	**0.1359**	**0.0006**	**0.0069**	**0.2866**	**0.0109**	**0.0784**	**0.0067**	**0.3973**
Wu-Hausman F p value	**0.2663**	**0.0074**	**0.0396**	**0.4290**	**0.0534**	**0.1879**	**0.0389**	**0.5305**
First Stage Partial r^2	**0.0615**	**0.0615**	**0.2225**	**0.2225**	**0.0916**	**0.0916**	**0.1542**	**0.1542**
Instruments	Pop. Density in 1910; Num. of Zon. Jur. per 100 sq mi.		Coastal Metro; Year of statehood for state with largest share of metro; % Chg in Pop. Density 1910-20.		Year of statehood for state with largest share of metro; Pop. Density in 1910, 1920, and 1930. % Chg in Pop. Density 1910-20.		Coastal Metro; Year of statehood for state with largest share of metro; Pop. Density in 1910 and 1920; % Chg in Pop. Density 1910-20.	
Supply Restrictions								
Single Family Development Limit Index	0.314	***1.327***	0.0772	0.119	-0.139	-0.0516	-0.0351	0.0496
	(1.01)	(1.77)	(0.84)	(0.97)	(-1.37)	(-0.39)	(-0.44)	(0.50)
Multi Family Development Limit Index	-0.00235	-0.354	-0.214	0.0538	**0.343***	**0.464***	0.0526	0.230
	(-0.01)	(-0.82)	(-1.10)	(0.21)	(2.41)	(2.48)	(0.45)	(1.61)
Density Restrictions								
Density Restrictions Importance Index	0.190	***0.483***	**0.212***	***0.258***	-0.518	-0.466	**0.289***	***0.282***
	(1.62)	(1.70)	(2.06)	(1.89)	(-1.42)	(-0.97)	(2.21)	(1.75)
1 Acre or More Minimum Lot Size	0.0378	0.168	-0.0477	0.165	***0.283***	**0.468***	***-0.444***	-0.0112
	(0.39)	(0.71)	(-0.47)	(1.20)	(1.68)	(2.12)	(-1.75)	(-0.04)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.628**	**.**	**0.660**	**0.395**	**0.514**	**0.161**	**0.604**	**0.396**

Standardized coefficients shown above, t statistics in parentheses. Model uses metropolitan-area clustered standard errors.
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 55 – Wharton IV Regression Results by Income Quartile – Owners and Renters – 1st Income Quartile

Model Number	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Instrumented	**Single Family Development Limit Index**		**Multi Family Development Limit Index**		**Density Restrictions Importance Index**		**1 Acre or More Minimum Lot Size**	
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Group	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**
Supply & Density Restrictions Endogenous?	**Yes**	**Yes**	**No**	**No**	**No**	**Yes**	**No**	**No**
Durbin score chi^2 p value	**0.0409**	**0.004**	**0.9243**	**0.5396**	**0.6143**	**0.0611**	**0.2374**	**0.805**
Wu-Hausman F p value	**0.1245**	**0.0279**	**0.944**	**0.6499**	**0.7093**	**0.1606**	**0.3800**	**0.8552**
First Stage Partial r^2	**0.0615**	**0.0615**	**0.2225**	**0.2225**	**0.0916**	**0.0916**	**0.1542**	**0.1542**
Instruments	Pop. Density in 1910; Num. of Zon. Jur. per 100 sq mi.		Coastal Metro; Year of statehood for state with largest share of metro; % Chg in Pop. Density 1910-20.		Year of statehood for state with largest share of metro; Pop. Density in 1910, 1920, and 1930. % Chg in Pop. Density 1910-20.		Coastal Metro; Year of statehood for state with largest share of metro; Pop. Density in 1910 and 1920; % Chg in Pop. Density 1910-20.	
Supply Restrictions								
Single Family Development Limit Index	0.620	0.963	0.0556	-0.0878	0.0805	***-0.235***	0.0676	-0.131
	(1.56)	(1.43)	(0.64)	(-0.71)	(0.98)	(-1.70)	(0.91)	(-1.33)
Multi Family Development Limit Index	-0.00117	-0.396	0.295	0.0150	**0.243***	***0.342***	**0.217***	0.137
	(-0.01)	(-1.02)	(1.59)	(0.06)	(2.11)	(1.75)	(2.01)	(0.96)
Density Restrictions								
Density Restrictions Importance Index	***0.258***	0.216	0.129	0.00723	0.272	-0.749	***0.221***	-0.00360
	(1.71)	(0.84)	(1.32)	(0.05)	(0.92)	(-1.50)	(1.81)	(-0.02)
1 Acre or More Minimum Lot Size	0.0803	-0.0482	0.110	-0.0347	0.0548	0.265	-0.138	-0.0694
	(0.64)	(-0.23)	(1.12)	(-0.25)	(0.40)	(1.15)	(-0.58)	(-0.22)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.391**	**.**	**0.692**	**0.391**	**0.681**	**0.084**	**0.656**	**0.400**

Standardized coefficients shown above, t statistics in parentheses. Model uses metropolitan-area clustered standard errors.
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 56 – Wharton IV Regression Results by Income Quartile – Owners and Renters – 2nd Income Quartile

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Instrumented	**Single Family Development Limit Index**		**Multi Family Development Limit Index**		**Density Restrictions Importance Index**		**1 Acre or More Minimum Lot Size**	
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Group	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**
Supply & Density Restrictions Endogenous?	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**	**Yes**
Durbin score chi^2 p value	**0.0717**	**0.0065**	**0.0686**	**0.0156**	**0.1994**	**0.018**	**0.1262**	**0.0319**
Wu-Hausman F p value	**0.1777**	**0.0384**	**0.1727**	**0.0674**	**0.3398**	**0.0739**	**0.2541**	**0.1063**
First Stage Partial r^2	**0.0615**	**0.0615**	**0.2225**	**0.2225**	**0.0916**	**0.0916**	**0.1542**	**0.1542**
Instruments	Pop. Density in 1910; Num. of Zon. Jur. per 100 sq mi.		Coastal Metro; Year of statehood for state with largest share of metro; % Chg in Pop. Density 1910-20.		Year of statehood for state with largest share of metro; Pop. Density in 1910, 1920, and 1930. % Chg in Pop. Density 1910-20.		Coastal Metro; Year of statehood for state with largest share of metro; Pop. Density in 1910 and 1920; % Chg in Pop. Density 1910-20.	
Supply Restrictions								
Single Family Development Limit Index	0.456	0.636	0.0795	0.107	-0.0594	-0.0818	-0.00287	0.00899
	(1.28)	(1.59)	(0.88)	(1.24)	(-0.70)	(-0.87)	(-0.04)	(0.13)
Multi Family Development Limit Index	-0.0114	-0.192	-0.0594	-0.211	**0.311****	**0.274***	0.147	0.0311
	(-0.06)	(-0.83)	(-0.31)	(-1.16)	(2.59)	(2.07)	(1.38)	(0.30)
Density Restrictions								
Density Restrictions Importance Index	**0.295***	***0.259***	**0.264****	**0.205***	-0.146	-0.444	**0.299***	**0.254***
	(2.19)	(1.70)	(2.63)	(2.13)	(-0.48)	(-1.31)	(2.50)	(2.18)
1 Acre or More Minimum Lot Size	0.0889	0.132	0.0369	0.0736	0.233	**0.366***	-0.189	-0.218
	(0.79)	(1.05)	(0.37)	(0.77)	(1.64)	(2.34)	(-0.81)	(-0.96)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.511**	**0.381**	**0.673**	**0.703**	**0.653**	**0.581**	**0.668**	**0.686**

Standardized coefficients shown above, t statistics in parentheses.
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 57 – Wharton IV Regression Results by Income Quartile – Owners and Renters – 3rd Income Quartile

Model Number	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Instrumented	**Single Family Development Limit Index**		**Multi Family Development Limit Index**		**Density Restrictions Importance Index**		**1 Acre or More Minimum Lot Size**	
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Group	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**
Supply & Density Restrictions Endogenous?	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**
Durbin score chi² p value	**0.1334**	**0.0821**	**0.0009**	**0.0755**	**0.0011**	**0.2641**	**0.0012**	**0.5606**
Wu-Hausman F p value	**0.2631**	**0.1935**	**0.0103**	**0.1834**	**0.0120**	**0.4069**	**0.0124**	**0.6668**
First Stage Partial r^2	**0.0615**	**0.0615**	**0.2225**	**0.2225**	**0.0916**	**0.0916**	**0.1542**	**0.1542**
Instruments	Pop. Density in 1910; Num. of Zon. Jur. per 100 sq mi.		Coastal Metro; Year of statehood for state with largest share of metro; % Chg in Pop. Density 1910-20.		Year of statehood for state with largest share of metro; Pop. Density in 1910, 1920, and 1930. % Chg in Pop. Density 1910-20.		Coastal Metro; Year of statehood for state with largest share of metro; Pop. Density in 1910 and 1920; % Chg in Pop. Density 1910-20.	
Supply Restrictions								
Single Family Development Limit Index	0.287	0.407	0.0926	0.0480	-0.157	-0.0810	-0.0354	-0.0365
	(1.00)	(1.17)	(1.02)	(0.54)	(-1.46)	(-0.98)	(-0.44)	(-0.55)
Multi Family Development Limit Index	-0.0587	-0.0648	***-0.336***	-0.114	**0.304***	**0.235***	-0.0297	0.131
	(-0.35)	(-0.32)	(-1.74)	(-0.60)	(2.01)	(2.02)	(-0.26)	(1.34)
Density Restrictions								
Density Restrictions Importance Index	0.154	**0.323***	***0.196***	**0.295****	***-0.662***	-0.0661	**0.278***	**0.264***
	(1.42)	(2.46)	(1.93)	(2.98)	(-1.71)	(-0.22)	(2.13)	(2.41)
1 Acre or More Minimum Lot Size	0.0173	0.134	-0.0831	0.0833	***0.303***	***0.260***	**-0.517***	0.0415
	(0.19)	(1.23)	(-0.82)	(0.84)	(1.70)	(1.90)	(-2.04)	(0.19)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.681**	**0.537**	**0.668**	**0.683**	**0.454**	**0.678**	**0.606**	**0.721**

Standardized coefficients shown above, t statistics in parentheses.
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 58 – Wharton IV Regression Results by Income Quartile – Owners and Renters – 4th Income Quartile

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Instrumented	**Single Family Development Limit Index**		**Multi Family Development Limit Index**		**Density Restrictions Importance Index**		**1 Acre or More Minimum Lot Size**	
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Group	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**
Supply & Density Restrictions Endogenous?	**No**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
Durbin score chi^2 p value	**0.3445**	**0.3307**	**0.0003**	**0.2589**	**0.0001**	**0.2826**	**0.001**	**0.6001**
Wu-Hausman F p value	**0.4832**	**0.4706**	**0.0047**	**0.4017**	**0.0019**	**0.425**	**0.0108**	**0.6981**
First Stage Partial r^2	**0.0615**	**0.0615**	**0.2225**	**0.2225**	**0.0916**	**0.0916**	**0.1542**	**0.1542**
Instruments	Pop. Density in 1910; Num. of Zon. Jur. per 100 sq mi.		Coastal Metro; Year of statehood for state with largest share of metro; % Chg in Pop. Density 1910-20.		Year of statehood for state with largest share of metro; Pop. Density in 1910, 1920, and 1930. % Chg in Pop. Density 1910-20.		Coastal Metro; Year of statehood for state with largest share of metro; Pop. Density in 1910 and 1920; % Chg in Pop. Density 1910-20.	
Supply Restrictions								
Single Family Development Limit Index	0.159	0.410	0.100	0.0201	-0.197	0.142	-0.0469	0.0876
	(0.59)	(1.10)	(1.02)	(0.19)	(-1.55)	(1.36)	(-0.56)	(1.03)
Multi Family Development Limit Index	-0.0322	-0.00811	**-0.431***	0.374	***0.323***	0.0594	-0.0702	0.185
	(-0.21)	(-0.04)	(-2.06)	(1.62)	(1.81)	(0.40)	(-0.58)	(1.49)
Density Restrictions								
Density Restrictions Importance Index	0.0493	**0.517*****	0.133	**0.388****	**-0.936***	**0.802***	0.212	**0.399****
	(0.49)	(3.65)	(1.21)	(3.21)	(-2.05)	(2.13)	(1.54)	(2.86)
1 Acre or More Minimum Lot Size	-0.0240	**0.235***	-0.146	**0.307***	0.328	0.119	**-0.599***	0.379
	(-0.29)	(1.99)	(-1.33)	(2.53)	(1.55)	(0.69)	(-2.24)	(1.39)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.724**	**0.460**	**0.611**	**0.528**	**0.234**	**0.480**	**0.563**	**0.548**

Standardized coefficients shown above, t statistics in parentheses.
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 59 – Pendall IV Regression Results by Income Quartile – Owners and Renters – All Income Quartiles

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Instrumented	**Development Moratorium in Place**		**Residential Pace Restriction**		**Mobile Homes Not Allowed**		**Vote Required for Rezoning**		**No Density Bonus or Inclusionary Zoning**		**Maximum Allowable Density**	
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Group	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**
Supply & Density Restrictions Endogenous?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**
Durbin score chi^2 p value	**0.0176**	**0.0054**	**0.0000**	**0.0002**	**0.0002**	**0.0001**	**0.0003**	**0.0001**	**0.2914**	**0.0763**	**0.0004**	**0.0000**
Wu-Hausman F p value	**0.1409**	**0.0811**	**0.0007**	**0.0143**	**0.0159**	**0.0077**	**0.0206**	**0.0081**	**0.5228**	**0.2780**	**0.0232**	**0.0061**
First Stage Partial r^2	**0.1900**	**0.1900**	**0.1203**	**0.1203**	**0.0611**	**0.0611**	**0.0168**	**0.0168**	**0.0400**	**0.0400**	**0.0335**	**0.0335**
Instruments	Pop. Density in 1910; Coastal Metro		Pop. Density in 1910, 1920, and 1930; % Chg in Pop. Density 1920-30; Coastal Metro		Pop. Density in 1910; % Chg in Pop. Density 1920-30; Num. of Zon. Jur.		Population Density in 1940; Coastal Metro		Population Density in 1910 and 1920; Coastal Metro		Pop. Density in 1910; Pop. In 1970; Num. of Zon. Jur.	
Supply Restrictions												
Development Moratorium in Place	-0.268	-0.682	-0.0109	0.0379	0.0911	0.247	0.680	1.725	0.136	0.478	0.172	0.468
	(-1.51)	(-1.63)	(-0.08)	(0.15)	(0.62)	(0.70)	(0.91)	(0.93)	(1.02)	(1.26)	(0.83)	(0.88)
Residential Pace Restriction	***-0.113***	-0.0451	**-0.728***	**-1.093***	-0.140	-0.107	0.0728	0.421	-0.0729	0.0874	-0.276	-0.472
	(-1.92)	(-0.33)	(-2.51)	(-2.04)	(-1.25)	(-0.40)	(0.27)	(0.63)	(-1.11)	(0.47)	(-1.40)	(-0.93)
Mobile Homes Not Allowed	**0.227****	-0.283	**0.300***	-0.141	**1.264***	2.238	0.969	1.576	**0.323***	0.0574	***0.415***	0.209
	(2.65)	(-1.40)	(2.02)	(-0.51)	(1.96)	(1.45)	(1.14)	(0.75)	(2.56)	(0.16)	(1.72)	(0.34)
Density Restrictions												
Vote Required for Rezoning	**-0.251***	**-0.529***	-0.245	-0.401	0.283	0.794	1.890	4.841	0.0779	0.555	-0.410	-0.945
	(-2.25)	(-2.01)	(-1.50)	(-1.33)	(0.95)	(1.12)	(0.84)	(0.87)	(0.31)	(0.79)	(-1.31)	(-1.17)
No Density Bonus or Inclusionary Zoning	-0.0414	0.231	-0.0479	0.101	-0.480	-0.860	-1.555	-3.571	-0.676	-2.000	-0.105	0.0659
	(-0.30)	(0.72)	(-0.23)	(0.26)	(-1.66)	(-1.25)	(-0.99)	(-0.91)	(-1.13)	(-1.17)	(-0.37)	(0.09)
Maximum Allowable Density	**0.381****	0.323	0.0427	-0.311	0.122	-0.317	0.945	1.729	**0.345***	0.255	-1.730	-5.205
	(2.82)	(1.01)	(0.17)	(-0.65)	(0.44)	(-0.48)	(1.17)	(0.86)	(2.53)	(0.66)	(-1.03)	(-1.20)
Observations	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**
Adjusted R-squared	**0.775**	**-0.503**	**0.328**	**.**	**0.215**	**.**	**-1.395**	**.**	**0.767**	**-1.261**	**-0.224**	**.**

Standardized coefficients shown above, t statistics in parentheses.

