Smart Growth and Its Effects on Housing Markets: The New Segregation

A econometric report by QuantEcon for
the Center for Environmental Justice of
The National Center for Public Policy Research
Washington, D.C.

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Introduction and Executive Summary by The National Center for Public Policy Research

followed by the unabridged QuantEcon study

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Introduction and Executive Summary

Terry Miller is a 45-year-old waitress in the Fairfax County, Virginia suburb of Washington. Although Miller has over $2,000 a month to spend, she and her four children live in a hotel and receive county help because she cannot afford most rents. The hotel is seedy, but it's a step up from when the family lived in their van in a grocery store parking lot.

Miller looked within a 10-mile radius of her job, but could not find affordable housing. The average rent in Fairfax County is $1,130 a month, and she faced problems securing decent housing for reasons that ranged from the size of her household to her meager income. When the family was living in the van, their situation was worse. Because the Millers had no fixed address, the children could not be enrolled in school. If the children weren't in school, Terry Miller couldn't work, because she had no childcare.

The problem that Miller and countless others are forced to deal with nationwide is a lack of affordable housing. In Fairfax County, new businesses have eagerly moved in while government planners have stifled housing development. During the 1990s, Fairfax County gained approximately 166,000 jobs while only 56,000 new dwellings were built. Due to existing development restrictions, some places in the area in which the Miller family hoped to live was seeking to live only allow one home per five acres of land. In the rest of the county, one per half-acre or more is now the norm.

The price of a home built on five acres of land in a desirable area is far too steep for a single mother of five living on a modest income.

Numerous cases like the Millers' led the National Center for Public Policy Research to commission this study to quantify the effects of so-called "smart growth" - a more objective term would be "restricted growth" - policies on minorities and the disadvantaged.

The Effects of Restricted Growth

Restricted growth policies are designed to preserve open space and reduce motor vehicle usage through limitations on the geographic expansion of metropolitan areas. Such policies necessarily - as one of their goals - reduce the land available for home building. In other words: site restriction.

Concerned that simple supply and demand market principles dictate that a reduction in the availability of housing will push up housing prices, and aware that minorities in the U.S., on the average, have lower incomes than other Americans, The National Center for Public Policy Research's Center for Environmental Justice set out to determine if restricted growth policies are reducing homeownership opportunities for minority Americans.

Expected home price inflation was found to be greater than expected in most of the states that embraced smart growth, including Oregon, Washington, Tennessee, Kentucky, Pennsylvania, and Colorado.

To do so, we engaged the services of the respected econometrics firm QuantEcon, Inc., of Portland, Oregon, commissioning an objective economic analysis of the issue. The study that follows is QuantEcon's complete, unaltered report.

QuantEcon's study examined the site restrictions caused by the restricted growth policies of Portland, Oregon, the metropolitan area with the most severe restricted growth policies in the United States, and answered this question: if Portland's severe restricted growth policies had been in effect nationally over the last decade, what would have been the effect on housing opportunities for minorities and other Americans?

QuantEcon determined that had Portland's policies been applied in major metropolitan areas nationwide over the last 10 years, over a million young and disadvantaged families, 260,000 of them minority families, would have been denied the dream of home ownership. Portland-like site restrictions would have increased the average cost of a home by an additional $7,000 - over $10,000 in 2002 dollars. For those unable to purchase homes, the cost of renting would have risen by six percent.

We have dubbed this process of site restriction "Portlandization," and found that varying degrees of it exist in a number of regions. Restricted growth policies are a major, but not the only, cause. Site availability can be restricted in a number of other ways, including natural barriers and large-scale government land ownership.

In November 2000, the last election for which complete data is available, across the entire U.S., 553 ballot initiatives were considered on the issue of controlling rates of development, mostly motivated by public perception that that urban sprawl rapidly is consuming America's available open space. Seventy-eight percent of these initiatives were approved. Outside of the ballot box, planning boards also are instituting similar rules.

It is difficult to make a case for the site-supply restrictions promoted by advocates of smart growth. It is apparent both from theory and the available data that restricting the supply of development sites is bound to raise home prices, everything else being equal. Insidiously, the burden of site-supply restrictions will fall disproportionately on poor and minority families.

Expected home price inflation was found to be greater than expected in most of the states that embraced smart growth, including Oregon, Washington, Tennessee, Kentucky, Pennsylvania, and Colorado. Notable exceptions were California, Hawaii and Vermont. The first two were in economic recession, and had home price bubbles that burst during that decade. Vermont is possibly an anomaly, although the site availability index indicates that it was not practicing a particularly effective variation of site supply restriction.

Paradoxes and Problems of Restricted Growth Policies

Key findings of the QuantEcon report:

- If restricted growth policies like those imposed by Portland had been in effect across the nation over the last ten years, 260,000 minority families who currently own their own homes would not own them today. Restricted growth policies, therefore, can fairly be dubbed "the new segregation," as they deter African-American and other minorities from the housing market as disproportionate rates.

- If these restricted growth policies had been in effect nationally over the past ten years, one million urban families who currently own their own homes would not own them today.

- Poor and minority families pay a disproportionate amount of the social and economic costs of growth restrictions. The weight of increased home prices falls most heavily on minorities, the disadvantaged and the young, fewer of whom already own homes. The

"haves" who already own homes ride the price bubble created by restricted growth policies while the dream of ownership moves further away from the "have-nots."

- Restrictive growth policies actually caused increased suburbanization in Portland, which now has the 10th greatest suburbanization rate in U.S. As home prices went up in the site-restricted metropolitan area, families moved further out to find affordable housing. Portland actually has rates of suburbanization that are close to that in metropolitan areas with so-called "white flight" and other central city problems. This phenomenon increases vehicle miles traveled as it lengthens commutes.

- The presumption by advocates that growth restrictions would reduce automobile travel in favor of light rail has proven false. While light rail struggles to attract riders in Portland, residents of that area still drive nearly as often and nearly as far as their counterparts in auto-dominated Los Angeles. Restricted growth policies in Portland are not replacing cars nor are they reducing congestion.

- Denser multi-family housing requires more costly construction techniques, further increasing the cost of housing.