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 60 – Pendall IV Regression Results by Income Quartile – Owners and Renters – 1st Income Quartile

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Instrumented	Development Moratorium in Place		Residential Pace Restriction		Mobile Homes Not Allowed		Vote Required for Rezoning		No Density Bonus or Inclusionary Zoning		Maximum Allowable Density	
Model	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.
Group	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters
Supply & Density Restrictions Endogenous?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Durbin score chi² p value	0.0291	0.0057	0.0000	0.0005	0.0001	0.0001	0.0001	0.0002	0.2246	0.0914	0.0000	0.0001
Wu-Hausman F p value	0.1780	0.0827	0.0009	0.0238	0.0091	0.0099	0.0116	0.0142	0.4612	0.3023	0.0029	0.01
First Stage Partial r^2	0.1900	0.1900	0.1203	0.1203	0.0611	0.0611	0.0168	0.0168	0.0400	0.0400	0.0335	0.0335
Instruments	Pop. Density in 1910; Coastal Metro		Pop. Density in 1910, 1920, and 1930; % Chg in Pop. Density 1920-30; Coastal Metro		Pop. Density in 1910; % Chg in Pop. Density 1920-30; Num. of Zon. Jur.		Population Density in 1940; Coastal Metro		Population Density in 1910 and 1920; Coastal Metro		Pop. Density in 1910; Pop. In 1970; Num. of Zon. Jur.	
Supply Restrictions												
Development Moratorium in Place	-0.0976	***-0.701***	0.147	-0.0266	0.257	0.160	0.926	1.450	**0.315***	0.363	0.373	0.353
	(-0.54)	(-1.80)	(1.05)	(-0.12)	(1.58)	(0.50)	(1.10)	(0.89)	(2.13)	(1.05)	(1.40)	(0.74)
Residential Pace Restriction	-0.0948	0.0156	**-0.734***	***-0.895***	-0.127	-0.0402	0.113	0.426	-0.0501	0.135	-0.315	-0.361
	(-1.57)	(0.12)	(-2.43)	(-1.87)	(-1.03)	(-0.16)	(0.37)	(0.73)	(-0.69)	(0.79)	(-1.24)	(-0.80)
Mobile Homes Not Allowed	**0.309*****	-0.205	**0.384***	-0.0783	**1.473***	2.088	1.148	1.425	**0.422****	0.0995	***0.551***	0.233
	(3.52)	(-1.09)	(2.48)	(-0.32)	(2.06)	(1.49)	(1.20)	(0.77)	(3.01)	(0.31)	(1.77)	(0.42)
Density Restrictions												
Vote Required for Rezoning	**-0.248***	-0.383	-0.250	-0.251	0.333	0.827	2.158	4.338	0.119	0.595	-0.503	-0.737
	(-2.16)	(-1.56)	(-1.47)	(-0.93)	(1.01)	(1.27)	(0.85)	(0.89)	(0.43)	(0.93)	(-1.25)	(-1.03)
No Density Bonus or Inclusionary Zoning	**0.359***	0.0907	0.362	-0.0429	-0.113	-0.908	-1.335	-3.258	-0.378	-1.907	0.323	-0.0704
	(2.57)	(0.30)	(1.65)	(-0.12)	(-0.35)	(-1.44)	(-0.75)	(-0.95)	(-0.57)	(-1.23)	(0.89)	(-0.11)
Maximum Allowable Density	0.0883	0.102	-0.258	-0.459	-0.194	-0.483	0.738	1.325	0.0593	0.0353	-2.673	-4.807
	(0.64)	(0.34)	(-0.96)	(-1.08)	(-0.63)	(-0.80)	(0.81)	(0.75)	(0.39)	(0.10)	(-1.24)	(-1.25)
Observations	51	51	51	51	51	51	51	51	51	51	51	51
Adjusted R-squared	0.739	-0.399	0.200	-1.358	-0.067	.	.	.	0.684	-0.996	-1.234	.

Standardized coefficients shown above, t statistics in parentheses.

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 61 – Pendall IV Regression Results by Income Quartile – Owners and Renters – 2nd Income Quartile

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Instrumented	Development Moratorium in Place		Residential Pace Restriction		Mobile Homes Not Allowed		Vote Required for Rezoning		No Density Bonus or Inclusionary Zoning		Maximum Allowable Density	
Model	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.
Group	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters
Supply & Density Restrictions Endogenous?	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Durbin score chi^2 p value	0.0718	0.0092	0.0003	0.0000	0.0010	0.0015	0.0002	0.0000	0.2499	0.0192	0.0000	0.0000
Wu-Hausman F p value	0.2703	0.1041	0.0203	0.0028	0.0363	0.0428	0.0168	0.0032	0.4853	0.1469	0.0058	0.0044
First Stage Partial r^2	0.1900	0.1900	0.1203	0.1203	0.0611	0.0611	0.0168	0.0168	0.0400	0.0400	0.0335	0.0335
Instruments	Pop. Density in 1910; Coastal Metro		Pop. Density in 1910, 1920, and 1930; % Chg in Pop. Density 1920-30; Coastal Metro		Pop. Density in 1910; % Chg in Pop. Density 1920-30; Num. of Zon. Jur.		Population Density in 1940; Coastal Metro		Population Density in 1910 and 1920; Coastal Metro		Pop. Density in 1910; Pop. In 1970; Num. of Zon. Jur.	
Supply Restrictions												
Development Moratorium in Place	-0.0999	*-0.365*	0.130	-0.0382	0.226	0.0631	0.945	0.889	*0.295*	0.246	0.354	0.191
	(-0.52)	(-1.79)	(1.02)	(-0.27)	(1.45)	(0.43)	(1.05)	(0.88)	(1.83)	(1.08)	(1.26)	(0.69)
Residential Pace Restriction	-0.136*	-0.0504	-0.668*	-0.674*	-0.166	-0.0721	0.0829	0.202	-0.0910	0.0296	-0.369	-0.273
	(-2.13)	(-0.74)	(-2.44)	(-2.23)	(-1.40)	(-0.65)	(0.26)	(0.56)	(-1.14)	(0.26)	(-1.38)	(-1.04)
Mobile Homes Not Allowed	0.313***	-0.160	0.377**	-0.0816	1.387*	0.842	1.203	0.854	0.429**	0.0565	*0.564*	0.0916
	(3.36)	(-1.62)	(2.68)	(-0.53)	(2.02)	(1.32)	(1.18)	(0.74)	(2.81)	(0.26)	(1.72)	(0.29)
Density Restrictions												
Vote Required for Rezoning	-0.265*	*-0.242*	-0.257	-0.208	0.270	0.308	2.275	2.671	0.104	0.410	-0.550	-0.473
	(-2.18)	(-1.87)	(-1.67)	(-1.22)	(0.85)	(1.04)	(0.84)	(0.88)	(0.35)	(0.96)	(-1.29)	(-1.14)
No Density Bonus or Inclusionary Zoning	0.0444	0.0240	0.0355	-0.0107	-0.391	-0.434	-1.740	-2.030	-0.716	-1.386	0.0229	-0.0449
	(0.30)	(0.15)	(0.18)	(-0.05)	(-1.27)	(-1.51)	(-0.92)	(-0.95)	(-0.99)	(-1.35)	(0.06)	(-0.12)
Maximum Allowable Density	0.243	0.452**	-0.0506	0.0955	-0.0173	0.187	0.942	1.233	0.220	*0.435*	-2.648	-2.396
	(1.65)	(2.90)	(-0.21)	(0.36)	(-0.06)	(0.68)	(0.97)	(1.12)	(1.33)	(1.86)	(-1.16)	(-1.08)
Observations	51	51	51	51	51	51	51	51	51	51	51	51
Adjusted R-squared	0.720	0.692	0.373	0.252	0.067	0.203	.	.	0.643	0.297	-1.367	-1.207

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 62 – Pendall IV Regression Results by Income Quartile – Owners and Renters – 3rd Income Quartile

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Instrumented	Development Moratorium in Place		Residential Pace Restriction		Mobile Homes Not Allowed		Vote Required for Rezoning		No Density Bonus or Inclusionary Zoning		Maximum Allowable Density	
Model	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.
Group	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters
Supply & Density Restrictions Endogenous?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Durbin score chi² p value	0.0154	0.0131	0.0000	0.0000	0.0028	0.0094	0.0013	0.0001	0.1404	0.0168	0.0054	0.0004
Wu-Hausman F p value	0.1326	0.1229	0.0018	0.0063	0.0594	0.1051	0.0411	0.0116	0.3693	0.138	0.081	0.0234
First Stage Partial r²	0.1900	0.1900	0.1203	0.1203	0.0611	0.0611	0.0168	0.0168	0.04	0.04	0.0335	0.0335
Instruments	Pop. Density in 1910; Coastal Metro		Pop. Density in 1910, 1920, and 1930; % Chg in Pop. Density 1920-30; Coastal Metro		Pop. Density in 1910; % Chg in Pop. Density 1920-30; Num. of Zon. Jur.		Population Density in 1940; Coastal Metro		Population Density in 1910 and 1920; Coastal Metro		Pop. Density in 1910; Pop. In 1970; Num. of Zon. Jur.	
Supply Restrictions												
Development Moratorium in Place	-0.254	-0.180	-0.0146	0.174	0.0660	_0.275_	0.545	1.103	0.147	_0.498_	0.123	0.396
	(-1.59)	(-0.79)	(-0.13)	(1.15)	(0.59)	(1.92)	(0.90)	(1.08)	(1.07)	(1.89)	(0.80)	(1.51)
Residential Pace Restriction	_-0.100_	_-0.131_	-0.619*	-0.788*	-0.116	-0.149	0.0515	0.122	-0.0549	-0.0402	-0.213	-0.337
	(-1.88)	(-1.74)	(-2.49)	(-2.43)	(-1.37)	(-1.36)	(0.24)	(0.33)	(-0.81)	(-0.31)	(-1.46)	(-1.35)
Mobile Homes Not Allowed	_0.150_	-0.118	0.214	-0.0344	_0.905_	0.812	0.751	0.896	0.265*	0.131	0.288	0.121
	(1.94)	(-1.07)	(1.67)	(-0.21)	(1.85)	(1.29)	(1.09)	(0.78)	(2.03)	(0.53)	(1.62)	(0.40)
Density Restrictions												
Vote Required for Rezoning	-0.206*	-0.235	-0.191	-0.195	0.207	0.298	1.536	2.685	0.163	0.507	-0.291	-0.428
	(-2.03)	(-1.63)	(-1.36)	(-1.07)	(0.92)	(1.03)	(0.84)	(0.88)	(0.64)	(1.04)	(-1.26)	(-1.08)
No Density Bonus or Inclusionary Zoning	-0.142	0.193	-0.157	0.152	-0.486*	-0.256	-1.378	-1.871	-0.896	-1.427	-0.215	0.105
	(-1.15)	(1.10)	(-0.87)	(0.64)	(-2.21)	(-0.91)	(-1.08)	(-0.87)	(-1.44)	(-1.21)	(-1.04)	(0.29)
Maximum Allowable Density	0.353**	_0.316_	0.0632	-0.0611	0.154	0.0607	0.802	1.090	0.328*	0.303	-1.160	-2.363
	(2.89)	(1.82)	(0.29)	(-0.21)	(0.73)	(0.23)	(1.22)	(0.99)	(2.32)	(1.12)	(-0.94)	(-1.11)
Observations	51	51	51	51	51	51	51	51	51	51	51	51
Adjusted R-squared	0.818	0.580	0.512	0.050	0.550	0.160	-0.561	.	0.753	-0.022	0.343	-1.215

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 63 – Pendall IV Regression Results by Income Quartile – Owners and Renters – 4th Income Quartile

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Instrumented	**Development Moratorium in Place**		**Residential Pace Restriction**		**Mobile Homes Not Allowed**		**Vote Required for Rezoning**		**No Density Bonus or Inclusionary Zoning**		**Maximum Allowable Density**	
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Group	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**
Supply & Density Restrictions Endogenous?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**
Durbin score chi^2 p value	**0.0030**	**0.0062**	**0.0002**	**0.3705**	**0.0164**	**0.0814**	**0.0051**	**0.0147**	**0.0289**	**0.0315**	**0.11**	**0.171**
Wu-Hausman F p value	**0.0605**	**0.0865**	**0.0147**	**0.5880**	**0.1364**	**0.2864**	**0.0787**	**0.1298**	**0.1774**	**0.1847**	**0.3294**	**0.4052**
First Stage Partial r^2	**0.1900**	**0.1900**	**0.1203**	**0.1203**	**0.0611**	**0.0611**	**0.0168**	**0.0168**	**0.04**	**0.04**	**0.0335**	**0.0335**
Instruments	Pop. Density in 1910; Coastal Metro		Pop. Density in 1910, 1920, and 1930; % Chg in Pop. Density 1920-30; Coastal Metro		Pop. Density in 1910; % Chg in Pop. Density 1920-30; Num. of Zon. Jur.		Population Density in 1940; Coastal Metro		Population Density in 1910 and 1920; Coastal Metro		Pop. Density in 1910; Pop. In 1970; Num. of Zon. Jur.	
Supply Restrictions												
Development Moratorium in Place	**-0.426***	-0.275	-0.0850	**0.246***	-0.0138	**0.295***	0.444	0.910	0.143	***0.542***	0.0132	**0.336***
	(-2.26)	(-0.99)	(-0.78)	(2.42)	(-0.13)	(2.20)	(0.76)	(1.15)	(0.75)	(1.88)	(0.12)	(2.14)
Residential Pace Restriction	-0.0621	**-0.216***	**-0.519***	-0.363	-0.0700	**-0.219***	0.0874	-0.0161	0.00673	-0.115	-0.123	-0.293
	(-0.99)	(-2.34)	(-2.21)	(-1.66)	(-0.88)	(-2.15)	(0.42)	(-0.06)	(0.07)	(-0.81)	(-1.15)	(-1.96)
Mobile Homes Not Allowed	0.00654	-0.0258	0.0704	0.0200	0.675	0.721	0.584	0.743	0.187	0.244	0.104	0.104
	(0.07)	(-0.19)	(0.58)	(0.18)	(1.47)	(1.23)	(0.88)	(0.83)	(1.04)	(0.90)	(0.80)	(0.57)
Density Restrictions												
Vote Required for Rezoning	**-0.251***	-0.200	-0.183	-0.00770	0.167	0.310	1.451	2.074	0.311	0.628	-0.218	-0.142
	(-2.11)	(-1.14)	(-1.39)	(-0.06)	(0.78)	(1.14)	(0.83)	(0.88)	(0.88)	(1.17)	(-1.29)	(-0.60)
No Density Bonus or Inclusionary Zoning	-0.105	**0.473***	-0.173	***0.278***	**-0.462***	0.0282	-1.327	-1.164	-1.286	-1.285	-0.237	0.284
	(-0.72)	(2.21)	(-1.01)	(1.75)	(-2.24)	(0.11)	(-1.08)	(-0.70)	(-1.50)	(-0.99)	(-1.56)	(1.33)
Maximum Allowable Density	**0.365***	0.0845	0.0835	-0.0908	0.167	-0.156	0.772	0.620	***0.339***	0.0521	-0.619	-1.208
	(2.54)	(0.40)	(0.40)	(-0.47)	(0.85)	(-0.62)	(1.22)	(0.72)	(1.74)	(0.18)	(-0.68)	(-0.95)
Observations	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**
Adjusted R-squared	**0.736**	**0.300**	**0.544**	**0.520**	**0.585**	**0.176**	**-0.514**	**.**	**0.508**	**-0.366**	**0.629**	**0.113**

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 64 – Wharton IV Regression Results by Value to Income Ratio - 1st Quartile Home Value to 1st Quartile Income Ratio

Model Number	**(1)**	**(2)**	**(3)**	**(4)**
Instrumented	**Single Family Development Limit Index**	**Multi Family Development Limit Index**	**Density Restrictions Importance Index**	**1 Acre or More Minimum Lot Size**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**No**	**No**	**Yes**	**No**
Durbin score chi^2 p value	**0.2409**	**0.1638**	**0.0014**	**0.1485**
Wu-Hausman F p value	**0.3835**	**0.2997**	**0.0139**	**0.2816**
First Stage Partial r^2	**0.1851**	**0.1845**	**0.1159**	**0.0986**
Instruments	Pop. Density 1920 and 1930; Year of statehood for state with largest share of metro; Coastal Metro; Num. of Zon. Jur.; Num of Zon. Jur. per 100 sq. mi.	Pop. Density 1970 ; Pop. in 1970 and 1980; % Chg in Pop. Density 1950-60 and 1970-80; Year of statehood for state with largest share of metro; Coastal Metro; Num. of Zon. Jur.; Num of Zon. Jur. per 100 sq. mi.	Pop. Density 1910, 1920, 1930, and 1940 ; % Chg in Pop. Density 1910-20; Year of statehood for state with largest share of metro; Num of Zon. Jur. per 100 sq. mi.	Pop. Density 1910, 1930, 1940, 1950, 1960, 1970, 1980; Num of Zon. Jur.; Num of Zon. Jur. per 100 sq. mi.
Supply Restrictions				
Single Family Development Limit Index	0.561	-0.375	-0.477	-0.0315
	(0.90)	(-1.05)	(-1.12)	(-0.11)
Multi Family Development Limit Index	-0.103	1.157	0.956	-0.147
	(-0.23)	(1.45)	(1.63)	(-0.32)
Density Restrictions				
Density Restrictions Importance Index	0.318	-0.0703	***-2.665***	0.689
	(0.88)	(-0.18)	(-1.90)	(1.26)
1 Acre or More Minimum Lot Size	-0.375	-0.102	0.692	-1.759
	(-1.11)	(-0.26)	(1.02)	(-1.50)
Observations	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.826**	**0.819**	**0.650**	**0.794**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 65 – Wharton IV Regression Results by Value to Income Ratio - 2nd Quartile Home Value to 2nd Quartile Income Ratio

Model Number	**(1)**	**(2)**	**(3)**	**(4)**
Instrumented	**Single Family Development Limit Index**	**Multi Family Development Limit Index**	**Density Restrictions Importance Index**	**1 Acre or More Minimum Lot Size**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**Yes**	**Yes**	**Yes**	**No**
Durbin score chi^2 p value	**0.0044**	**0.0391**	**0.0157**	**0.1742**
Wu-Hausman F p value	**0.0294**	**0.121**	**0.0675**	**0.3118**
First Stage Partial r^2	**0.1851**	**0.1845**	**0.1159**	**0.0986**
Instruments	Pop. Density 1920 and 1930; Year of statehood for state with largest share of metro; Coastal Metro; Num. of Zon. Jur.; Num of Zon. Jur. per 100 sq. mi.	Pop. Density 1970 ; Pop. in 1970 and 1980; % Chg in Pop. Density 1950-60 and 1970-80; Year of statehood for state with largest share of metro; Coastal Metro; Num. of Zon. Jur.; Num of Zon. Jur. per 100 sq. mi.	Pop. Density 1910, 1920, 1930, and 1940 ; % Chg in Pop. Density 1910-20; Year of statehood for state with largest share of metro; Num of Zon. Jur. per 100 sq. mi.	Pop. Density 1910, 1930, 1940, 1950, 1960, 1970, 1980; Num of Zon. Jur.; Num of Zon. Jur. per 100 sq. mi.
Supply Restrictions				
Single Family Development Limit Index	0.434	-0.128	**-0.516****	**-0.339***
	(1.13)	(-0.65)	(-2.69)	(-2.27)
Multi Family Development Limit Index	***-0.497***	***-0.818***	0.189	-0.275
	(-1.84)	(-1.87)	(0.71)	(-1.17)
Density Restrictions				
Density Restrictions Importance Index	0.215	0.226	***-1.069***	0.286
	(0.98)	(1.05)	(-1.69)	(1.03)
1 Acre or More Minimum Lot Size	-0.214	***-0.364***	0.226	-0.862
	(-1.03)	(-1.70)	(0.74)	(-1.45)
Observations	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.830**	**0.859**	**0.815**	**0.862**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 66 – Wharton IV Regression Results by Value to Income Ratio - 3rd Quartile Home Value to 3rd Quartile Income Ratio

Model Number	**(1)**	**(2)**	**(3)**	**(4)**
Instrumented	**Single Family Development Limit Index**	**Multi Family Development Limit Index**	**Density Restrictions Importance Index**	**1 Acre or More Minimum Lot Size**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**Yes**	**Yes**	**Yes**	**No**
Durbin score chi^2 p value	**0.0456**	**0.0416**	**0.0035**	**0.1191**
Wu-Hausman F p value	**0.1334**	**0.1259**	**0.0256**	**0.2449**
First Stage Partial r^2	**0.1851**	**0.1845**	**0.1159**	**0.0986**
Instruments	Pop. Density 1920 and 1930; Year of statehood for state with largest share of metro; Coastal Metro; Num. of Zon. Jur.; Num of Zon. Jur. per 100 sq. mi.	Pop. Density 1970 ; Pop. in 1970 and 1980; % Chg in Pop. Density 1950-60 and 1970-80; Year of statehood for state with largest share of metro; Coastal Metro; Num. of Zon. Jur.; Num of Zon. Jur. per 100 sq. mi.	Pop. Density 1910, 1920, 1930, and 1940 ; % Chg in Pop. Density 1910-20; Year of statehood for state with largest share of metro; Num of Zon. Jur. per 100 sq. mi.	Pop. Density 1910, 1930, 1940, 1950, 1960, 1970, 1980; Num of Zon. Jur.; Num of Zon. Jur. per 100 sq. mi.
Supply Restrictions				
Single Family Development Limit Index	0.157	-0.0513	**-0.317***	***-0.182***
	(0.71)	(-0.41)	(-2.39)	(-1.85)
Multi Family Development Limit Index	-0.142	-0.415	0.256	-0.0928
	(-0.92)	(-1.50)	(1.40)	(-0.60)
Density Restrictions				
Density Restrictions Importance Index	-0.0172	0.0216	**-0.944***	0.0846
	(-0.14)	(0.16)	(-2.16)	(0.47)
1 Acre or More Minimum Lot Size	0.153	0.0530	**0.479***	-0.328
	(1.29)	(0.39)	(2.26)	(-0.84)
Observations	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.839**	**0.838**	**0.747**	**0.830**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 67 – Wharton IV Regression Results by Value to Income Ratio - 4th Quartile Home Value to 4th Quartile Income Ratio

Model Number	**(1)**	**(2)**	**(3)**	**(4)**
Instrumented	**Single Family Development Limit Index**	**Multi Family Development Limit Index**	**Density Restrictions Importance Index**	**1 Acre or More Minimum Lot Size**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**Yes**	**Yes**	**No**	**Yes**
Durbin score chi^2 p value	**0.0266**	**0.0055**	**0.1787**	**0.0204**
Wu-Hausman F p value	**0.0968**	**0.0353**	**0.3199**	**0.0818**
First Stage Partial r^2	**0.1882**	**0.2031**	**0.1159**	**0.1327**
Instruments	Pop. Density 1920 and 1930; Year of statehood for state with largest share of metro; Coastal Metro; Num. of Zon. Jur.; Num of Zon. Jur. per 100 sq. mi.	Pop. Density 1970 ; Pop. in 1970 and 1980; % Chg in Pop. Density 1950-60 and 1970-80; Year of statehood for state with largest share of metro; Coastal Metro; Num. of Zon. Jur.; Num of Zon. Jur. per 100 sq. mi.	Pop. Density 1910, 1920, 1930, and 1940 ; % Chg in Pop. Density 1910-20; Year of statehood for state with largest share of metro; Num of Zon. Jur. per 100 sq. mi.	Pop. Density 1910, 1930, 1940, 1950, 1960, 1970, 1980; Num of Zon. Jur.; Num of Zon. Jur. per 100 sq. mi.
Supply Restrictions				
Single Family Development Limit Index	***0.349***	***0.181***	-0.0141	0.0397
	(1.91)	(1.72)	(-0.17)	(0.46)
Multi Family Development Limit Index	-0.146	**-0.461***	0.0910	-0.124
	(-1.15)	(-2.00)	(0.79)	(-0.97)
Density Restrictions				
Density Restrictions Importance Index	**0.386*****	**0.436*****	-0.00403	**0.492*****
	(3.65)	(3.73)	(-0.01)	(3.44)
1 Acre or More Minimum Lot Size	0.0917	-0.0268	0.212	-0.418
	(0.91)	(-0.23)	(1.59)	(-1.40)
Observations	**64**	**64**	**64**	**64**
Adjusted R-squared	**0.725**	**0.696**	**0.749**	**0.680**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 68 – Pendall IV Regression Results by Value to Income Ratio – 1st Quartile Home Value to 1st Quartile Income Ratio

Model Number	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Instrumented	**Development Moratorium in Place**	**Residential Pace Restriction**	**Mobile Homes Not Allowed**	**Vote Required for Rezoning**	**No Density Bonus or Inclusionary Zoning**	**Maximum Allowable Density**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**No**	**No**	**No**	**Yes**	**Yes**	**Yes**
Durbin score chi^2 p value	**0.3318**	**0.1117**	**0.9671**	**0.0271**	**0.0095**	**0.0113**
Wu-Hausman F p value	**0.5569**	**0.3319**	**0.9802**	**0.1721**	**0.1056**	**0.1148**
First Stage Partial r^2	**0.0511**	**0.0350**	**0.16**	**0.0168**	**0.0815**	**0.0335**
Instruments	Pop. in 1910, 1920, and 1970; Year of statehood for state with largest share of metro; % Chg Pop. Density 1940-50	Pop. in 1910, 1940, 1950 and 1980; Year of statehood for state with largest share of metro; Pop. Density 1910, 1920, and 1930; Coastal Metro, Num. of Zon. Jur.	Year of statehood for state with largest share of metro; Pop. Density 1910; % Chg in Pop Density 1910-20 and 1950-60	Pop. 1940; Coastal Metro	Pop. in 1910, 1920, & 1930; Year of statehood for state w/largest share of metro; % Chg Pop. Density 1950-60 & 1960-70; Coastal metro; Num. of Zon. Jur.; Pop. Density 1910	Pop. in 1970; Num. of Zon. Jur.; Pop. Density 1970
Supply Restrictions						
Development Moratorium in Place	-1.609	-0.494	-0.328	-2.226	-1.076	-0.772
	(-1.02)	(-0.99)	(-1.06)	(-0.95)	(-1.62)	(-1.01)
Residential Pace Restriction	-0.359	-2.230	-0.294	-0.804	-0.496	0.324
	(-1.29)	(-1.17)	(-1.26)	(-0.96)	(-1.29)	(0.45)
Mobile Homes Not Allowed	0.128	0.372	0.168	-1.962	-0.439	-0.391
	(0.32)	(0.68)	(0.20)	(-0.74)	(-0.66)	(-0.44)
Density Restrictions						
Vote Required for Rezoning	-1.041	-0.883	-0.511	-6.490	***-2.103***	0.511
	(-1.36)	(-1.34)	(-1.09)	(-0.92)	(-1.87)	(0.45)
No Density Bonus or Inclusionary Zoning	0.859	0.698	0.318	4.426	***4.392***	0.0642
	(1.01)	(0.86)	(0.61)	(0.90)	(1.70)	(0.06)
Maximum Allowable Density	0.764	-0.333	0.536	-1.324	0.355	7.667
	(1.14)	(-0.29)	(0.98)	(-0.52)	(0.43)	(1.24)
Observations	**51**	**51**	**51**	**51**	**51**	**51**
Adjusted R-squared	**0.834**	**0.708**	**0.877**	**0.187**	**0.693**	**0.429**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 69 – Pendall IV Regression Results by Value to Income Ratio – 2nd Quartile Home Value to 2nd Quartile Income Ratio

Model Number	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Instrumented	**Development Moratorium in Place**	**Residential Pace Restriction**	**Mobile Homes Not Allowed**	**Vote Required for Rezoning**	**No Density Bonus or Inclusionary Zoning**	**Maximum Allowable Density**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**Yes**	**No**	**No**	**Yes**	**Yes**	**No**
Durbin score chi^2 p value	**0.0064**	**0.1026**	**0.7503**	**0.0246**	**0.0306**	**0.1054**
Wu-Hausman F p value	**0.0878**	**0.3189**	**0.8479**	**0.1646**	**0.1821**	**0.3229**
First Stage Partial r^2	**0.0511**	**0.0350**	**0.16**	**0.0168**	**0.0815**	**0.0335**
Instruments	Pop. in 1910, 1920, and 1970; Year of statehood for state with largest share of metro; % Chg Pop. Density 1940-50	Pop. in 1910, 1940, 1950 and 1980; Year of statehood for state with largest share of metro; Pop. Density 1910, 1920, and 1930; Coastal Metro, Num. of Zon. Jur.	Year of statehood for state with largest share of metro; Pop. Density 1910; % Chg in Pop Density 1910-20 and 1950-60	Pop. 1940; Coastal Metro	Pop. in 1910, 1920, & 1930; Year of statehood for state w/largest share of metro; % Chg Pop. Density 1950-60 & 1960-70; Coastal metro; Num. of Zon. Jur.; Pop. Density 1910	Pop. in 1970; Num. of Zon. Jur.; Pop. Density 1970
Supply Restrictions						
Development Moratorium in Place	-1.330	0.0163	0.0793	0.841	0.329	0.196
	(-1.30)	(0.08)	(0.65)	(0.90)	(1.40)	(0.89)
Residential Pace Restriction	-0.212	-0.921	-0.139	0.0600	-0.0771	-0.298
	(-1.17)	(-1.21)	(-1.50)	(0.18)	(-0.56)	(-1.43)
Mobile Homes Not Allowed	-0.169	-0.0195	-0.186	0.774	0.120	0.0598
	(-0.64)	(-0.09)	(-0.56)	(0.73)	(0.51)	(0.23)
Density Restrictions						
Vote Required for Rezoning	-0.725	-0.281	-0.164	2.264	0.399	-0.379
	(-1.45)	(-1.07)	(-0.89)	(0.81)	(1.00)	(-1.15)
No Density Bonus or Inclusionary Zoning	-0.415	**-0.864****	**-0.992*****	-2.663	**-2.356***	**-0.960****
	(-0.75)	(-2.67)	(-4.81)	(-1.36)	(-2.56)	(-3.24)
Maximum Allowable Density	***0.742***	0.137	**0.503***	1.223	***0.541***	-1.306
	(1.70)	(0.30)	(2.33)	(1.21)	(1.83)	(-0.74)
Observations	**51**	**51**	**51**	**51**	**51**	**51**
Adjusted R-squared	**0.812**	**0.876**	**0.949**	**0.656**	**0.897**	**0.874**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 70 – Pendall IV Regression Results by Value to Income Ratio – 3rd Quartile Home Value to 3rd Quartile Income Ratio

Model Number	(1)	(2)	(3)	(4)	(5)	(6)
Instrumented	**Development Moratorium in Place**	**Residential Pace Restriction**	**Mobile Homes Not Allowed**	**Vote Required for Rezoning**	**No Density Bonus or Inclusionary Zoning**	**Maximum Allowable Density**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**No**	**Yes**	**No**	**No**	**No**	**No**
Durbin score chi^2 p value	**0.4059**	**0.0856**	**0.1388**	**0.3753**	**0.2729**	**0.4976**
Wu-Hausman F p value	**0.6154**	**0.2932**	**0.3673**	**0.5919**	**0.5064**	**0.6822**
First Stage Partial r^2	**0.0511**	**0.035**	**0.16**	**0.0168**	**0.0815**	**0.0335**
Instruments	Pop. in 1910, 1920, and 1970; Year of statehood for state with largest share of metro; % Chg Pop. Density 1940-50	Pop. in 1910, 1940, 1950 and 1980; Year of statehood for state with largest share of metro; Pop. Density 1910, 1920, and 1930; Coastal Metro, Num. of Zon. Jur.	Year of statehood for state with largest share of metro; Pop. Density 1910; % Chg in Pop Density 1910-20 and 1950-60	Pop. 1940; Coastal Metro	Pop. in 1910, 1920, & 1930; Year of statehood for state w/largest share of metro; % Chg Pop. Density 1950-60 & 1960-70; Coastal metro; Num. of Zon. Jur.; Pop. Density 1910	Pop. in 1970; Num. of Zon. Jur.; Pop. Density 1970
Supply Restrictions						
Development Moratorium in Place	0.112	-0.0959	-0.125	0.0357	-0.0652	-0.110
	(0.33)	(-0.81)	(-1.61)	(0.13)	(-0.61)	(-1.22)
Residential Pace Restriction	**-0.166****	0.296	**-0.189****	-0.132	**-0.159***	**-0.216***
	(-2.72)	(0.65)	(-3.23)	(-1.30)	(-2.56)	(-2.52)
Mobile Homes Not Allowed	**0.220***	0.164	**0.467***	0.403	**0.267***	**0.242***
	(2.50)	(1.26)	(2.20)	(1.24)	(2.50)	(2.31)
Density Restrictions						
Vote Required for Rezoning	-0.0742	-0.0853	-0.0767	0.365	-0.0258	***-0.241***
	(-0.44)	(-0.54)	(-0.65)	(0.43)	(-0.14)	(-1.77)
No Density Bonus or Inclusionary Zoning	**-0.850*****	**-0.838*****	**-0.821*****	***-1.117***	**-1.134****	**-0.728*****
	(-4.55)	(-4.33)	(-6.25)	(-1.86)	(-2.71)	(-5.97)
Maximum Allowable Density	0.0261	0.283	0.0199	0.240	0.0884	-0.362
	(0.18)	(1.03)	(0.14)	(0.78)	(0.66)	(-0.50)
Observations	**51**	**51**	**51**	**51**	**51**	**51**
Adjusted R-squared	**0.939**	**0.872**	**0.940**	**0.907**	**0.938**	**0.938**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 71 – Pendall IV Regression Results by Value to Income Ratio – 4th Quartile Home Value to 4th Quartile Income Ratio