- Restricted growth policies do not eliminate the need for great amounts of spending on new infrastructure. Portland has encountered great expense in upgrading its urban infrastructure to accommodate increased population density. Infrastructure costs can in fact be higher in a dense metropolitan area because the old must be removed before the new is built.

- The notion that potential homeowners would prefer to pay the higher cost of high-density housing as an alternative to the traditional home/yard/neighborhood environment style of raising families is wrong. The percentage of families moving to the Portland area that buy or rent within the UGB has fallen dramatically since site restrictions were implemented.

- There is very little evidence that other aspects of restricted growth policies have reduced households' costs in other areas to offset the increased costs of housing. In economic terms, it is safe to say that restricted growth policies are not family-friendly.

Conclusion

The policy of restricting growth through limiting site availability in favor of open land achieved none of its goals: reduced sprawl, more livable communities and decreased auto travel.

It has, however, harmed individuals and families, disproportionately harming minorities and the poor.

As the study's author, Randall Pozdena, Ph.D., put it in his own conclusion to the study:

> It is difficult to make a case for the site-supply restrictions promoted by advocates of smart growth. It is apparent both from theory and the available data that restricting the supply of development sites is bound to raise home prices, everything else being equal.
>
> Insidiously, the burden of site-supply restrictions will fall disproportionately on poor and minority families. Families who already owned homes at the time that smart growth policies were embraced, of course, enjoy some immunity from the effects of smart growth on housing costs. However, for new or young families, and families that rent their homes, the impact of higher home values and rents is a significant burden.
>
> The analysis in this report suggests that more than a million families will be adversely affected by site supply restrictions of the Portland type advanced in the name of smart growth.
>
> Smart growth advocates argue, of course, that the amenities and efficiencies of smart growth outweigh these adverse effects on the cost of housing. From this author's viewpoint, however, these amenities and efficiencies have yet to be demonstrated.
>
> Until they are, one can only conclude that smart growth isn't particularly smart.

-The National Center for Public Policy Research
November 21, 2002

Smart Growth and Its Effects on Housing Markets: The New Segregation

An econometric study conducted for
The National Center for Public Policy Research

Randall J. Pozdena, Ph.D.
QuantEcon, Inc.

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Introduction

According to a recent report by the Brookings Institution, the November 2000 ballots contained 553 measures relating to growth control or anti-sprawl policies.[1] The vast majority of these so-called "smart growth" policies were open space preservation measures, which have the effect of restricting residential and other development on the "preserved" land. These measures are enormously popular with the electorate. Of the 257 open-space preservation measures on the ballot, 201 — or 78 percent — passed.

Smart growth measures are most commonly proposed and passed in the densely developed states of the Northeast, Midwest and West, although such measures have been passed all over the country. The vast majority of these measures are local measures, reflecting local communities' attempts to deal symptomatically with the effects of urban development. Individually, most local initiatives do not tend to affect development opportunities in their respective regions in a quantitatively significant manner. In most regions, therefore, local policies have not affected a significant share of urban land. Although most smart growth policies are local policies, there have been a few cases of statewide growth control restrictions, notably in Hawaii, Oregon, Tennessee, Vermont and Washington.

Minorities and Housing Affordability

Over time, as more smart growth initiatives are adopted, smart growth policies will become a significant factor in the availability of land for development, and hence in the cost of housing. This will be a particularly significant development for the nation's minorities, whose incomes and circumstances already make homeownership and access to affordable housing elusive. Some researchers have found that sprawl increases minorities' housing opportunities.[2] It follows that policies that restrict the availability of land will have the reverse effect. This is a side effect of smart growth policy that has, however, been largely ignored.

As Figure 1 illustrates, policies that impair minorities' access to housing should not be adopted casually. Minorities' ownership of their homes already lags far behind non-minority households at every home price level. This result is to a large degree, of course, a consequence of the relatively lower incomes of minorities vs. those of non-minorities. However, the pattern of homeownership among minorities is also strongly influenced by local housing conditions. For example, although a larger proportion of minority households in non-metro areas have low incomes (see Figure 2), homeownership rates are actually higher for minorities in non-metro areas (see Figure 3).

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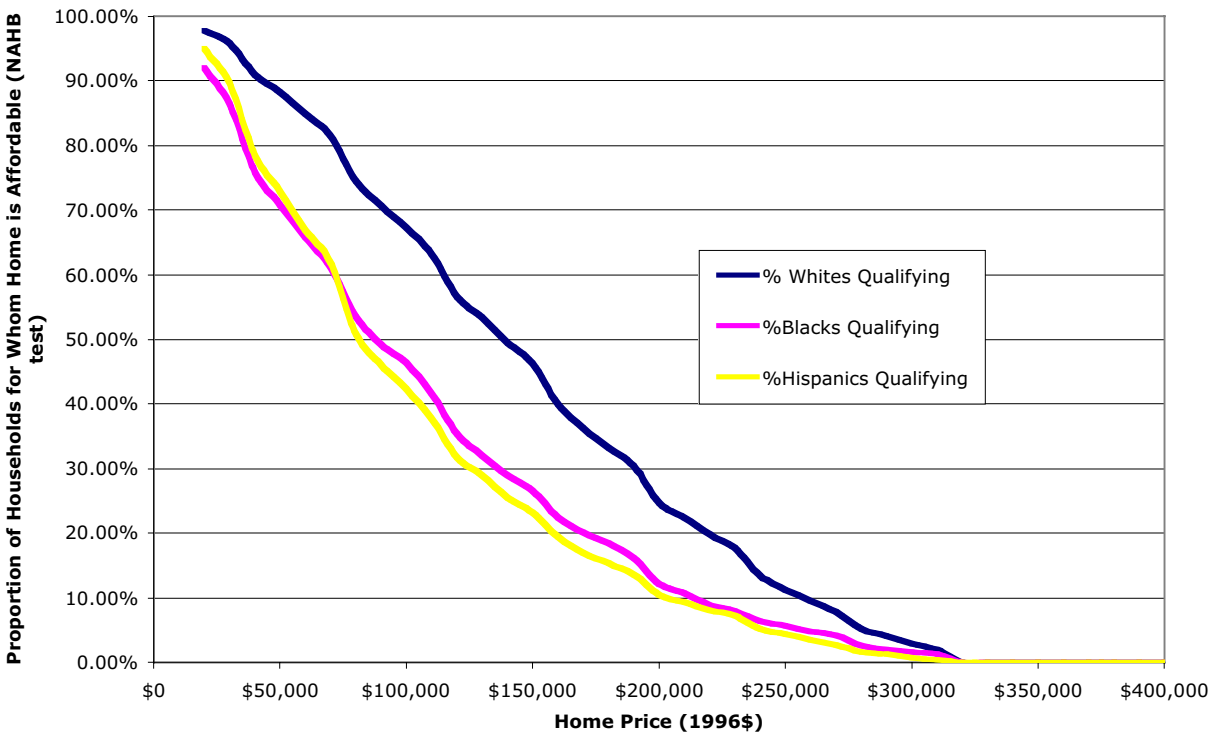
[1] P. Myers and R. Puentes, "Growth at the Ballot Box: Electing the Shape of Communities in November 2000," (Washington DC: The Brookings Institution Center on Urban and Metropolitan Policy), February 2001.