Model Number	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Instrumented	**Development Moratorium in Place**	**Residential Pace Restriction**	**Mobile Homes Not Allowed**	**Vote Required for Rezoning**	**No Density Bonus or Inclusionary Zoning**	**Maximum Allowable Density**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**No**	**No**	**No**	**No**	**Yes**	**Yes**
Durbin score chi^2 p value	**0.7806**	**0.1512**	**0.1147**	**0.5352**	**0.0125**	**0.0011**
Wu-Hausman F p value	**0.869**	**0.3908**	**0.3445**	**0.7131**	**0.1267**	**0.0413**
First Stage Partial r^2	**0.1444**	**0.0342**	**0.1472**	**0.0055**	**0.0056**	**0.0132**
Instruments	Pop. in 1910, 1920, and 1970; Year of statehood for state with largest share of metro; % Chg Pop. Density 1940-50	Pop. in 1910, 1940, 1950 and 1980; Year of statehood for state with largest share of metro; Pop. Density 1910, 1920, and 1930; Coastal Metro, Num. of Zon. Jur.	Year of statehood for state with largest share of metro; Pop. Density 1910; % Chg in Pop Density 1910-20 and 1950-60	Pop. 1940; Coastal Metro	Pop. in 1910, 1920, & 1930; Year of statehood for state w/largest share of metro; % Chg Pop. Density 1950-60 & 1960-70; Coastal metro; Num. of Zon. Jur.; Pop. Density 1910	Pop. in 1970; Num. of Zon. Jur.; Pop. Density 1970
Supply Restrictions						
Development Moratorium in Place	0.0947	0.0804	-0.0197	0.356	1.396	0.511
	(0.34)	(0.49)	(-0.16)	(0.42)	(0.52)	(0.68)
Residential Pace Restriction	**-0.225****	0.316	**-0.213****	-0.150	0.0142	-0.608
	(-3.09)	(0.56)	(-2.61)	(-0.67)	(0.02)	(-1.08)
Mobile Homes Not Allowed	0.0613	0.00851	-0.348	0.395	0.948	0.499
	(0.56)	(0.05)	(-1.11)	(0.46)	(0.53)	(0.70)
Density Restrictions						
Vote Required for Rezoning	-0.0851	-0.00246	-0.276	0.802	1.805	-0.683
	(-0.56)	(-0.01)	(-1.61)	(0.35)	(0.48)	(-0.81)
No Density Bonus or Inclusionary Zoning	-0.284	-0.364	-0.0909	-0.923	-5.423	-0.364
	(-1.30)	(-1.39)	(-0.44)	(-0.54)	(-0.54)	(-0.55)
Maximum Allowable Density	0.197	0.453	0.309	0.467	0.0641	-4.392
	(1.11)	(1.32)	(1.56)	(0.69)	(0.08)	(-0.75)
Observations	**50**	**50**	**50**	**50**	**50**	**50**
Adjusted R-squared	**0.746**	**0.456**	**0.676**	**0.401**	**.**	**.**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 72 – All Income Quartiles Difference IV Regression Results – Wharton Measures

Model Number	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Instrumented	**Single Family Development Limit Index**		**Multi Family Development Limit Index**		**Density Restrictions Importance Index**		**1 Acre or More Minimum Lot Size**	
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Group	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**
Supply & Density Restrictions Endogenous?	**Yes**	**No**	**No**	**No**	**No**	**No**	**No**	**Yes**
Durbin score chi^2 p value	**0.0158**	**0.9115**	**0.6762**	**0.3657**	**0.9215**	**0.4701**	**0.7352**	**0.0122**
Wu-Hausman F p value	**0.0680**	**0.9345**	**0.7574**	**0.5025**	**0.9419**	**0.5927**	**0.8025**	**0.0575**
First Stage Partial r^2	**0.2324**	**0.2324**	**0.1920**	**0.1920**	**0.1656**	**0.1656**	**0.0625**	**0.0625**
Instruments	Coastal metro; Pop. Density in 1910, 1920, 1930, 1940, 1950, and 1960		Pop. in 1910 and 1920; Pop. Density in 1910 and 1920		Pop. in 1910 and 1920; Pop. Density in 1910 and 1920		Year of statehood for state with largest metro share; Pop. in 1970	
Supply Restrictions								
Single Family Development Limit Index	***0.423***	-0.0219	0.00600	0.128	-0.0346	0.0520	-0.0417	0.0224
	(1.70)	(-0.08)	(0.04)	(0.66)	(-0.29)	(0.35)	(-0.39)	(0.11)
Multi Family Development Limit Index	**-0.507****	-0.165	-0.350	-0.447	***-0.259***	-0.251	-0.223	-0.437
	(-2.84)	(-0.84)	(-1.32)	(-1.32)	(-1.85)	(-1.41)	(-1.55)	(-1.58)
Density Restrictions								
Density Restrictions Importance Index	0.197	0.205	0.0994	0.309	0.0938	0.490	-0.000565	***0.804***
	(1.17)	(1.11)	(0.61)	(1.49)	(0.28)	(1.14)	(0.00)	(1.76)
1 Acre or More Minimum Lot Size	0.148	0.0629	0.136	0.0110	0.146	-0.0244	0.313	-1.399
	(1.08)	(0.42)	(1.05)	(0.07)	(0.94)	(-0.12)	(0.64)	(-1.48)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.186**	**0.021**	**0.365**	**-0.030**	**0.371**	**-0.018**	**0.355**	**.**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 73 – 1st Income Quartile Difference IV Regression Results – Wharton Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Instrumented	**Single Family Development Limit Index**		**Multi Family Development Limit Index**		**Density Restrictions Importance Index**		**1 Acre or More Minimum Lot Size**	
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Group	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**
Supply & Density Restrictions Endogenous?	**Yes**	**No**	**No**	**No**	**Yes**	**No**	**No**	**No**
Durbin score chi^2 p value	**0.0271**	**0.5255**	**0.2567**	**0.5211**	**0.0731**	**0.4125**	**0.9035**	**0.4918**
Wu-Hausman F p value	**0.0959**	**0.6384**	**0.3996**	**0.6348**	**0.1797**	**0.5437**	**0.9286**	**0.6107**
First Stage Partial r^2	**0.2324**	**0.2324**	**0.1920**	**0.1920**	**0.1656**	**0.1656**	**0.0625**	**0.0625**
Instruments	Coastal metro; Pop. Density in 1910, 1920, 1930, 1940, 1950, and 1960		Pop. in 1910 and 1920; Pop. Density in 1910 and 1920		Pop. in 1910 and 1920; Pop. Density in 1910 and 1920		Year of statehood for state with largest metro share; Pop. in 1970	
Supply Restrictions								
Single Family Development Limit Index	***0.481***	0.174	-0.126	-0.0846	-0.0928	-0.0480	0.0108	0.00486
	(1.78)	(0.58)	(-0.72)	(-0.41)	(-0.64)	(-0.29)	(0.09)	(0.03)
Multi Family Development Limit Index	**-0.616****	-0.262	-0.0589	0.0338	-0.199	-0.0834	**-0.345***	-0.0946
	(-3.18)	(-1.23)	(-0.19)	(0.09)	(-1.15)	(-0.43)	(-2.19)	(-0.47)
Density Restrictions								
Density Restrictions Importance Index	0.194	0.128	-0.0497	0.00574	-0.553	-0.260	0.0331	-0.0951
	(1.06)	(0.63)	(-0.27)	(0.03)	(-1.32)	(-0.56)	(0.13)	(-0.29)
1 Acre or More Minimum Lot Size	0.117	-0.0529	0.182	-0.0109	0.316	0.0562	0.187	0.383
	(0.78)	(-0.32)	(1.22)	(-0.06)	(1.65)	(0.26)	(0.35)	(0.56)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.037**	**-0.166**	**0.164**	**-0.173**	**0.036**	**-0.202**	**0.226**	**-0.267**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 74 – 2nd Income Quartile Difference IV Regression Results – Wharton Measures

Model Number	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Instrumented	**Single Family Development Limit Index**		**Multi Family Development Limit Index**		**Density Restrictions Importance Index**		**1 Acre or More Minimum Lot Size**	
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Group	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**
Supply & Density Restrictions Endogenous?	**No**	**No**	**No**	**Yes**	**No**	**Yes**	**Yes**	**Yes**
Durbin score chi^2 p value	**0.9837**	**0.6209**	**0.9186**	**0.0321**	**0.5823**	**0.0617**	**0.0166**	**0.0085**
Wu-Hausman F p value	**0.9879**	**0.7144**	**0.9398**	**0.1067**	**0.6840**	**0.1615**	**0.0702**	**0.0456**
First Stage Partial r^2	**0.2324**	**0.2324**	**0.1920**	**0.1920**	**0.1656**	**0.1656**	**0.0625**	**0.0625**
Instruments	Coastal metro; Pop. Density in 1910, 1920, 1930, 1940, 1950, and 1960		Pop. in 1910 and 1920; Pop. Density in 1910 and 1920		Pop. in 1910 and 1920; Pop. Density in 1910 and 1920		Year of statehood for state with largest metro share; Pop. in 1970	
Supply Restrictions								
Single Family Development Limit Index	0.0364	-0.0905	0.0217	0.309	0.0607	0.143	0.0457	0.0425
	(0.17)	(-0.34)	(0.15)	(1.47)	(0.52)	(0.89)	(0.29)	(0.21)
Multi Family Development Limit Index	**-0.302***	-0.131	-0.276	**-0.809***	**-0.342***	***-0.374***	**-0.491***	-0.457
	(-1.98)	(-0.68)	(-1.08)	(-2.23)	(-2.48)	(-1.95)	(-2.34)	(-1.65)
Density Restrictions								
Density Restrictions Importance Index	0.00208	0.261	-0.00759	**0.517***	0.166	**0.991***	0.442	**0.897***
	(0.01)	(1.45)	(-0.05)	(2.31)	(0.50)	(2.15)	(1.27)	(1.96)
1 Acre or More Minimum Lot Size	0.134	0.237	0.138	0.117	0.0822	0.0173	-0.955	-1.254
	(1.14)	(1.61)	(1.10)	(0.66)	(0.54)	(0.08)	(-1.33)	(-1.33)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.406**	**0.066**	**0.405**	**-0.197**	**0.392**	**-0.172**	**-0.381**	**.**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 75 – 3rd Income Quartile Difference IV Regression Results – Wharton Measures

Model Number	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Instrumented	**Single Family Development Limit Index**		**Multi Family Development Limit Index**		**Density Restrictions Importance Index**		**1 Acre or More Minimum Lot Size**	
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Group	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**	**Owners**	**Renters**
Supply & Density Restrictions Endogenous?	**Yes**	**No**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**
Durbin score chi^2 p value	**0.0079**	**0.4483**	**0.1301**	**0.0024**	**0.3118**	**0.0057**	**0.6403**	**0.0000**
Wu-Hausman F p value	**0.0433**	**0.5744**	**0.2590**	**0.0196**	**0.4529**	**0.0351**	**0.7296**	**0.0004**
First Stage Partial r^2	**0.2324**	**0.2324**	**0.1920**	**0.1920**	**0.1656**	**0.1656**	**0.0625**	**0.0625**
Instruments	Coastal metro; Pop. Density in 1910, 1920, 1930, 1940, 1950, and 1960		Pop. in 1910 and 1920; Pop. Density in 1910 and 1920		Pop. in 1910 and 1920; Pop. Density in 1910 and 1920		Year of statehood for state with largest metro share; Pop. in 1970	
Supply Restrictions								
Single Family Development Limit Index	0.334	-0.316	0.0601	0.266	-0.0294	0.0377	-0.0696	-0.109
	(1.64)	(-1.17)	(0.46)	(1.14)	(-0.30)	(0.21)	(-0.81)	(-0.36)
Multi Family Development Limit Index	**-0.365***	0.164	***-0.426***	**-0.808***	***-0.205***	-0.200	-0.172	-0.372
	(-2.52)	(0.85)	(-1.90)	(-2.00)	(-1.78)	(-0.93)	(-1.49)	(-0.93)
Density Restrictions								
Density Restrictions Importance Index	0.0785	0.0648	0.0654	***0.434***	0.209	**1.150***	0.0320	***1.122***
	(0.57)	(0.36)	(0.47)	(1.74)	(0.75)	(2.22)	(0.17)	(1.70)
1 Acre or More Minimum Lot Size	***0.211***	0.0586	0.163	-0.113	0.140	-0.268	0.0439	***-2.430***
	(1.89)	(0.39)	(1.48)	(-0.57)	(1.10)	(-1.13)	(0.11)	(-1.78)
Observations	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.461**	**0.045**	**0.544**	**-0.483**	**0.572**	**-0.478**	**0.583**	**.**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 76 – 4th Income Quartile Difference IV Regression Results – Wharton Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Instrumented	Single Family Development Limit Index		Multi Family Development Limit Index		Density Restrictions Importance Index		1 Acre or More Minimum Lot Size	
Model	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.
Group	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters
Supply & Density Restrictions Endogenous?	No	No	No	No	No	No	Yes	No
Durbin score chi^2 p value	0.2361	0.8476	0.7321	0.7687	0.4639	0.8943	0.0275	0.5315
Wu-Hausman F p value	0.3786	0.8870	0.8001	0.8279	0.5875	0.9218	0.0966	0.6433
First Stage Partial r^2	0.2324	0.2324	0.1920	0.1920	0.1656	0.1656	0.0625	0.0625
Instruments	Coastal metro; Pop. Density in 1910, 1920, 1930, 1940, 1950, and 1960		Pop. in 1910 and 1920; Pop. Density in 1910 and 1920		Pop. in 1910 and 1920; Pop. Density in 1910 and 1920		Year of statehood for state with largest metro share; Pop. in 1970	
Supply Restrictions								
Single Family Development Limit Index	0.0977	0.0177	-0.101	0.111	-0.102	0.0769	-0.0823	0.0627
	(0.57)	(0.06)	(-0.88)	(0.54)	(-1.13)	(0.48)	(-0.71)	(0.42)
Multi Family Development Limit Index	-0.101	-0.0836	0.0542	-0.205	0.0369	-0.125	0.130	-0.0415
	(-0.83)	(-0.39)	(0.27)	(-0.58)	(0.34)	(-0.66)	(0.84)	(-0.21)
Density Restrictions								
Density Restrictions Importance Index	**0.261***	***-0.354***	0.189	-0.305	0.0422	-0.284	-0.102	-0.499
	(2.27)	(-1.77)	(1.55)	(-1.39)	(0.16)	(-0.62)	(-0.40)	(-1.52)
1 Acre or More Minimum Lot Size	0.0407	0.186	0.0551	0.167	0.0964	0.168	0.817	0.580
	(0.43)	(1.14)	(0.57)	(0.96)	(0.82)	(0.81)	(1.55)	(0.85)
Observations	65	65	65	65	65	65	65	65
Adjusted R-squared	0.621	-0.148	0.643	-0.152	0.631	-0.148	0.248	-0.250

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 77 – All Income Quartiles Difference IV Regression Results – Pendall Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Instrumented	Development Moratorium in Place		Residential Pace Restriction		Mobile Homes Not Allowed		Vote Required for Rezoning		No Density Bonus or Inclusionary Zoning		Maximum Allowable Density	
Model	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.
Group	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters
Supply & Density Restrictions Endogenous?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Durbin score chi^2 p value	0.0000	0.0002	0.0003	0.0546	0.0000	0.0115	0.0007	0.1164	0.0162	0.0961	0.0111	0.0141
Wu-Hausman F p value	0.0001	0.0147	0.0175	0.238	0.0046	0.1157	0.0295	0.3382	0.1357	0.3094	0.1135	0.1272
First Stage Partial r^2	0.0393	0.0393	0.0835	0.0835	0.2467	0.2467	0.0351	0.0351	0.0385	0.0385	0.0678	0.0678
Instruments	Zon. Jur. per 100 sq. mi; Year of statehood for state with largest metro share; Pop. in 1910		Year of statehood for state with largest metro share; Pop. in 1910; Coastal metro		Year of statehood for state with largest metro share; Num. of Zon. Jur.		Year of statehood for state with largest metro share; Pop. in 1910 and 1920		Pop. Density in 1960 and 1970		Pop. and Pop. Density in 1970	
Supply Restrictions												
Development Moratorium in Place	2.414	1.875	0.0257	0.0214	-0.0718	-0.0409	0.283	0.150	0.175	0.137	-0.161	-0.169
	(1.37)	(1.33)	(0.14)	(0.16)	(-0.53)	(-0.34)	(0.87)	(0.74)	(0.78)	(0.71)	(-0.85)	(-0.83)
Residential Pace Restriction	-0.447	-0.196	**-1.556***	***-0.826***	**-0.342***	-0.124	-0.335	-0.131	-0.306	-0.0891	-0.293	-0.0413
	(-1.26)	(-0.69)	(-2.43)	(-1.74)	(-2.48)	(-1.01)	(-1.29)	(-0.81)	(-1.50)	(-0.51)	(-1.67)	(-0.22)
Mobile Homes Not Allowed	0.552	***0.743***	0.321	**0.531****	**-0.748***	-0.152	0.00561	0.361	0.545	**0.730***	-0.343	-0.0911
	(1.02)	(1.71)	(1.25)	(2.79)	(-2.11)	(-0.48)	(0.02)	(1.66)	(1.38)	(2.16)	(-0.89)	(-0.22)
Density Restrictions												
Vote Required for Rezoning	0.401	0.259	-0.187	-0.182	-0.0522	-0.0997	2.014	0.935	0.0975	0.0201	0.0328	0.0153
	(0.69)	(0.55)	(-0.78)	(-1.02)	(-0.30)	(-0.64)	(1.18)	(0.88)	(0.34)	(0.08)	(0.15)	(0.06)
No Density Bonus or Inclusionary Zoning	-0.396	-0.383	0.267	0.0991	***0.365***	0.175	-0.237	-0.166	-1.473	-1.187	0.116	0.0160
	(-0.64)	(-0.78)	(0.98)	(0.49)	(1.75)	(0.94)	(-0.53)	(-0.60)	(-1.12)	(-1.06)	(0.53)	(0.07)
Maximum Allowable Density	-1.311	***-1.296***	**-0.725***	**-0.784****	0.101	-0.268	-0.0490	-0.422	-0.450	**-0.628***	1.139	1.045
	(-1.47)	(-1.81)	(-1.99)	(-2.90)	(0.33)	(-0.99)	(-0.09)	(-1.25)	(-1.37)	(-2.24)	(1.07)	(0.92)
Observations	51	51	51	51	51	51	51	51	51	51	51	51
Adjusted R-squared	.	.	-1.077	-0.711	-0.109	-0.317	.	-1.217	-1.045	-1.244	-0.465	.

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 78 – 1st Income Quartile Difference IV Regression Results – Pendall Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Instrumented	Development Moratorium in Place		Residential Pace Restriction		Mobile Homes Not Allowed		Vote Required for Rezoning		No Density Bonus or Inclusionary Zoning		Maximum Allowable Density	
Model	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.
Group	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters
Supply & Density Restrictions Endogenous?	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No
Durbin score chi² p value	0.0001	0.0059	0.0178	0.938	0.0012	0.1309	0.0393	0.9135	0.0203	0.0430	0.0346	0.1183
Wu-Hausman F p value	0.0079	0.0845	0.1418	0.9626	0.0392	0.3574	0.2045	0.9478	0.1507	0.2133	0.1929	0.3409
First Stage Partial r^2	0.0393	0.0393	0.0835	0.0835	0.2467	0.2467	0.0351	0.0351	0.0385	0.0385	0.0678	0.0678
Instruments	Zon. Jur. per 100 sq. mi; Year of statehood for state with largest metro share; Pop. in 1910		Year of statehood for state with largest metro share; Pop. in 1910; Coastal metro		Year of statehood for state with largest metro share; Num. of Zon. Jur.		Year of statehood for state with largest metro share; Pop. in 1910 and 1920		Pop. Density in 1960 and 1970		Pop. and Pop. Density in 1970	
Supply Restrictions												
Development Moratorium in Place	1.684	1.475	-0.229	0.0859	**-0.306***	0.0531	-0.0656	0.0767	-0.0732	-0.0656	**-0.390***	0.204
	(1.17)	(1.33)	(-1.59)	(0.84)	(-2.42)	(0.48)	(-0.28)	(0.57)	(-0.32)	(-0.30)	(-2.18)	(1.25)
Residential Pace Restriction	-0.151	0.0855	***-0.901***	0.129	-0.0670	0.132	-0.0746	0.0997	-0.0150	-0.000940	-0.0185	0.0175
	(-0.52)	(0.38)	(-1.78)	(0.36)	(-0.52)	(1.17)	(-0.40)	(0.92)	(-0.07)	(0.00)	(-0.11)	(0.12)
Mobile Homes Not Allowed	0.663	0.457	**0.458***	0.226	-0.378	-0.129	0.250	0.235	***0.739***	-0.130	-0.0901	***0.572***
	(1.49)	(1.34)	(2.26)	(1.56)	(-1.15)	(-0.44)	(1.01)	(1.62)	(1.83)	(-0.34)	(-0.25)	(1.72)
Density Restrictions												
Vote Required for Rezoning	0.464	0.130	0.00202	-0.167	0.101	-0.144	1.409	-0.244	0.266	-0.367	0.180	-0.269
	(0.97)	(0.35)	(0.01)	(-1.24)	(0.63)	(-1.01)	(1.16)	(-0.34)	(0.89)	(-1.28)	(0.87)	(-1.42)
No Density Bonus or Inclusionary Zoning	-0.732	0.156	-0.220	**0.444****	-0.122	**0.549****	***-0.548***	**0.460***	-1.931	1.924	-0.321	**0.443***
	(-1.45)	(0.40)	(-1.02)	(2.89)	(-0.63)	(3.21)	(-1.73)	(2.48)	(-1.44)	(1.49)	(-1.56)	(2.36)
Maximum Allowable Density	-1.139	**-1.222***	**-0.636***	**-0.711*****	-0.00838	**-0.504***	-0.192	**-0.731****	-0.452	**-0.707***	0.937	***-1.792***
	(-1.56)	(-2.18)	(-2.20)	(-3.47)	(-0.03)	(-2.03)	(-0.50)	(-3.24)	(-1.35)	(-2.20)	(0.93)	(-1.95)
Observations	51	51	51	51	51	51	51	51	51	51	51	51
Adjusted R-squared	.	.	-0.607	0.201	-0.184	0.093	-1.392	0.197	.	-1.396	-0.604	-0.323

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 79 – 2nd Income Quartile Difference IV Regression Results – Pendall Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Instrumented	Development Moratorium in Place		Residential Pace Restriction		Mobile Homes Not Allowed		Vote Required for Rezoning		No Density Bonus or Inclusionary Zoning		Maximum Allowable Density	
Model	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.
Group	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters
Supply & Density Restrictions Endogenous?	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes
Durbin score chi^2 p value	0.0754	0.0001	0.008	0.0014	0.0150	0.0023	0.3136	0.0109	0.1495	0.0044	0.0254	0.0002
Wu-Hausman F p value	0.2764	0.0119	0.0976	0.0425	0.1309	0.0537	0.5418	0.1129	0.3804	0.0734	0.1671	0.0148
First Stage Partial r^2	0.0393	0.0393	0.0835	0.0835	0.2467	0.2467	0.0351	0.0351	0.0385	0.0385	0.0678	0.0678
Instruments	Zon. Jur. per 100 sq. mi; Year of statehood for state with largest metro share; Pop. in 1910		Year of statehood for state with largest metro share; Pop. in 1910; Coastal metro		Year of statehood for state with largest metro share; Num. of Zon. Jur.		Year of statehood for state with largest metro share; Pop. in 1910 and 1920		Pop. Density in 1960 and 1970		Pop. and Pop. Density in 1970	
Supply Restrictions												
Development Moratorium in Place	0.679	2.480	-0.205	-0.0771	**-0.269***	-0.183	-0.127	0.204	-0.108	0.189	**-0.384***	-0.470
	(0.83)	(1.28)	(-1.27)	(-0.32)	(-2.22)	(-1.06)	(-0.76)	(0.54)	(-0.60)	(0.50)	(-1.98)	(-1.28)
Residential Pace Restriction	***-0.290***	-0.0978	**-1.191***	***-1.525***	***-0.231***	0.0138	***-0.252***	0.0254	-0.206	0.127	-0.158	0.204
	(-1.76)	(-0.25)	(-2.09)	(-1.79)	(-1.88)	(0.08)	(-1.89)	(0.08)	(-1.25)	(0.37)	(-0.88)	(0.60)
Mobile Homes Not Allowed	***0.450***	0.357	***0.433***	0.142	-0.271	**-1.024***	0.253	-0.234	***0.559***	0.608	-0.184	-1.152
	(1.79)	(0.60)	(1.90)	(0.42)	(-0.86)	(-2.26)	(1.41)	(-0.57)	(1.77)	(0.92)	(-0.47)	(-1.54)
Density Restrictions												
Vote Required for Rezoning	0.139	0.449	-0.111	-0.196	-0.0140	-0.0374	0.645	2.245	0.0871	0.267	0.0899	0.216
	(0.51)	(0.70)	(-0.52)	(-0.61)	(-0.09)	(-0.17)	(0.73)	(1.13)	(0.37)	(0.55)	(0.40)	(0.51)
No Density Bonus or Inclusionary Zoning	-0.268	-0.515	0.0464	0.229	0.0827	0.298	-0.193	-0.354	-1.128	-2.731	-0.0729	0.0421
	(-0.94)	(-0.76)	(0.19)	(0.63)	(0.44)	(1.12)	(-0.84)	(-0.68)	(-1.07)	(-1.24)	(-0.33)	(0.10)
Maximum Allowable Density	-0.567	-1.373	-0.472	-0.805	0.0999	0.133	-0.114	-0.00802	-0.249	-0.457	1.292	2.981
	(-1.37)	(-1.40)	(-1.46)	(-1.66)	(0.37)	(0.34)	(-0.41)	(-0.01)	(-0.95)	(-0.83)	(1.19)	(1.44)
Observations	51	51	51	51	51	51	51	51	51	51	51	51
Adjusted R-squared	-0.566	.	-0.565	.	0.157	-0.791	0.037	.	-0.255	.	-0.462	.

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 80 – 3rd Income Quartile Difference IV Regression Results – Pendall Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Instrumented	Development Moratorium in Place		Residential Pace Restriction		Mobile Homes Not Allowed		Vote Required for Rezoning		No Density Bonus or Inclusionary Zoning		Maximum Allowable Density	
Model	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.
Group	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters
Supply & Density Restrictions Endogenous?	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Durbin score chi^2 p value	0.0000	0.0144	0.0002	0.0200	0.0001	0.2505	0.0039	0.0089	0.0080	0.0000	0.0126	0.0000
Wu-Hausman F p value	0.0006	0.1283	0.0154	0.1495	0.0114	0.4859	0.0692	0.1025	0.0972	0.0007	0.1204	0.0017
First Stage Partial r^2	0.0393	0.0393	0.0835	0.0835	0.2467	0.2467	0.0351	0.0351	0.0385	0.0385	0.0678	0.0678
Instruments	Zon. Jur. per 100 sq. mi; Year of statehood for state with largest metro share; Pop. in 1910		Year of statehood for state with largest metro share; Pop. in 1910; Coastal metro		Year of statehood for state with largest metro share; Num. of Zon. Jur.		Year of statehood for state with largest metro share; Pop. in 1910 and 1920		Pop. Density in 1960 and 1970		Pop. and Pop. Density in 1970	
Supply Restrictions												
Development Moratorium in Place	2.193	1.513	-0.0856	-0.116	-0.179	-0.162	0.138	0.179	0.0856	0.356	-0.275	-0.589
	(1.30)	(1.12)	(-0.45)	(-0.58)	(-1.34)	(-1.12)	(0.47)	(0.46)	(0.34)	(0.60)	(-1.42)	(-1.35)
Residential Pace Restriction	-0.286	-0.218	**-1.452***	***-1.264***	-0.187	-0.168	-0.185	-0.104	-0.131	0.132	-0.131	0.134
	(-0.84)	(-0.80)	(-2.17)	(-1.80)	(-1.38)	(-1.15)	(-0.79)	(-0.34)	(-0.58)	(0.24)	(-0.73)	(0.33)
Mobile Homes Not Allowed	0.331	0.513	0.125	0.396	**-0.896***	-0.118	-0.179	0.0701	0.394	1.391	-0.553	-1.090
	(0.63)	(1.24)	(0.47)	(1.40)	(-2.56)	(-0.31)	(-0.57)	(0.17)	(0.90)	(1.32)	(-1.41)	(-1.23)
Density Restrictions												
Vote Required for Rezoning	0.395	0.0531	-0.173	-0.367	-0.0385	-0.274	1.770	2.117	0.145	0.332	0.0523	0.0931
	(0.70)	(0.12)	(-0.69)	(-1.40)	(-0.23)	(-1.49)	(1.15)	(1.04)	(0.45)	(0.43)	(0.23)	(0.18)
No Density Bonus or Inclusionary Zoning	-0.379	-0.252	0.269	0.240	0.344	0.195	-0.199	-0.300	-1.698	-4.614	0.111	0.111
	(-0.64)	(-0.53)	(0.94)	(0.80)	(1.67)	(0.88)	(-0.50)	(-0.56)	(-1.16)	(-1.32)	(0.50)	(0.22)
Maximum Allowable Density	-1.028	-0.757	-0.496	-0.429	0.312	0.0547	0.147	0.282	-0.207	-0.193	1.404	4.035
	(-1.20)	(-1.11)	(-1.30)	(-1.07)	(1.05)	(0.17)	(0.30)	(0.44)	(-0.57)	(-0.22)	(1.29)	(1.65)
Observations	51	51	51	51	51	51	51	51	51	51	51	51
Adjusted R-squared	.	.	-0.848	-1.180	0.122	-0.086	.	.	-1.063	.	-0.244	.

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 81 – 4th Income Quartile Difference IV Regression Results – Pendall Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Instrumented	Development Moratorium in Place		Residential Pace Restriction		Mobile Homes Not Allowed		Vote Required for Rezoning		No Density Bonus or Inclusionary Zoning		Maximum Allowable Density	
Model	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.	w/Geo.
Group	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters	Owners	Renters
Supply & Density Restrictions Endogenous?	Yes	No	Yes	No	Yes	No	No	Yes	No	No	No	No
Durbin score chi² p value	0.0000	0.2133	0.0757	0.7083	0.0049	0.6776	0.1340	0.0173	0.4013	0.7508	0.5635	0.5144
Wu-Hausman F p value	0.0010	0.4499	0.2769	0.8216	0.0775	0.8021	0.3613	0.1397	0.6119	0.8482	0.7274	0.6939
First Stage Partial r²	0.0393	0.0393	0.0835	0.0835	0.2736	0.2736	0.0351	0.0351	0.114	0.114	0.0678	0.0678
Instruments	Zon. Jur. per 100 sq. mi; Year of statehood for state with largest metro share; Pop. in 1910		Year of statehood for state with largest metro share; Pop. in 1910; Coastal metro		Year of statehood for state with largest metro share; Num. of Zon. Jur.; Pop. in 1920		Year of statehood for state with largest metro share; Pop. in 1910 and 1920		Coastal metro; Pop. Density in 1970		Pop. and Pop. Density in 1970	
Supply Restrictions												
Development Moratorium in Place	1.940	0.660	0.106	-0.0469	0.0567	-0.0390	0.202	0.189	0.0738	-0.0336	0.0673	0.00703
	(1.43)	(0.86)	(1.05)	(-0.40)	(0.60)	(-0.33)	(1.32)	(0.62)	(0.83)	(-0.27)	(0.66)	(0.05)
Residential Pace Restriction	-0.158	**0.346***	***-0.605***	0.209	-0.0962	**0.346****	-0.105	***0.427***	***-0.154***	**0.365****	-0.112	**0.314***
	(-0.58)	(2.23)	(-1.69)	(0.51)	(-1.00)	(2.89)	(-0.86)	(1.75)	(-1.77)	(2.97)	(-1.19)	(2.25)
Mobile Homes Not Allowed	0.254	***0.401***	0.0196	***0.305***	**-0.523***	0.388	-0.104	0.150	-0.111	***0.320***	-0.144	0.446
	(0.61)	(1.69)	(0.14)	(1.85)	(-2.22)	(1.32)	(-0.63)	(0.46)	(-0.82)	(1.68)	(-0.70)	(1.45)
Density Restrictions												
Vote Required for Rezoning	0.232	**-0.573***	-0.193	**-0.735*****	-0.130	**-0.733*****	0.634	1.142	***-0.198***	**-0.706*****	-0.135	**-0.773*****
	(0.51)	(-2.25)	(-1.44)	(-4.77)	(-1.07)	(-4.84)	(0.79)	(0.71)	(-1.71)	(-4.33)	(-1.14)	(-4.40)
No Density Bonus or Inclusionary Zoning	0.00189	-0.207	**0.454****	-0.0374	**0.524*****	-0.0867	0.260	-0.361	***0.651***	-0.203	**0.391*****	-0.0596
	(0.00)	(-0.77)	(2.98)	(-0.21)	(3.63)	(-0.48)	(1.24)	(-0.86)	(1.87)	(-0.41)	(3.35)	(-0.34)
Maximum Allowable Density	-0.935	**-0.799***	***-0.384***	**-0.578***	0.0165	**-0.603***	-0.121	-0.200	***-0.265***	**-0.542***	0.0379	-1.048
	(-1.36)	(-2.06)	(-1.89)	(-2.46)	(0.08)	(-2.34)	(-0.47)	(-0.39)	(-1.77)	(-2.57)	(0.07)	(-1.23)
Observations	51	51	51	51	51	51	51	51	51	51	51	51
Adjusted R-squared	.	-0.461	0.463	0.136	0.549	0.154	0.294	.	0.646	0.149	0.651	0.065