[2] Matthew E. Kahn, "Does Sprawl Reduce the Black/White Housing Consumption Gap?," *Housing Policy Debate*, Volume 12 Issue 1.

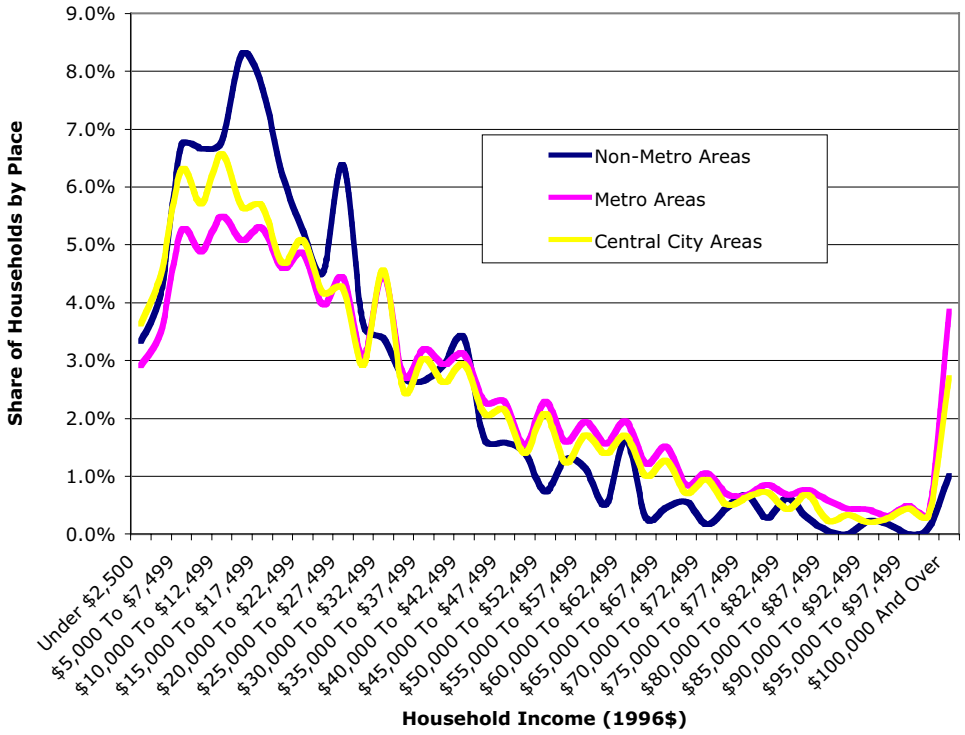
This suggests that the metropolitan housing market already operates to the disadvantage of minority households. Since smart growth policies are generally targeted at metropolitan areas, and frequently have the effect of raising urban home prices, minorities will be put at a further disadvantage.

Figure 1: Housing Affordability by Race and Home Price, 1996



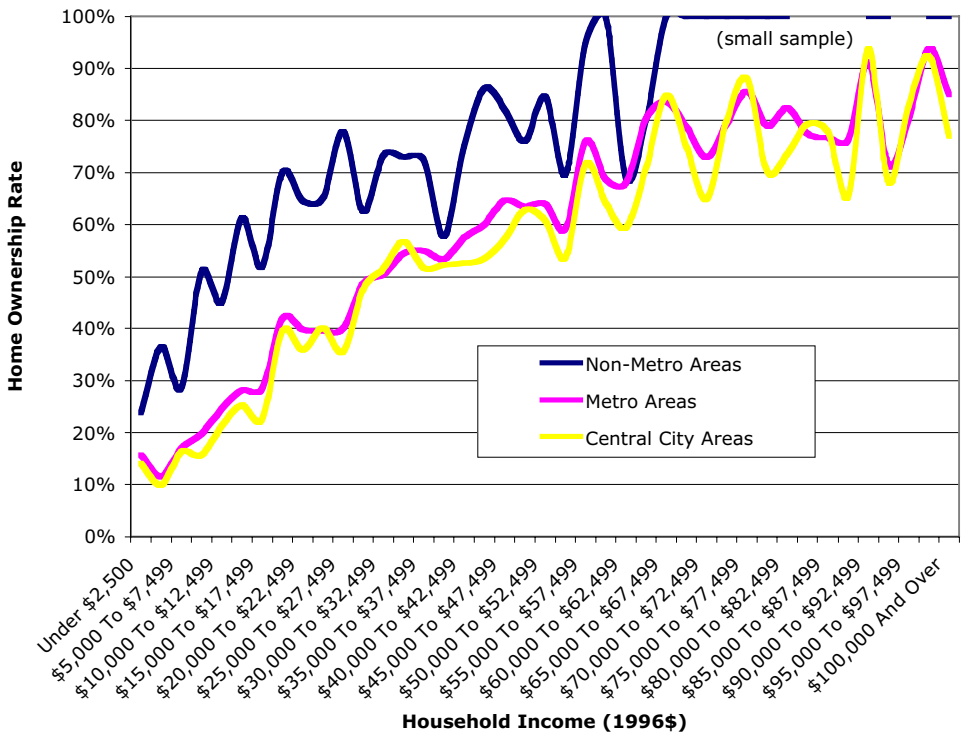
Source: U.S. Census data.