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 82 – 1st Quartile Value to Income Ratio Difference IV Regression Results – Wharton Measures

Model Number	**(1)**	**(2)**	**(3)**	**(4)**
Instrumented	**Single Family Development Limit Index**	**Multi Family Development Limit Index**	**Density Restrictions Importance Index**	**1 Acre or More Minimum Lot Size**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**No**		**No**	**Yes**
Durbin score chi^2 p value	**0.4558**	**0.0008**	**0.3202**	**0.0017**
Wu-Hausman F p value	**0.5807**	**0.0095**	**0.4609**	**0.0160**
First Stage Partial r^2	**0.0706**	**0.1845**	**0.0991**	**0.1483**
Instruments	Year of statehood for state with largest metro share; Num. of Zon. Jur.; Zon. Jur. per 100 sq mi	Year of statehood for state with largest metro share; Num. of Zon. Jur.; Zon. Jur. per 100 sq mi; Pop. in 1910	Year of statehood for state with largest metro share; Zon. Jur. per 100 sq mi	Pop. in 1910, 1930, 1940, 1950, 1960, 1970, and 1980; Num. of Zon. Jur.; Zon. Jur. per 100 sq mi;
Supply Restrictions				
Single Family Development Limit Index	-0.278	***-0.371***	0.0885	0.00502
	(-0.64)	(-1.76)	(0.63)	(0.03)
Multi Family Development Limit Index	0.202	**0.876***	-0.0688	0.204
	(0.77)	(2.39)	(-0.40)	(1.15)
Density Restrictions				
Density Restrictions Importance Index	-0.0516	-0.271	0.456	-0.344
	(-0.27)	(-1.22)	(0.95)	(-1.36)
1 Acre or More Minimum Lot Size	0.205	**0.362***	0.0681	**1.132***
	(1.56)	(2.05)	(0.35)	(2.57)
Observations	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.260**	**-0.173**	**0.243**	**-0.241**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 83 – 2nd Quartile Value to Income Ratio Difference IV Regression Results – Wharton Measures

Model Number	**(1)**	**(2)**	**(3)**	**(4)**
Instrumented	**Single Family Development Limit Index**	**Multi Family Development Limit Index**	**Density Restrictions Importance Index**	**1 Acre or More Minimum Lot Size**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**Yes**	**Yes**	**Yes**	**Yes**
Durbin score chi^2 p value	**0.0502**	**0.0019**	**0.0361**	**0.0007**
Wu-Hausman F p value	**0.1417**	**0.0169**	**0.1150**	**0.0085**
First Stage Partial r^2	**0.0706**	**0.1845**	**0.0991**	**0.1483**
Instruments	Year of statehood for state with largest metro share; Num. of Zon. Jur.; Zon. Jur. per 100 sq mi	Year of statehood for state with largest metro share; Num. of Zon. Jur.; Zon. Jur. per 100 sq mi; Pop. in 1910	Year of statehood for state with largest metro share; Zon. Jur. per 100 sq mi	Pop. in 1910, 1930, 1940, 1950, 1960, 1970, and 1980; Num. of Zon. Jur.; Zon. Jur. per 100 sq mi;
Supply Restrictions				
Single Family Development Limit Index	-0.424	-0.0986	**0.303***	0.174
	(-0.99)	(-0.61)	(2.32)	(1.43)
Multi Family Development Limit Index	***0.501***	**0.775****	-0.0155	**0.305***
	(1.92)	(2.77)	(-0.10)	(2.10)
Density Restrictions				
Density Restrictions Importance Index	-0.263	***-0.310***	0.613	**-0.410***
	(-1.39)	(-1.83)	(1.37)	(-1.98)
1 Acre or More Minimum Lot Size	0.179	**0.287***	-0.0503	**0.963****
	(1.37)	(2.13)	(-0.28)	(2.68)
Observations	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.268**	**0.318**	**0.335**	**0.169**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 84 – 3rd Quartile Value to Income Ratio Difference IV Regression Results – Wharton Measures

Model Number	**(1)**	**(2)**	**(3)**	**(4)**
Instrumented	**Single Family Development Limit Index**	**Multi Family Development Limit Index**	**Density Restrictions Importance Index**	**1 Acre or More Minimum Lot Size**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**No**	**No**	**Yes**	**Yes**
Durbin score chi^2 p value	**0.1073**	**0.4634**	**0.0655**	**0.0242**
Wu-Hausman F p value	**0.2293**	**0.5871**	**0.1677**	**0.0891**
First Stage Partial r^2	**0.0706**	**0.1845**	**0.0991**	**0.1483**
Instruments	Year of statehood for state with largest metro share; Num. of Zon. Jur.; Zon. Jur. per 100 sq mi	Year of statehood for state with largest metro share; Num. of Zon. Jur.; Zon. Jur. per 100 sq mi; Pop. in 1910	Year of statehood for state with largest metro share; Zon. Jur. per 100 sq mi	Pop. in 1910, 1930, 1940, 1950, 1960, 1970, and 1980; Num. of Zon. Jur.; Zon. Jur. per 100 sq mi;
Supply Restrictions				
Single Family Development Limit Index	-0.374 (-0.95)	0.0548 (0.44)	***0.225*** (1.82)	0.114 (1.12)
Multi Family Development Limit Index	0.220 (0.92)	0.0890 (0.41)	-0.211 (-1.38)	0.0385 (0.32)
Density Restrictions				
Density Restrictions Importance Index	-0.240 (-1.38)	-0.149 (-1.12)	0.513 (1.21)	***-0.309*** (-1.78)
1 Acre or More Minimum Lot Size	-0.0379 (-0.32)	-0.0182 (-0.17)	-0.237 (-1.37)	0.477 (1.58)
Observations	**65**	**65**	**65**	**65**
Adjusted R-squared	**0.385**	**0.582**	**0.405**	**0.415**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 85 – 4th Quartile Value to Income Ratio Difference IV Regression Results – Wharton Measures

Model Number	**(1)**	**(2)**	**(3)**	**(4)**
Instrumented	**Single Family Development Limit Index**	**Multi Family Development Limit Index**	**Density Restrictions Importance Index**	**1 Acre or More Minimum Lot Size**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**No**	**No**	**No**	**No**
Durbin score chi^2 p value	**0.3975**	**0.9525**	**0.3536**	**0.1086**
Wu-Hausman F p value	**0.5333**	**0.9651**	**0.4944**	**0.2339**
First Stage Partial r^2	**0.0741**	**0.1806**	**0.0873**	**0.1539**
Instruments	Year of statehood for state with largest metro share; Num. of Zon. Jur.; Zon. Jur. per 100 sq mi	Year of statehood for state with largest metro share; Num. of Zon. Jur.; Zon. Jur. per 100 sq mi; Pop. in 1910	Year of statehood for state with largest metro share; Zon. Jur. per 100 sq mi	Pop. in 1910, 1930, 1940, 1950, 1960, 1970, and 1980; Num. of Zon. Jur.; Zon. Jur. per 100 sq mi;
Supply Restrictions				
Single Family Development Limit Index	-0.540	-0.232	-0.153	***-0.224***
	(-1.31)	(-1.51)	(-1.09)	(-1.93)
Multi Family Development Limit Index	0.194	0.0371	-0.0753	-0.0633
	(0.78)	(0.14)	(-0.45)	(-0.45)
Density Restrictions				
Density Restrictions Importance Index	**-0.538****	**-0.448****	-0.0270	-0.284
	(-2.82)	(-2.77)	(-0.05)	(-1.50)
1 Acre or More Minimum Lot Size	-0.103	-0.0999	-0.215	-0.564
	(-0.78)	(-0.75)	(-1.17)	(-1.63)
Observations	**64**	**64**	**64**	**64**
Adjusted R-squared	**0.283**	**0.371**	**0.282**	**0.232**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 86 – 1st Quartile Value to Income Ratio Difference IV Regression Results – Pendall Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)
Instrumented	**Development Moratorium in Place**	**Residential Pace Restriction**	**Mobile Homes Not Allowed**	**Vote Required for Rezoning**	**No Density Bonus or Inclusionary Zoning**	**Maximum Allowable Density**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**
Durbin score chi^2 p value	**0.0102**	**0.0672**	**0.0001**	**0.7416**	**0.0329**	**0.1090**
Wu-Hausman F p value	**0.1092**	**0.2622**	**0.0077**	**0.8425**	**0.1883**	**0.3280**
First Stage Partial r^2	**0.1470**	**0.1000**	**0.0213**	**0.0927**	**0.1191**	**0.0463**
Instruments	Zon. Jur. per 100 sq. mi; Num. of Zon. Jur.	Zon. Jur. per 100 sq. mi; Num. of Zon. Jur.	Pop. Density in 1970 and 1980	Year of statehood for state with largest metro share; Coastal metro; Num. of Zon. Jur.	Pop. in 1910, 1920, and 1930; Num. of Zon. Jur.	Pop. in 1910, 1920, and 1930; Zon. Jur. per 100 sq. mi
Supply Restrictions						
Development Moratorium in Place	0.534	-0.112	-0.452	-0.0874	-0.193	0.0451
	(1.50)	(-0.86)	(-0.85)	(-0.74)	(-1.35)	(0.23)
Residential Pace Restriction	-0.100	0.486	0.220	-0.0868	-0.152	-0.200
	(-0.72)	(1.16)	(0.43)	(-0.81)	(-1.09)	(-1.12)
Mobile Homes Not Allowed	0.174	-0.0120	-3.680	0.0599	-0.139	0.504
	(0.92)	(-0.07)	(-0.99)	(0.42)	(-0.64)	(1.16)
Density Restrictions						
Vote Required for Rezoning	-0.127	-0.228	-0.00555	-0.126	**-0.379***	***-0.392***
	(-0.66)	(-1.33)	(-0.01)	(-0.28)	(-2.04)	(-1.76)
No Density Bonus or Inclusionary Zoning	-0.00791	0.0468	1.185	0.104	***0.984***	0.121
	(-0.04)	(0.24)	(0.99)	(0.63)	(1.78)	(0.57)
Maximum Allowable Density	***-0.496***	-0.119	1.967	-0.239	-0.258	-1.630
	(-1.80)	(-0.46)	(0.85)	(-1.17)	(-1.07)	(-1.31)
Observations	**51**	**51**	**51**	**51**	**51**	**51**
Adjusted R-squared	**0.148**	**0.226**	**.**	**0.503**	**0.192**	**0.009**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 87 – 2nd Quartile Value to Income Ratio Difference IV Regression Results – Pendall Measures

Model Number	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Instrumented	**Development Moratorium in Place**	**Residential Pace Restriction**	**Mobile Homes Not Allowed**	**Vote Required for Rezoning**	**No Density Bonus or Inclusionary Zoning**	**Maximum Allowable Density**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Durbin score chi^2 p value	**0.0817**	**0.1671**	**0.0043**	**0.0066**	**0.0013**	**0.0010**
Wu-Hausman F p value	**0.2869**	**0.4008**	**0.0722**	**0.0889**	**0.0404**	**0.0362**
First Stage Partial r^2	**0.1470**	**0.1000**	**0.0213**	**0.0927**	**0.1191**	**0.0463**
Instruments	Zon. Jur. per 100 sq. mi; Num. of Zon. Jur.	Zon. Jur. per 100 sq. mi; Num. of Zon. Jur.	Pop. Density in 1970 and 1980	Year of statehood for state with largest metro share; Coastal metro; Num. of Zon. Jur.	Pop. in 1910, 1920, and 1930; Num. of Zon. Jur.	Pop. in 1910, 1920, and 1930; Zon. Jur. per 100 sq. mi
Supply Restrictions						
Development Moratorium in Place	0.273	-0.0630	-0.248	-0.170	-0.161	0.176
	(1.14)	(-0.69)	(-0.83)	(-1.23)	(-1.19)	(0.71)
Residential Pace Restriction	0.0707	0.409	0.245	0.0407	0.00533	-0.0947
	(0.76)	(1.39)	(0.84)	(0.32)	(0.04)	(-0.43)
Mobile Homes Not Allowed	0.0291	-0.0726	-2.065	0.0379	-0.267	0.656
	(0.23)	(-0.57)	(-0.99)	(0.23)	(-1.30)	(1.22)
Density Restrictions						
Vote Required for Rezoning	0.0953	0.0452	0.165	-0.850	-0.109	-0.176
	(0.74)	(0.38)	(0.50)	(-1.62)	(-0.62)	(-0.64)
No Density Bonus or Inclusionary Zoning	**0.552*** **	**0.576*** **	***1.198***	**0.764*** **	**1.613** **	**0.613* **
	(3.96)	(4.22)	(1.79)	(3.94)	(3.11)	(2.34)
Maximum Allowable Density	***-0.359***	-0.154	0.976	-0.398	-0.231	-2.380
	(-1.94)	(-0.85)	(0.75)	(-1.65)	(-1.01)	(-1.54)
Observations	**51**	**51**	**51**	**51**	**51**	**51**
Adjusted R-squared	**0.614**	**0.616**	**-1.403**	**0.306**	**0.282**	**-0.535**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 88 – 3rd Quartile Value to Income Ratio Difference IV Regression Results – Pendall Measures

Model Number	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Instrumented	**Development Moratorium in Place**	**Residential Pace Restriction**	**Mobile Homes Not Allowed**	**Vote Required for Rezoning**	**No Density Bonus or Inclusionary Zoning**	**Maximum Allowable Density**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**No**	**No**	**No**	**No**	**No**	**Yes**
Durbin score chi^2 p value	**0.3087**	**0.1336**	**0.1276**	**0.6218**	**0.6662**	**0.0516**
Wu-Hausman F p value	**0.5376**	**0.3608**	**0.3531**	**0.7661**	**0.7948**	**0.2319**
First Stage Partial r^2	**0.147**	**0.1**	**0.0213**	**0.0927**	**0.1191**	**0.0463**
Instruments	Zon. Jur. per 100 sq. mi; Num. of Zon. Jur.	Zon. Jur. per 100 sq. mi; Num. of Zon. Jur.	Pop. Density in 1970 and 1980	Year of statehood for state with largest metro share; Coastal metro; Num. of Zon. Jur.	Pop. in 1910, 1920, and 1930; Num. of Zon. Jur.	Pop. in 1910, 1920, and 1930; Zon. Jur. per 100 sq. mi
Supply Restrictions						
Development Moratorium in Place	-0.202	-0.00284	0.0941	-0.0274	-0.0209	-0.148
	(-0.92)	(-0.03)	(0.52)	(-0.30)	(-0.24)	(-0.86)
Residential Pace Restriction	**0.179***	-0.188	0.0856	**0.170***	**0.167***	***0.278***
	(2.09)	(-0.62)	(0.48)	(2.03)	(1.97)	(1.81)
Mobile Homes Not Allowed	-0.138	-0.0539	0.987	-0.0941	-0.138	-0.512
	(-1.18)	(-0.41)	(0.77)	(-0.85)	(-1.05)	(-1.38)
Density Restrictions						
Vote Required for Rezoning	-0.0161	0.00273	-0.0495	-0.134	0.00793	0.145
	(-0.14)	(0.02)	(-0.25)	(-0.38)	(0.07)	(0.76)
No Density Bonus or Inclusionary Zoning	**0.452*****	**0.462*****	0.103	**0.437*****	0.545	**0.417***
	(3.54)	(3.29)	(0.25)	(3.41)	(1.63)	(2.30)
Maximum Allowable Density	0.109	-0.0541	-0.612	0.00857	0.0387	1.315
	(0.64)	(-0.29)	(-0.77)	(0.05)	(0.26)	(1.23)
Observations	**51**	**51**	**51**	**51**	**51**	**51**
Adjusted R-squared	**0.658**	**0.573**	**0.054**	**0.680**	**0.686**	**0.226**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 89 – 4th Quartile Value to Income Ratio Difference IV Regression Results – Pendall Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)
Instrumented	**Development Moratorium in Place**	**Residential Pace Restriction**	**Mobile Homes Not Allowed**	**Vote Required for Rezoning**	**No Density Bonus or Inclusionary Zoning**	**Maximum Allowable Density**
Model	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**	**w/Geo.**
Supply & Density Restrictions Endogenous?	**No**	**No**	**No**	**No**	**No**	**No**
Durbin score chi^2 p value	**0.977**	**0.4435**	**0.3041**	**0.5395**	**0.6414**	**0.6413**
Wu-Hausman F p value	**0.9864**	**0.6492**	**0.5409**	**0.716**	**0.7826**	**0.7826**
First Stage Partial r^2	**0.0953**	**0.1103**	**0.0798**	**0.1016**	**0.1189**	**0.0438**
Instruments	Zon. Jur. per 100 sq. mi; Num. of Zon. Jur.	Zon. Jur. per 100 sq. mi; Num. of Zon. Jur.	Pop. Density in 1970 and 1980	Year of statehood for state with largest metro share; Coastal metro; Num. of Zon. Jur.	Pop. in 1910, 1920, and 1930; Num. of Zon. Jur.	Pop. in 1910, 1920, and 1930; Zon. Jur. per 100 sq. mi
Supply Restrictions						
Development Moratorium in Place	-0.116	-0.140	-0.0357	-0.154	-0.156	-0.206
	(-0.26)	(-0.98)	(-0.20)	(-1.05)	(-1.04)	(-0.92)
Residential Pace Restriction	0.145	0.422	0.0917	0.132	0.130	0.188
	(1.13)	(1.05)	(0.60)	(0.99)	(0.98)	(1.15)
Mobile Homes Not Allowed	-0.0124	-0.0599	0.574	0.0135	-0.0729	-0.184
	(-0.06)	(-0.32)	(0.86)	(0.07)	(-0.34)	(-0.44)
Density Restrictions						
Vote Required for Rezoning	0.0597	0.0787	0.00513	-0.238	0.0296	0.112
	(0.35)	(0.46)	(0.03)	(-0.45)	(0.17)	(0.54)
No Density Bonus or Inclusionary Zoning	0.0220	-0.0116	-0.143	0.0696	0.250	0.0318
	(0.11)	(-0.06)	(-0.53)	(0.35)	(0.48)	(0.17)
Maximum Allowable Density	**0.686***	**0.768****	0.320	**0.627***	**0.696****	1.194
	(2.31)	(2.92)	(0.67)	(2.40)	(2.97)	(1.03)
Observations	**50**	**50**	**50**	**50**	**50**	**50**
Adjusted R-squared	**0.145**	**0.065**	**-0.062**	**0.089**	**0.118**	**0.065**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 90 - Suburban/Central City Cost Burden IV Regression Results – Wharton Measures

Model Number	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
	Central City Owners % Cost Burdened				**Central City Renters % Cost Burdened**			
	Single Family Development Limit Index	**Multi Family Development Limit Index**	**Density Restrictions Importance**	**1 Acre or More Minimum Lot Size**	**Single Family Development Limit Index**	**Multi Family Development Limit Index**	**Density Restrictions Importance**	**1 Acre or More Minimum Lot Size**
Supply & Density Restrictions Endogenous?	**Yes**	**Yes**	**No**	**No**	**No**	**No**	**No**	**Yes**
Durbin score chi^2 p value	**0.0048**	**0.0124**	**0.2289**	**0.4435**	**0.1448**	**0.1191**	**0.0652**	**0.0017**
Wu-Hausman F p value	**0.0981**	**0.1461**	**0.4943**	**0.6646**	**0.4061**	**0.3739**	**0.2906**	**0.0635**
First Stage partial r^2	**0.0181**	**0.1199**	**0.2634**	**0.1266**	**0.0181**	**0.1199**	**0.2634**	**0.1266**
Instruments	Pop. Density in 1960 and 1970, Num. of Zoning Jur., Num. of Zoning Jur. per 100 sq. mi., Coastal metro	Pop. Density in 1910 and 1920, Num. of Zoning Jur., % Chg. Pop. Density 1950-60., Coastal metro	Pop. Density in 1910, 1920 and 1930, Num. of Zoning Jur., Year of statehood for state with largest metro share	Pop. Density in 1910 and 1930, Num. of Zoning Jur. per 100 sq. mi	Pop. Density in 1960 and 1970, Num. of Zoning Jur., Num. of Zoning Jur. per 100 sq. mi., Coastal metro	Pop. Density in 1910 and 1920, Num. of Zoning Jur., % Chg. Pop. Density 1950-60., Coastal metro	Pop. Density in 1910, 1920 and 1930, Num. of Zoning Jur., Year of statehood for state with largest metro share	Pop. Density in 1910 and 1930, Num. of Zoning Jur. per 100 sq. mi
Supply Restrictions								
Suburb Single Family Development Limit Index	-2.164	**-0.543***	**-0.242***	***-0.253***	1.365	***-0.527***	***-0.322***	**-0.614***
	(-1.03)	(-2.33)	(-2.19)	(-1.86)	(0.72)	(-1.75)	(-1.84)	(-2.07)
Suburb Multi Family Development Limit Index	1.520	**1.001***	**0.354****	**0.289***	-0.526	**1.151***	**0.658****	**0.590***
	(1.12)	(2.36)	(2.62)	(2.49)	(-0.43)	(2.11)	(3.08)	(2.32)
Density Restrictions								
Suburb Density Restrictions Importance Index	-0.636	***-0.311***	-0.248	-0.0250	0.579	-0.104	-0.299	0.369
	(-0.96)	(-1.70)	(-1.34)	(-0.23)	(0.97)	(-0.44)	(-1.02)	(1.56)
Suburb 1 Acre or More Minimum Lot Size	-0.687	-0.143	-0.0558	-0.251	0.277	-0.242	-0.113	**-1.193***
	(-1.02)	(-1.27)	(-0.63)	(-1.07)	(0.46)	(-1.67)	(-0.81)	(-2.33)
Observations	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**
Adjusted R-squared	**.**	**0.393**	**0.645**	**0.645**	**-1.360**	**-0.008**	**0.107**	**-0.700**

Standardized coefficients shown above, t statistics in parentheses
Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 91 - Suburban/Central City Cost Burden IV Regression Results – Pendall Measures

Model Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent Variable	**Central City Owners % Cost Burdened**						**Central City Renters % Cost Burdened**					
Instrumented	**Dvmt. Mor. in Place**	**Res. Pace Restriction**	**Mobile Home Ban**	**Max. Allowable Density**	**No Density Bonus**	**Rezone Vote Required**	**Dvmt. Mor. in Place**	**Res. Pace Restriction**	**Mobile Home Ban**	**Max. Allowable Density**	**No Density Bonus**	**Rezone Vote Required**
Supply & Density Restrictions Endogenous?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Durbin score chi^2 p value	**0.0000**	**0.0000**	**0.0000**	**0.0164**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0001**	**0.0000**	**0.0000**
Wu-Hausman F p value	**0.0816**	**0.0095**	**0.0052**	**0.5448**	**0.0384**	**0.2263**	**0.2219**	**0.0528**	**0.0382**	**0.307**	**0.1284**	**0.0853**
First Stage partial r^2	**0.6614**	**0.5203**	**0.2615**	**0.0822**	**0.2866**	**0.009**	**0.6614**	**0.5203**	**0.2615**	**0.0822**	**0.2866**	**0.009**
Instruments	Pop. Density in 1910 and 1920	Pop. Density in 1920, Num. of Zoning Jur. per 100 sq. mi.	Pop. in 1930, Num. of Zoning Jur., Num. of Zoning Jur. per 100 sq. mi.	Pop. in 1910 and 1930; % Chg. in Pop. Density 1930-40	Pop. Density in 1930 and 1940; Pop. in 1910 and 1940	Pop. Den. 1960, Pop. in 1910, % Chg. in Pop. Density 1910-20	Pop. Density in 1910 and 1920	Pop. Den. in 1920, Num. of Zoning Jur. per 100 sq. mi.	Pop. in 1930, Num. of Zoning Jur., Num. of Zoning Jur. per 100 sq. mi.	Pop. in 1910 and 1930; % Chg. in Pop. Density 1930-40	Pop. Density in 1930 and 1940; Pop. in 1910 and 1940	Pop. Den. 1960, Pop. in 1910, % Chg. in Pop. Density 1910-20
Supply Restrictions												
Suburb Development Moratorium in Place	0.0253	**0.163***	**0.333****	**0.388****	0.126	-0.442	**0.264***	**0.464*****	**0.767*****	**1.075****	**0.409***	-1.045
	(0.35)	(2.31)	(3.23)	(2.88)	(1.36)	(-0.39)	(1.96)	(3.54)	(4.06)	(2.98)	(2.50)	(-0.38)
Suburb Residential Pace Restriction	0.0633	**-0.223***	**0.313****	***0.308***	-0.00541	-1.353	0.116	**-0.399***	**0.552***	***0.804***	-0.00308	-3.358
	(0.99)	(-2.18)	(2.58)	(1.94)	(-0.05)	(-0.57)	(0.98)	(-2.09)	(2.48)	(1.89)	(-0.02)	(-0.58)
Suburb Mobile Homes Not Allowed	0.0925	-0.00531	**0.909*****	***0.249***	-0.00416	-1.022	**-0.458****	**-0.642*****	**0.989***	-0.0634	**-0.624****	-3.209
	(1.11)	(-0.05)	(3.42)	(1.91)	(-0.03)	(-0.52)	(-2.98)	(-3.38)	(2.03)	(-0.18)	(-2.71)	(-0.68)
Density Restrictions												
Suburb Maximum Allowable Density	0.198	0.0542	**0.594****	**1.293***	**0.407***	-2.375	-0.193	-0.485	0.472	***2.889***	0.134	-6.594
	(1.43)	(0.32)	(2.60)	(2.05)	(2.05)	(-0.53)	(-0.76)	(-1.53)	(1.13)	(1.72)	(0.38)	(-0.60)
Suburb No Density Bonus or Incl. Zoning	**-0.356*****	**-0.316****	**-0.611*****	**-0.401****	0.302	0.574	**-0.761*****	**-0.677*****	**-1.200*****	**-0.804***	0.338	1.552
	(-3.91)	(-2.93)	(-3.83)	(-3.26)	(1.20)	(0.34)	(-4.53)	(-3.38)	(-4.11)	(-2.45)	(0.77)	(0.38)
Suburb Vote Required for Rezoning	-0.101	**-0.270***	0.246	0.271	-0.204	-3.159	**-0.329***	**-0.645****	0.273	0.693	**-0.510***	-7.818
	(-1.23)	(-2.50)	(1.59)	(1.22)	(-1.56)	(-0.62)	(-2.17)	(-3.21)	(0.96)	(1.17)	(-2.21)	(-0.63)
Observations	**43**	**43**	**43**	**43**	**43**	**43**	**43**	**43**	**43**	**43**	**43**	**43**
Adjusted R-squared	**0.803**	**0.731**	**0.465**	**0.637**	**0.563**	**-6.107**	**0.327**	**0.064**	**-0.801**	**-1.601**	**-0.358**	**.**

Standardized coefficients shown above, t statistics in parentheses

Italics: p<0.10, * p<0.05, ** p<0.01, *** p<0.001

References

Appelbaum, R. P., & Gilderbloom, J. I. (1983). Housing supply and regulation: a study of the rental housing market. *The Journal of Applied Behavioral Science,*19(1), 1-18.

Barewin, H. J. (1990). Rescuing Manufactured Housing from the Perils of Municipal Zoning Laws. *Wash. UJ Urban & Contemp. Law*, *37*, 189.

Becker, D. M. (1969). Police Power and Minimum Lot Size Zoning Part I: A Method of Analysis, The. *Wash. ULQ*, 263.

Belsky, E. S. and Lambert, M. (2001). *Where Will They Live? Metropolitan Dimensions of Affordable Housing Problems* (No. 9). Joint Center for Housing Studies, Graduate School of Design [and] John F. Kennedy School of Government, Harvard University.

Bento, A., Lowe, S., Knaap, G. J., & Chakraborty, A. (2009). Housing market effects of inclusionary zoning. *Cityscape*, 7-26.

Bogdon, A. S., & Can, A. (1997). Indicators of local housing affordability: Comparative and spatial approaches. *Real Estate Economics*, *25*(1), 43-80.

Bourassa, C. Steven. (1996). Measuring the Affordability of Home-ownership. *Urban Studies.* 33 (10), 1867-1877.

Bramley, G. (1994). An affordability crisis in British housing: dimensions, causes and policy impact. *Housing Studies*, *9*(1), 103-124.

Briggs, X. N. D. S. (2005). *The geography of opportunity: Race and housing choice in metropolitan America*. Brookings Institution Press.

Bunting, T., Walks, A. R., & Filion, P. (2004). The uneven geography of housing affordability stress in Canadian metropolitan areas. *Housing Studies*, 19(3), 361-393.

Case, K. E., & Mayer, C. J. (1996). Housing price dynamics within a metropolitan area. *Regional Science and Urban Economics*, *26*(3), 387-407.

Chakraborty, A., Knaap, G. J., Nguyen, D., & Shin, J. H. (2010). The effects of high-density zoning on multi-family housing construction in the suburbs of six US metropolitan areas. *Urban Studies*, *47*(2), 437-451.

Chakravorty, S., Koo, J., & Lall, S. V. (2003). Metropolitan industrial clusters: Patterns and processes. *World bank policy research working paper*, (3073).

Chi, P. S., & Laquatra, J. (1998). Profiles of housing cost burden in the United States. *Journal of Family and Economic Issues*, *19*(2), 175-193.

Collins, M., Crowe, D., & Carliner, M. (2002). Supply-side constraints on low-income homeownership. *Low-income homeownership: Examining the unexamined goal*, 175-199.

Crowley, S. (2003). The affordable housing crisis: Residential mobility of poor families and school mobility of poor children. *Journal of Negro Education*, 22-38.

Fischel, W. A. (1999). Does the American way of zoning cause the suburbs of metropolitan areas to be too spread out?. *Governance and opportunity in metropolitan America*, *15*, 1-19.

Fischler, R. (1998). The metropolitan dimension of early zoning: Revisiting the 1916 New York City Ordinance. *Journal of the American Planning Association, 64*(2), 170-188.

Fox, G. M., & Davis, B. R. (1975). Density bonus zoning to provide low and moderate cost housing. *Hastings. Const. LQ, 3*, 1015.

Ganong, P., & Shoag, D. (2013). Why Has Regional Income Convergence in the US Declined? Retrieved August 25, 2016 from http://scholar.harvard.edu/files/shoag/files/why_has_regional_income_convergence_in_the_us_declined_01.pdf

Genz, R. (2001). Why advocates need to rethink manufactured housing. *Housing Policy Debate*, *12*(2), 393-414.

Glaeser, E. L., & Gyourko, J. (2002). *The impact of zoning on housing affordability* (No. w8835). National Bureau of Economic Research.

Glaeser, E. L., Gyourko, J., & Saks, R. (2005a). *Why have housing prices gone up?* (No. w11129). National Bureau of Economic Research.

Glaeser, E. L., Gyourko, J., & Saks, R. (2005b). Why is Manhattan so expensive? Regulation and the rise in housing prices. *Journal of Law and Economics*, *48*(2), 331-369.

Glaeser, E. L., Schuetz, J., & Ward, B. (2006). *Regulation and the rise of housing prices in Greater Boston*. Cambridge: Rappaport Institute for Greater Boston, Harvard University and Boston: Pioneer Institute for Public Policy Research.

Glaeser, E. L., & Ward, B. A. (2009). The causes and consequences of land use regulation: Evidence from Greater Boston. *Journal of Urban Economics,*65(3), 265-278.

Goodman, J. (2001). Housing affordability in the United States: Trends, interpretations, and outlook. *Report to the Millennial Housing Commission*.

Green, R. K. (1999). Land use regulation and the price of housing in a suburban Wisconsin county. *Journal of Housing Economics, 8*(2), 144-159.

Gyourko, J., & Linneman, P. (1993). The affordability of the American dream: An examination of the last 30 years. *Journal of Housing Research*, *4*(1), 39-72.

Gyourko, J., Saiz, A., & Summers, A. (2008). A new measure of the local regulatory environment for housing markets: The Wharton Residential Land Use Regulatory Index. *Urban Studies*, *45*(3), 693-729.

Gyourko, J., & Tracy, J. S. (1999). A look at real housing prices and incomes: Some implications for housing affordability and quality. *Economic Policy Review*, 63-77.

Hilber, C. A., & Robert-Nicoud, F. (2013). On the origins of land use regulations: Theory and evidence from US metro areas. *Journal of Urban Economics*, *75*, 29-43.

Hsieh, C. T., & Moretti, E. (2015). *Why do cities matter? Local growth and aggregate growth* (No. w21154). National Bureau of Economic Research.

Hulchanski, J. D. (1995). The concept of housing affordability: Six contemporary uses of the housing expenditure-to-income ratio. *Housing studies*, *10*(4), 471-491.

Ihlanfeldt, K. R. (2004). Exclusionary land-use regulations within suburban communities: A review of the evidence and policy prescriptions. *Urban Studies*, *41*(2), 261-283.