Figure 2: Income Distribution of Minorities, by Place



Source: U.S. Census data.

Figure 3: Minority Homeownership, by Place



Source: U.S. Census data.

The purpose of this report is to study the effect of a central feature of smart growth policy on the housing market generally, and on the affordability of homeownership to minorities in particular. The report first looks at the concept of smart growth in general and how it has been practiced to date. Using Oregon, and the Portland metropolitan area in particular, as a benchmark for measuring the effects of such policies, we examine quantitatively what the effect of widespread "Portlandization" would be on other metro area housing markets.

A Brief History of "Smart Growth"

The term "smart growth" was coined relatively recently, and is used to mean many things. Its essential elements are the adoption of policies that permit government planners to intervene in market-driven development trends through land-use regulation, management of infrastructure development, and other

policies.[3] Whether smart growth is, in fact, any smarter than market-derived growth is legitimately an issue of hot debate. However, it is a movement with considerable force, and one that is, in fact, being assisted by various federal policies, including transit and environmental policies.

The practical origins of smart growth in the United States can be traced to the adoption of statewide planning policies by a few states.

- Hawaii was the first state to adopt statewide land use controls. These controls (adopted in 1961) consisted of fairly conventional zoning regulations. However, Hawaii was unique in imposing consistent controls throughout the state, and in being the first state to aggressively attempt to preserve agricultural plantations. Earlier this year, Governor Ben Cayetano signed into law a more comprehensive smart growth policy for Hawaii.

- Vermont adopted statewide development permitting procedures in 1969 as Chapter 151 of Title 10 of Vermont's state code. The procedures, referred to as Act 250 regulations, created nine administrative districts. Each district has a three-member commission appointed by the governor. The commissions serve as a quasi-judicial body with the authority to determine whether and under what conditions a land use permit may be issued for development or subdivision of land subject to the jurisdiction of Act 250. Virtually all development of any scale is subject to the statewide permitting process. Before an Act 250 permit can be issued, an applicant must show that his project conforms to ten planning criteria set out in Subchapter 4 of Act 250. These criteria require conformance with local plans, and subject any proposed development to feasibility criteria concerning local public services, utilities, and other factors.

- Oregon implemented its strong statewide program for land use planning in 1973, and adopted strict urban growth boundary restrictions. Nineteen statewide planning goals[4] articulate the state's policies on land use and related topics. Oregon's process is widely considered the model by those who advocate smart growth because the goals are set uniformly by the state, there are implementation mechanisms, and the local governments have limited ability to contravene the effects of state policy. The statewide planning program is implemented through local comprehensive planning. State law requires each city and county to have a comprehensive plan, and attendant ordinances, that are consistent with the statewide planning goals. Plans are reviewed for consistency by the state's Land Conservation and

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[3] The Sierra Club, a major environmental group and advocate of smart growth, defines smart growth as including the following policies:

"Enacting growth boundaries, parks and open space protections — like those in Oregon, Tennessee and Colorado - which allow growth without creating sprawl; Planning pedestrian-friendly development where people have transportation choices, such as commuter trains and bus service; Directing new highway transportation dollars to existing communities to improve safety for walkers, bicyclists and drivers, and to promote public transportation choices; Reversing government programs and tax policies that help create sprawl. The U.S. EPA practiced smart growth by denying permits for the proposed Legacy Highway near Salt Lake City — a highway that would destroy wetlands, increase air pollution and promote sprawl; Saving taxpayers money by having developers pay impact fees to cover the costs of new roads, schools, water and sewer lines, and requiring property tax impact studies on new developments; Advocating for revitalization of already developed areas through measures such as attracting new businesses, reducing crime and improving schools; Preventing new development in floodplains, coastal areas and other disaster- prone areas." (see: Sierra Club, *Stop Sprawl Fact Sheet*, 2001. <http://www.sierraclub.org/sprawl/factsheet.asp#Money>)

[4] The goals have been adopted as administrative rules (Oregon Administrative Rules Chapter 660, Division 15).

Development Commission (LCDC), and appeals of rulings are referred to a special Land Use Board of Appeals. The practical effect of this system is to make it very hard to avoid the impact of smart growth policies. In contrast to Hawaii and Vermont, the Oregon laws emphasize the establishment of *urban growth boundaries* (UGBs) around Oregon urban areas and cities, in addition to development goals and standards. The UGBs define those areas in which development can occur; development outside the UGBs is tightly restricted. The Portland region's multi-city growth boundary was adopted in 1979 as part of Oregon's statewide growth-management law. The growth boundary encompasses 24 cities and three counties.

- The Washington State Legislature passed the Growth Management Act (GMA) in 1990 to encourage wise land use and planning. Under the GMA, local governments are required to adopt plans indicating how they will manage growth for the next 20 years. The fastest-growing counties, and the cities within them, must develop detailed land-use plans, including plans for containing the geography of growth. Each county that is required or chooses to plan under these provisions (RCW 36.70A.040) must define an *urban growth area* for within which urban growth is to be encouraged and outside of which growth can occur only if it is not urban in nature. Each city that is located in such a county must be included within such an urban growth area. Today, approximately 95 percent of the state's population lives in areas subject to planning under the GMA. Although loosely modeled on the Oregon policy, the GMA is less proscriptive than the Oregon practice.

- In 1998 Tennessee enacted a new law that incorporated smart growth themes, including urban growth boundaries and minimization of urban sprawl. The act, which regulates local governments' powers to plan, annex, raise taxes, and incorporate new cities, was created to establish a comprehensive growth strategy for the state that looked forward 20 years to balance development demand and supply. Among the purposes of the legislation is the minimization of urban sprawl. Each county was required to create a coordinating committee to recommend a growth plan by January 1, 2000, to be revised and/or ratified no later than July 1, 2001. The new law, known as Public Chapter 1101 — Tennessee's Growth Policy Law, imposes a variation of the UGB concept. In addition to urban growth areas, the bill also identifies so-called *planned growth areas* outside a UGB "where high or moderate density development is projected and where selected urban services may be provided."