Ihlanfeldt, K. R. (2007). The effect of land use regulation on housing and land prices. *Journal of Urban Economics*, *61*(3), 420-435.

Ikeda, S. and Hamilton, E. (2015). *How Land-Use Regulation Undermines Affordable Housing.* Mercatus Center, George Mason University. Retrieved August 25, 2016 from http://mercatus.org/sites/default/files/Ikeda-Land-Use-Regulation.pdf

Jewkes, M. D., & Delgadillo, L. M. (2010). Weaknesses of housing affordability indices used by practitioners. *Journal of Financial Counseling and Planning*, *21*(1), 43-52.

Joint Center for Housing Studies of Harvard University (2007). The *State of the Nation's Housing 2007*.

Joint Center for Housing Studies of Harvard University (2016). The *State of the Nation's Housing 2016*.

Katz, L., & Rosen, K. T. (1987). The interjurisdictional effects of growth controls on housing prices. *The Journal of Law and Economics*, *30*(1), 149-160.

Keene, D. E., & Geronimus, A. T. (2011). “Weathering” HOPE VI: the importance of evaluating the population health impact of public housing demolition and displacement. *Journal of Urban Health*, *88*(3), 417-435.

Knaap, G., Meck, S., Moore, T., Parker, R., & American Planning Association. (2007). Zoning as a barrier to multi-family housing development. *American Planning Association*.

Kutty, N. K. (2005). A new measure of housing affordability: Estimates and analytical results. *Housing policy debate*, *16*(1), 113-142

Lee, H. J. (2012). Housing: Influences on Housing Cost Burden of the US Households by Current and Previous Housing Tenure Types. *International Journal of Human Ecology*, *13*(1), 129-145.

Lens, M. C., & Monkkonen, P. (2016). Do Strict Land Use Regulations Make Metropolitan Areas More Segregated by Income? *Journal of the American Planning Association*, *82*(1), 6-21.

Leopold, J., Getsinger, L., Blumenthal, P., Abazajian, K., & Jordan, R. (2015). The Housing Affordability Gap for Extremely Low-Income Renters in 2013. *Washington, DC: Urban Institute*.

Lerman, D. L., & Reeder, W. J. (1987). The affordability of adequate housing. *Real Estate Economics*, *15*(4), 389-404.

Linneman, P. D., & Megbolugbe, I. F. (1992). Housing affordability: myth or reality? *Urban studies*, *29*(3-4), 369-392.

Maher, C. (1994). Housing prices and geographical scale: Australian cities in the 1980s. *Urban Studies*, *31*(1), 5-27.

Malpezzi, S. (1996). Housing prices, externalities, and regulation in US metropolitan areas. *Journal of Housing Research*, *7*, 209-242.

Massey, D. S., & Rothwell, J. (2009). The effect of density zoning on racial segregation in US urban areas. *Urban Affairs Review.*

McConnell, E. D., & Akresh, I. R. (2010). Housing cost burden and new lawful immigrants in the United States. *Population Research and Policy Review*, *29*(2), 143-171.

McConnell, E. D. (2013). Who has housing affordability problems? Disparities in housing cost burden by race, nativity, and legal status in Los Angeles. *Race and social problems*, *5*(3), 173-190.

Miller, N., & Peng, L. (2006). Exploring metropolitan housing price volatility. *The Journal of Real Estate Finance and Economics*, 33(1), 5-18.

Mimura, Y. (2008). Housing cost burden, poverty status, and economic hardship among low-income families. *Journal of Family and Economic Issues*, *29*(1), 152-165.

Mukhija, V., Regus, L., Slovin, S., & Das, A. (2010). Can inclusionary zoning be an effective and efficient housing policy? Evidence from Los Angeles and Orange Counties. *Journal of Urban Affairs*, *32*(2), 229-252.

Mullier, E. Kate and Maliene, Vida. (2012). What Attribute Determine Housing Affordability? *World Academy of Science, Engineering and Technology*. 67, 695-700.

National Affordable Housing Act of 1990, 42 U.S.C. § 12701 et seq.

National Housing Act of 1949, 42 U.S.C. § 1441a.

Nelson, K. P. (1994). Whose shortage of affordable housing? *Housing Policy Debate, 5*(4), 401-442.

Nelson, A. C., Pendall, R., Dawkins, C. J., & Knaap, G. J. (2002). The link between growth management and housing affordability: The academic evidence. *Growth management and affordable housing: Do they conflict*, 117-158.

Neogi, R. (2012). Three Essays on Housing Affordability and Housing Supply Regulation Dynamics. University of Connecticut.

O'Neill, P., Sliogeris, E., Crabtree, L., Phibbs P., and Johnston, K. (2008). Housing Affordability Literature Review and Affordable Housing Program Audit. Urban Research Centre University of Western Sydney. Retrieved October 18, 2014 from http://www.uws.edu.au/__data/assets/pdf_file/0004/164623/landcom_report_2008-07-21.pdf

Pendall, R. (1995) Residential Growth Controls and Racial and Ethnic Diversity: Making and Breaking the Chain of Exclusion. Dissertation in City and Regional Planning. Berkeley: University of California at Berkeley.

Pendall, R. (2000). Local land use regulation and the chain of exclusion. *Journal of the American Planning Association*, *66*(2), 125-142.

Pendall, R., Puentes, R., & Martin, J. (2006). From Traditional to Reformed: A Review of the Land Use Regulations in the Nation's 50 largest Metropolitan Areas. Brookings Institution Metropolitan Policy Program Research Brief.

Platt, R. H. (2004). Land Use and Society, Revised Edition: Geography, Law, and Public Policy. Island Press.

Pogodzinski, J. M. (1991). The effects of fiscal and exclusionary zoning on household location: A critical review. *Journal of Housing Research*, *2*(2), 145.

Quigley, J. M., & Rosenthal, L. A. (2005). The effects of land use regulation on the price of housing: What do we know? What can we learn? *Cityscape*, 69-137.

Rothwell, J. T. (2009). The effects of density regulation on metropolitan housing markets. Working Paper.

Rothwell, J. T., & Massey, D. S. (2010). Density Zoning and Class Segregation in US Metropolitan Areas. *Social Science Quarterly*, *91*(5), 1123-1143.

Ruggles S., Genadek, K., Goeken, R., Grover, J., and Sobek, M. (2015). *Integrated Public Use Microdata Series: Version 6.0* [Machine-readable database]. University of Minnesota.

Saiz, A. (2010). The geographic determinants of housing supply. *quarterly Journal of Economics*, *125*(3).

Seelig, T., & Phibbs, P. (2006). Beyond the normative: low income private renters' perspectives of housing affordability and need for housing assistance. *Urban Policy and Research*, *24*(1), 53-66.

Sharkey, P. (2013). *Stuck in place: Urban neighborhoods and the end of progress toward racial equality*. University of Chicago Press.

Schilling, J., & Linton, L. S. (2005). The public health roots of zoning: in search of active living's legal genealogy. *American journal of preventive medicine*, *28*(2), 96-104.

Shlay, A. B. (2006). Low-income homeownership: American dream or delusion?. *Urban Studies*, *43*(3), 511-531.

Sirmans, S. G., & Macpherson, D. A. (2003). The state of affordable housing. *Journal of Real Estate Literature*, *11*(2), 131-156.

Smith, M. M., & Hevener, C. C. (2014). Subprime lending over time: the role of race. *Journal of Economics and Finance, 38*(2), 321-344.

Song, Y., & Knaap, G. J. (2004). Measuring urban form: Is Portland winning the war on sprawl? *Journal of the American Planning Association*, *70*(2), 210-225.

Stone, M. E. (2006). What is housing affordability? The case for the residual income approach. *Housing policy debate*, *17*(1), 151-184.

Stone, M. (2010). *Shelter poverty: New ideas on housing affordability*. Temple University Press.

Thalmann, P. (1999). Identifying households which need housing assistance. *Urban Studies*, *36*(11), 1933-1947.

Tiebout, C. M. (1956). A pure theory of local expenditures. *Journal of political economy*, *64*(5), 416-424.

Turner, M. A., Haughwout, A., & Van Der Klaauw, W. (2014). Land use regulation and welfare. *Econometrica*, *82*(4), 1341-1403.

United States Census Bureau (2015). *The American Community Survey*. Retrieved April 27, 2015 from https://www.census.gov/history/www/programs/demographic/american_community_survey.html

United States Census Bureau (2014). *American Community Survey Design and Methodology*. Retrieved April 27, 2015 from http://www.census.gov/acs/www/Downloads/survey_methodology/acs_design_methodology_ch04_2014.pdf

Walker, C. (1993). Nonprofit housing development: Status, trends, and prospects. *Housing Policy Debate*, *4*(3), 369-414.

Whitehead, C. M. (1991). From need to affordability: an analysis of UK housing objectives. *Urban Studies*, *28*(6), 871-887.

Wolff, A. (2006). *Housing Affordability by Metropolitan Area.* Master's Thesis. Retrieved April 27, 2015 from http://libres.uncg.edu/ir/uncg/listing.aspx?id=1074

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B.A. (summa cum laude) Political Science
Minor: Economics, German
Certificate in Political Economy
GPA: 3.96

Interuniversity Consortium for Political and Social Research Summer Program in Quantitative Methods — August 2014

Courses completed: Simultaneous Equation Models, Structural Equation Models with Latent Variables, Matrix Algebra, Introduction to Calculus

HONORS & ACADEMIC AWARDS

Temple University Scholar Award (Tuition Scholarship)	2002
Temple University Dean's List, 4 years	2002-06
Norman & Ruth Sun Economics Department Writing Prize	2005
Phi Beta Kappa	2005
Temple University President's Scholar	2006
Eagleton Alumni Fellow	2014
Public Administration Student Association Outstanding PhD Candidate	2014

AFFILIATIONS

Member, National Society of Collegiate Scholars	2003 - Present
Member, Temple University Ambler Political Science Group	2005 – 2006
Member, Pi Sigma Alpha (National Political Science Honor Society)	2005 – Present
Member, Public Administration Student Association	2014 – Present

PROFESSIONAL ASSOCIATIONS

Association for Public Policy Analysis and Management	2013 - Present
Urban Affairs Association	2013 - Present
American Society for Public Administration	2015 - Present

FOREIGN LANGUAGES

German (speak, write, read)

Spanish (basic knowledge)

SKILLS

Expert knowledge of Microsoft Word, Excel, Outlook, & PowerPoint Software

Proficient in Stata statistical software

Proficient in Microsoft MapPoint and ArcGIS software

40 wpm typing speed

RESEARCH INTERESTS

Political economy, tax policy, economics, economic development, housing, community development, public finance and budgeting

TRAINING

Fels Institute of Government Public Speaking Workshop 2006

Fels Institute of Government Microsoft Excel Training 2006

Public Financial Management Consultant Training Program 2010

VOLUNTEER WORK AND ACTIVITIES

Bickley United Methodist Church, *Youth Group Leader* 2001

Reviewer, *Economic Development Quarterly* 2013

Discussant, *Symposium on Housing, Segregation, and Poverty* 2015

Member, *PhD Committee, Rutgers Camden Public Affairs PhD Program* 2016

EMPLOYMENT HISTORY

Public Financial Management, Philadelphia, PA Sept. 2007- April 2009
Research Associate

- Researched, analyzed, and summarized provisions of state and municipal codes
- Drafted portions of proposed FY2008 budget for Newark, NJ.
- Organized, analyzed and graphed budget data for inclusion in reports.
- Worked on several budget development and operational review projects with completion deadlines
- Researched and analyzed construction management practices in state administrative services departments
- Conducted phone interviews with public officials for benchmarking information.
- Conducted extensive research on best practices in municipal government.
- Performed review of contractor invoices for the New Orleans Mayor's Office of Information Technology.

Public Financial Management, Philadelphia, PA April 2009 – September 2012
Consultant

- Created and delivered project wrap-up presentations of findings and lessons learned to Management and Budget Consulting practice
- Met with and interviewed clients to prepare operational reviews and financial plans
- Developed and issued economic development policies and recommendations for St. Louis economic development agencies
- Issued recommendations to clients in improving management practices, reducing costs, and raising revenues

- Conducted legal research to assess effect of law on proposed recommendations
- Assisted in design and planning for internal databases and software applications
- Served as practice-wide expert on Microsoft MapPoint and Microsoft Excel
- Drafted major portions of operational reviews, fee and revenue studies, and financial plans
- Developed and presented multi-year budget projection model to states, cities, and authorities
- Regularly collected and analyzed financial data for inclusion in reports
- Developed Excel-based costing model in support of client labor arbitration
- Managed and updated in-house multi-year budget projection models
- Regularly briefed project managers on project status
- Prepared preparatory materials and memos for Project Managers
- Assisted in developing department budget justifications and the budget book for New Orleans, LA

Public Financial Management, Philadelphia, PA September 2012 – July 2013
Senior Analyst

- Managed and supervised work of interns and junior consultants
- Developed five-year financial projections for the School District of Philadelphia, assisted in costing labor proposals
- Served as senior modeler in Management and Budget Consulting practice, provided training for consultants
- Developed and executed budget projection model training program and curriculum
- Managed Knowledge Management responsibilities for practice (how-to-guides, manuals, website maintenance, database mgmt, etc.)

Rutgers University Camden, Camden NJ September 2013 – Present
Graduate and Teaching Assistant

- Assisted Public Policy and Administration professors in research projects
- Received full tuition scholarship and stipend
- Served as fill-in instructor for class during professor’s absence
- Conducted graduate-level qualitative social science research
- Tutored first year PhD students in quantitative methods
- Graded student problem sets, answer student questions on course material

New Jersey Department of Community Affairs, Trenton NJ
Intern January 2015 – April 2015

- Conducted legislative intent research for proposed administrative rules
- Analyzed municipal health benefits expenditures for cost saving opportunities
- Examined municipal authority budgets for errors and compliance with state regulations
- Conducted research on professional continuing education sponsor agreements and approval
- Issued recommendations on improvements to the Department’s budget reporting forms.

New Jersey Department of Community Affairs, Trenton NJ
Research Economist May 2015 – Present

- Conducted policy research and performing data analysis in support of the

Commissioner's Office

- Computed and maintained municipal state aid totals, allocations, and payments
- Analyzed and reported property tax information for public release
- Prepared Local Finance Notices for public release
- Supported the Director of Local Government Services and the Commissioner with special analysis and briefings on request
- Participated in Department and Division meetings and conference calls
- Answered legislative and public inquiries on property tax and Municipal State Aid related questions
- Sent notifications to county finance officers on aid release information

REPORTS

Drafted portions and chapters of the following reports:

- City of Kansas City Five-Year Financial Plan
- City of St. Louis Comprehensive Revenue Study
- City of St. Louis Earnings Tax Report
- St. Louis City/County Shared Services Study
- City of New Orleans Emergency Medical Services Study
- City of New Orleans Health Department Clinics Operational Study
- City of Colorado Springs Long-Term Sustainable Funding Plan
- City of Gary, IN Fiscal Monitor Report
- City of York, PA Early Intervention Plan
- State of Hawaii Tax Review Commission – Study of Tax System
- City of New Castle, PA Act 47 Recovery Plan Update
- DeKalb County, GA Review of Financial Policies

CONFERENCE PRESENTATIONS

Urban Affairs Association (poster) 2013
"Tax Increment Financing and Economic Growth: A National Perspective"

Rutgers Camden Student-Led Academic Conference 2014
"Barriers to Community Development: The Case of Camden, New Jersey."

Black Doctoral Network Conference 2014
"Movin' On Up: The Dynamics of Urban Black Poverty Change in the 21st Century."

Urban Affairs Association Conference 2015
"The Dynamics of U.S. Metropolitan Poverty Change: Causes and Implications for Policymakers"

Urban Affairs Association Conference (poster) 2016
"Metropolitan Size & Housing Affordability Stress in U.S. Metro Counties"

Rutgers University Camden Gradate Research Showcase (poster) 2016
"Metropolitan Size & Housing Affordability Stress in U.S. Metro Counties"

UNDERGRADUATE RESEARCH

Conducted study of individualist and social determinist attitudes in a suburban Philadelphia hospital. 2004

Conducted an analysis of New York Times election coverage against the investment theory of electoral politics. 2004

Researched and evaluated the privatization of telecommunications and child welfare in three contexts. 2005

Researched and analyzed the evolution of the Swedish welfare state 2006

JOURNAL ARTICLES

"Barriers to Community Development: The case of Camden, New Jersey." 2016
Community Development: Journal of the Community Development Society

PUBLICATIONS

"Poverty Dynamics in South Jersey: Trends and Determinants 1970 – 2012." 2014
Senator Walter Rand Institute for Public Affairs

WORKS IN PROGRESS

"Straddling the Poverty Line: Region and Poverty Dynamics in Metropolitan America."

"Movin' On Up: The Dynamics of Urban Black Poverty Change in the 21st Century."