In addition to these four states, a few other states have either statewide legislation or a centralized role for the state in the land-use planning process. In general, however, even advocates of smart growth recognize that there are very few states where supportive, statewide policies are in place (see Table 1).

A number of other places have strong local regulation that goes beyond simply setting aside land for preservation purposes. Locally implemented UGBs now exist in California, Kentucky, Colorado and Pennsylvania:

- In California, numerous communities (mostly in Northern California) have established growth boundaries, or used water or other utility service area restrictions to create *de facto* growth boundaries. According to publications of and conversations with the Greenbelt Alliance and others, the following California cities have established UGBs by law or administrative action since 1996: Cupertino, Healdsburg, Los Gatos, Modesto, Morgan Hill, Monte Sereno, Napa, Novato, Pleasanton, San Jose, Santa Barbara, Santa Rosa, Sebastopol, and Windsor. It is probably not a coincidence that some of these areas have among the country's highest home prices.

- Lexington, Kentucky and its surrounding county, Fayette, implemented a UGB in the 1960s. The county is partitioned into the Urban Service Area (USA) that includes the city of Lexington, and the Rural Service Area (RSA) where growth is restricted. The policy appears to have been implemented to preserve the region's historic horse farms.

- Boulder County, Colorado has used urban-service area definitions and/or open space preservation activity since 1978 to, in effect, erect UGBs.

- Lancaster County, Pennsylvania enacted farmland protection programs and growth boundaries in the 1980s and 1990s. Staley, Edgen and Mildner indicate that the growth boundaries in Lancaster County have not proved particularly restrictive.

As the above discussion indicates, there are numerous aspects of smart growth policy that deserve evaluation. However, the principle feature of smart growth that predisposes most of its effects is the regulation of land use, ostensibly to reduce the effects of sprawl. In this regard, the smart growth implementations that use UGBs to geographically contain growth are probably the most important and representative smart growth implementations.

From an economics standpoint, open space preservation and UGB policies have the effect of restricting developable site supply. Economic theory would suggest that restrictions on site supply that are not market determined should raise site values, thereby affecting the price of housing and other activities that make use of urban land.

The effect is only a potential one, because these policies all tend to incorporate mechanisms for loosening the restrictions gradually in the face of growth. In the case of the state of Oregon and in its Portland region specifically, however, the practice has been to resist engaging the boundary expansion features of the policy. In practice, the planners find ways to redefine (upward) the development capacity of the area within the boundary, thereby avoiding significant increases in the area within the boundary despite regional and development demand growth.

Table 1: Ranking of State-Level Smart Growth Policies by the Sierra Club

Rank	State	State Act	State Role	Implementation Tools	Field Expertise
1	Oregon	2	1	1	1
2	Vermont	1	1	2	3
3	Maryland	1	1	2	2
4	Georgia	2	1	2	3
5	Washington	2	1	2	3
6	Tennessee	3	2	2	1
7	Maine	2	1	2	2
8	Hawaii	2	1	3	2
9	California	3	2	1	3
10	Rhode Island	2	1	2	3
11	Florida	2	1	2	3
12	Idaho	3	2	2	3
13	New Hampshire	3	1	2	3
14	Minnesota	2	2	2	2
15	Delaware	3	1	2	3
16	Kentucky	3	2	2	3
17	New Jersey	2	3	2	3
18	Nevada	3	2	2	3
19	Massachusetts	3	2	2	3
20	Alaska	3	2	3	3
21	Arizona	3	3	2	3
22	Indiana	3	3	2	3
23	New Mexico	3	3	2	3
24	Pennsylvania	3	2	3	3
25	West Virginia	3	2	3	3
26	Illinois	3	3	2	2
27	Wisconsin	3	3	2	3
28	Virginia	3	3	2	3
29	Colorado	3	3	3	3
30	Louisiana	3	3	3	3
31	Mississippi	3	2	3	3
32	Arkansas	3	2	3	3
33	Iowa	3	3	3	2
34	Nebraska	3	2	3	3
35	South Carolina	3	2	3	3
36	Montana	3	3	3	3
37	Texas	3	3	3	3
38	New York	3	3	3	3
39	Missouri	3	3	3	3
40	Oklahoma	3	3	3	2
41	South Dakota	3	2	3	3
42	Alabama	3	3	3	3
43	Kansas	3	3	3	3
44	Connecticut	3	2	3	3
45	Utah	3	3	3	3
46	Ohio	3	3	3	3
47	North Carolina	3	3	3	3
48	North Dakota	3	3	3	3
49	Michigan	3	3	3	3
50	Wyoming	3	3	3	3

Source: Sierra Club, Solving Sprawl: 1999 Sierra Club Sprawl Report

Key: 1: very effective
2: moderately effective
3: not effective

More general policies, such as statewide zoning policies (as in Vermont and Hawaii, for example) are less obviously restrictive of site supply, although site supply restriction is undoubtedly their intended effect.

Statewide supply restrictions are also the most likely to measurably impact urban housing markets, since an elastic supply of housing is dependent upon an elastic supply of developable sites. This is not to say that

statewide or local zoning and other such regulatory hurdles do not have an effect on development opportunities; they certainly do. However, even a restrictive-sounding zoning policy can prove to be unrestrictive if it is not strongly enforced. In addition, if a UGB is in place only locally, its overall effectiveness is limited by the competition from housing activity in unrestricted areas. Hence, in looking for a way to characterize the effects of smart growth on housing, it is best to look at the most extreme implementations.

A Look at the Gold Standard of Smart Growth: Portland, Oregon

The policies implemented in Oregon generally, and the Portland metropolitan area specifically, emerge as perhaps the gold standard for American implementations of site supply restrictions in the name of smart growth. Not only has the policy been in place for over two decades, but its reliance on UGBs as the main implementation tool provides a direct channel to the restriction of site supply as well. In addition, the Oregon policy is a statewide policy. Thus, since every city in the state has a UGB, the opportunity for excess demand pressures in one community to be relieved by supply provided in another community is limited.

Oregon is also the only state in which effective regional government is in place to enforce land-use planning. Strong regional government contains what might otherwise be a tendency for local plans to compete away the most severe restrictions. Indeed, in 1990, Portland voters gave their metropolitan planning entity (Metro) legal authority to require local governments to change their plans and zoning codes to be consistent with Metro's adopted regional framework plans. Consequently there is a reasonably consistent, and enforceable, regional plan vision.

Oregon's 30 years of experience with integrated land use planning arguably did not begin to appreciably affect housing market conditions until the late eighties and early nineties. The initial expressions of the UGBs were probably not particularly binding, and Oregon had been in deep economic recession for most of the eighties.

In the latter part of the eighties and in the early nineties, however, Oregon began to experience significant in-migration and economic growth as the high tech industry in the state came into stride and the poor state of the California economy stimulated in-migration by workers.

At the same time, the Portland region was solidifying the future of the UGB through its Metro Region 2040 planning process. The boundary that was in place at the time encompassed about 250,000 acres, and a population of about 1.7 million people. Regional planners estimated that, without strict policies to the contrary, the UGB would have to be extended by an additional 120,000 acres to accommodate the anticipated 750,000 new residents in the next 50 years.

The region considered three alternative futures for the region (Concepts A, B, and C). These involved three different strategies toward new highways, transit service and the UGB. None of these visions imagined expansion of the UGB by a significant amount (the greatest was an addition of 55,000 acres). In the end, a policy was adopted that added no new land to the UGB and no new highways, and clustered development around light rail and bus transit corridors.

In essence, therefore, Portland's adopted regional plan envisioned constraining the region to be only two-thirds the size it might have become if market trends had been permitted to prevail. Under the adopted alternative, the anticipated population and job growth would be accommodated by densifying residential land use and developing on in-fill land, rather than on new, peripheral land outside the UGB.

Although there was an extensive public outreach effort, there was never any real doubt that the process would maintain the UGB restrictions. Although surveys of the general public did not give a clear mandate to this approach, smart growth advocates dominated the debate and the outreach efforts. To smart growth advocates, it was important to hold the line on the UGB to avoid the sprawled development that the region felt it was at risk of experiencing.

The approval of the constrained growth concept meant that all of the next 50 years of anticipated growth would be incorporated within agreed upon UGBs. Although the boundary is not necessarily *absolutely* fixed (the growth plan is reviewed every five years) the adopted plan envisions dramatic densification of the region's settlement patterns so that the existing UGB will not, generally speaking, be expanded significantly in response to growth.

In implementing smart growth in the Portland metro region, planners have adopted, of course, much more than site supply restriction policies. Portland also has adopted mixed-use development concepts, and a multi-center vision for regional development. These various urban centers — with Portland itself as the primary, central city — are to be tied together along the spine of a light rail transit system. Transit-oriented development (TOD) policies guide the zoning of land uses in the area of the transit stations. The transit policy is further reinforced by limited highway development and quantitative, downtown parking restrictions. Finally, smart growth planners imagine open space inside the UGB and in so-called urban and rural reserves outside the UGB to offset the recreational amenity losses associated with densification.

Did Planners Anticipate Impacts on Housing?

In the debate over the 2040 Growth Concept, the issue of the effect of constrained growth on housing was a frequent element of the discussion. Essentially, two lines of argument were advanced.

Homebuilders and regional housing economists generally expressed concern over the housing policy implicit in the 2040 Growth Concept.[5] Specifically, builders and housing economists expressed concern over the price and availability of development sites in the region if site supply (relative to a no-UGB policy) remained restricted. In addition, they expressed concern regarding the compatibility of a policy of high-density development with the traditional trend of larger homes and lots as income increases. The implementation of the 2040 Growth Concept plan anticipated significant increases in the number of multifamily units in the region and much higher residential densities. Both of these trends would have the effect of raising the price of housing, either absolutely, or in an amenity-adjusted manner, or both. That is, there was concern that Portlanders would be paying more for homes with less desirable physical amenities.

[5] The homebuilders also tried to influence Oregon's original, statewide planning law. The 20-year supply requirement of the UGBs in Oregon is widely credited to the industry, although many fully appreciated how that concept would come to be operationalized.

Area planners, on the other hand, appeared to embrace the view that the marketplace was not providing what people really wanted. They believed that with good planning high-amenity housing could be provided on small lots (or in multifamily structures). In addition, they believed that "sprawl" was a costly form of development because it required utility extensions, highway and other infrastructure spending, etc. By concentrating development near already serviced parts of the region, they believed that the total regional cost of providing housing services would be lower. In economic parlance, they believed that more intensive use of sites would lower the per-unit contribution of sites to cost. In addition, they believed that by reducing infrastructure development costs the total cost of consuming housing services would be lower than in a traditional, suburban development model, and that households would thus prefer — all costs considered — the 2040 Growth Concept approach.

In the *2040 Growth Concept Report*, the following conclusion was reached in the "What we have learned" section of the report:

> *From citizens, local governments and stakeholders we learned that it would be very difficult and expensive to make major expansions to the urban growth boundary. We learned about the desirability of having a job and housing balance and of having distinct communities with their own identities. We did not learn much about housing costs, sense of community or how to enact some changes.* [Emphasis added.][6]

Homebuilders and others who participated in the process would have stated the conclusion about housing costs somewhat differently. Many felt that the debate was one-sided, and that undemonstrated arguments about how the cost of housing would be held down were accepted, without proof. To this day, the region's planners are reluctant to accept the fact that there is any relationship between the UGB and the area's skyrocketing housing prices.

Holding the Line on the UGB: Politics and Economics At Odds

In Oregon, the UGB must embrace sufficient development capacity to provide for a 20-year supply of land for jobs and housing. Portland's regional growth plan is reviewed for compliance with this capacity requirement. The most recent growth plan update performed in 1998-99 and published in July 2000[7] concluded that there was a 100-unit surplus housing unit capacity within the UGB as presently constituted.[8] The plan update concluded, in effect, that no expansion of the UGB was warranted to accommodate future growth.

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[6] *2040 Growth Concept Report*, Portland Metro, 1995. See <http://www.multnomah.lib.or.us/metro/growth/tfplan/gcondoc.html>.

[7] *1997-2017 Urban Growth Report Update*, Portland Metro, July 2000.

[8] There had been minor legislataive and quasi-judicial amendments to the UGB in 1997.

Critics of the plan update process argued that the finding of adequate capacity was an artifact of aggressive assumptions by Metro staff regarding the true capacity of the UGB. Some of these assumptions included the following:

- No test of market feasibility of density and development assumptions of the plan. The measurement of capacity assumed that the conversion of all available developable sites envisioned by the plan was economic. In essence, the measurement assumes that vacant land can and will be developed profitably in the manner assumed in the plan (e.g., the density and housing type assumptions).

- Accessory dwelling units are assumed to provide significant housing capacity. The measurement of capacity assumes that accessory dwelling units built in the backyards of existing homes will provide almost 2 percent of total housing unit demand. The physical feasibility and market desirability of this assumption was not demonstrated to the satisfaction of many.[9]

- Open space outside the UGB is counted as within-UGB parks capacity. Although the plan uses the average ratio of parks acres per capita within the UGB as the standard for meeting the promise of adequate parks capacity, the plan update satisfies this requirement with land outside the UGB.

In essence, regional planners in Portland have been holding the line on the UGB by assuming away housing market responses, and by opportunistically redefining the concept of capacity. This has been done in the face of fairly clear evidence that the housing market in Portland (and other Oregon cities) is being severely distorted by the site supply restrictions inherent in the UGB-smart growth concept.

Oregon housing has become among the least affordable housing in the United States, an effect that can be linked empirically to the joint phenomena of the UGB and the rapid growth in the economy that occurred in the 1990s.[10] Even though the Oregon economy weakened significantly in 2001, its housing remains among the most expensive in the nation. Small cities surrounded by developable land, like Eugene and Salem, now have housing prices that rival those in San Francisco Bay Area communities, when the purchasing power of local incomes is considered (see Figure 4). Homeownership in the Portland region has plummeted since home price inflation and the region's emphasis on multifamily development discourage home purchases. Portland homeownership rates, once among the nation's highest, fell sharply below U.S. and even nearby, larger Seattle's rates (see Figure 5).

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[9] Coalition for Sensible Growth, "Review of Metro's Urban Growth Report, September 1999 Update," 2000.

[10] See, for example, Anthony Downs, Arthur C. Nelson and William A. Fischel, "Have Housing Prices Risen Faster in Portland Than Elsewhere?," *Housing Policy Debate*, Vol. 13, No. 1, 2002. The study concludes, "This study provides initial evidence that an urban growth boundary or other stringent land-use controls can, at least for a short period, exert upward pressure on the rate of increase of housing prices, if it is combined with other factors strongly stimulating the demand for housing in the region, such as employment growth." [From study summary.]

Figure 4: Ranking of the Least Affordable Housing Markets, 1999, 2000

1999	National Rank	2001	National Rank
SAN FRANCISCO, CA PMSA	181	SAN FRANCISCO, CA PMSA	181
Santa Cruz-Watsonville, CA PMSA*	180	Santa Cruz-Watsonville, CA PMSA*	180
Eugene-Springfield, OR MSA+	179	Santa Rosa, CA PMSA+	179
Santa Rosa, CA PMSA+	178	Salinas, CA MSA+	177
Laredo, TX MSA*	177	SAN JOSE, CA PMSA	177
SAN JOSE, CA PMSA	176	San Luis Obispo-Atascadero-Paso Robles, CA MSA*	176
Salinas, CA MSA+	175	OAKLAND, CA PMSA	175
PORTLAND-VANCOUVER, OR-WA PMSA	174	SAN DIEGO, CA MSA	174
San Luis Obispo-Atascadero-Paso Robles, CA MSA*	173	Portsmouth-Rochester, NH-ME PMSA*	173
SAN DIEGO, CA MSA	172	Vallejo-Fairfield-Napa, CA PMSA+	172
Portsmouth-Rochester, NH-ME PMSA*	171	Stockton-Lodi, CA MSA+	171
OAKLAND, CA PMSA	170	**Eugene-Springfield, OR MSA+**	170
Provo-Orem, UT MSA+	169	Lowell, MA-NH PMSA+	169
Lowell, MA-NH PMSA+	168	Greeley, CO PMSA*	168
Santa Barbara-Santa Maria-Lompoc, CA MSA+	167	Merced, CA MSA*	167
LOS ANGELES-LONG BEACH, CA PMSA	166	Barnstable-Yarmouth, MA MSA*	165
Salem, OR PMSA+	165	**PORTLAND-VANCOUVER, OR-WA PMSA**	165
ORANGE COUNTY, CA PMSA	164	LOS ANGELES-LONG BEACH, CA PMSA	164
Ventura, CA PMSA+	163	**Salem, OR PMSA+**	163
Greeley, CO PMSA*	162	ORANGE COUNTY, CA PMSA	162
New Bedford, MA PMSA*	161	Ventura, CA PMSA+	161
Stockton-Lodi, CA MSA+	160	Jersey City, NJ PMSA+	160
Jersey City, NJ PMSA+	159	BERGEN-PASSAIC, NJ PMSA	159
NEW YORK, NY PMSA	158	Santa Barbara-Santa Maria-Lompoc, CA MSA+	158
Honolulu, HI MSA+	157	New Bedford, MA PMSA*	157

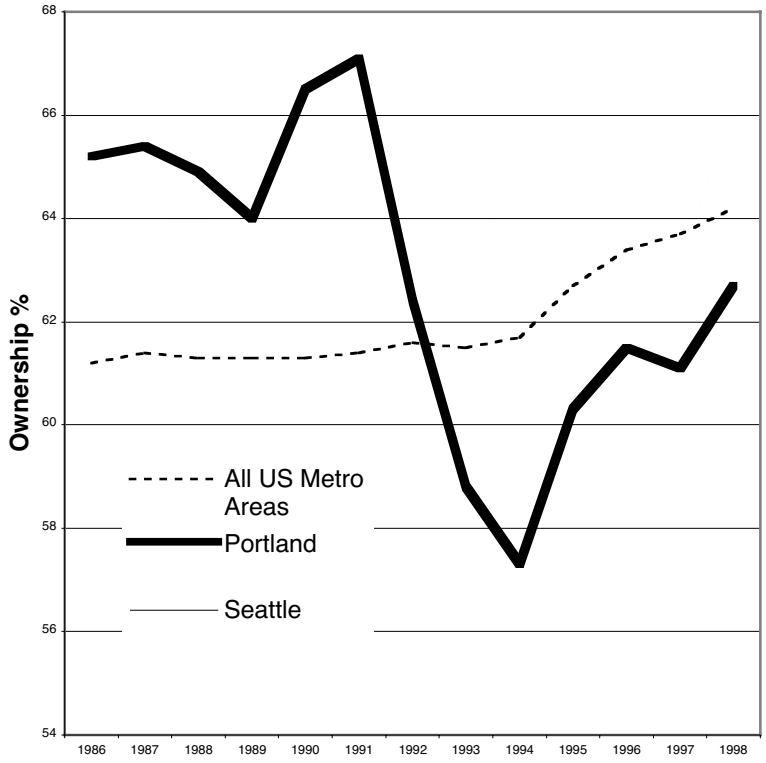
Source: National Association of Home Builders

Key: MSA = metropolitan statistical area, PMSA = primary metropolitan statistical area

Ironically, given the stated goals of smart growth policy, these trends caused the Portland metropolitan area to suffer a high rate of suburbanization because it lost its ability to "capture" new population influx into the metro area (see Figure 6). That is, growth was diverted from the Portland UGB to other areas. This so-called capture rate trend, of course, is inconsistent with the notion that Portland's smart growth policy was successful in engineering a "quality of life" and other conditions that offset the disadvantage of high home prices. New migrants to the Portland region did what they could to avoid the region's restrictive policies by increasingly choosing other metro areas. The result is that Portland actually suffered rates of suburbanization that were close to that in metropolitan areas with "white flight" and other central city problems (see Figure 7).

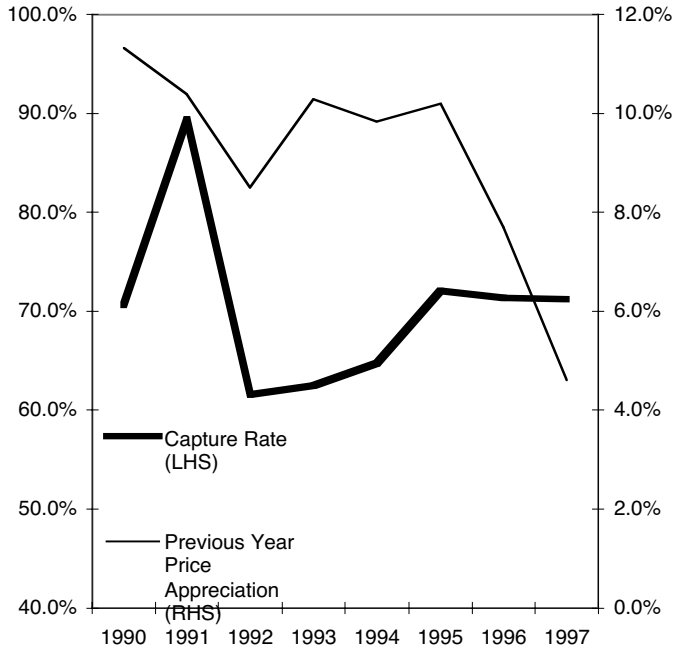
It is certainly true that the households that remain in the region are, by definition, comfortable with the overall balance of employment, housing, and other conditions in the region. But Portland is increasingly unattractive to some households, particularly to those with lower incomes and households hoping to own their own homes and rear their of children in a conventional house and yard environment.

Figure 5: Recent Trends in Portland Homeownership Rates



Source: U.S. Census data.

Figure 6: Housing Inflation and the Capture Rate



Source: U.S. Census and Portland METRO data.

Figure 7: Comparative Rates of Suburbanization

Metro Area	Suburbanization Indicator	Rank
St.Louis	>10	1
Washington, DC	>10	2
Baltimore	>10	3
Philadelphia	8.9	4
Milwaukee	7.1	5
Pittsburgh	3.8	6
Indianapolis	3.0	7
NewOrleans	3.0	8
VirginiaBeach	2.3	9
Portland	**2.0**	**10**
Chicago	1.8	11

Suburbanization indicator is the ratio of suburban growth to urban growth, using employment by residence (6/93-6/99). If >10, indicates negative urban growth.

Source: U.S. Census data.

Have Other Portland Policies Helped Offset Site Supply Restrictions?

There is very little evidence that other aspects of smart growth policy have been successful in reducing households' costs in other dimensions to offset the increasing costs of housing.

- It is certainly the case that suburban-type development requires infrastructure development. But so does in-fill development. The important difference is that infrastructure development in the suburban context occurs in a green-field development setting; that is, infrastructure development costs are favored by the relative ease with which right-of-way can be obtained, and the fact that there is not much need to acquire and demolish existing development. For example, Portland is currently laboring to finance a multi-billion dollar consolidated sewer outflow system to accommodate the effects that dense (and impervious) development is having on surface water accumulations in the region.

- The presumption that Portland can significantly reduce auto use through intensive light rail and bus transit service and land-use planning is not borne out by the data. The share of trips by transit in the Portland region is not tremendously different from the share enjoyed by its car-loving nemesis, the Los Angeles region (at 5.6 vs. 4.7 percent). Nor is the total amount of driving per person that occurs in the region vastly different. In Portland, average daily vehicle miles traveled (VMT) per person is about 20, versus 21 for Los Angeles. Reliance on light rail to provide the transportation services' spine for the region raises questions about the basic cost-effectiveness of the growth plan logic. Light rail in Portland has proved to be notoriously costly, on a per new ride basis, despite the fact that it is not being assessed the cost of its rights-of-way in the most expensive parts of the network because the right-of-way is taken out of existing road capacity. The high cost and low effectiveness of area light rail has not been lost on its detractors.[11]

- The notion that concentrating development will somehow reduce the dis-amenity of regional congestion has poor theoretical and empirical foundation. Traffic congestion rises approximately in proportion to population density. Portland's population density, for example, is approximately 45 percent higher than the average of the largest 200 metro areas; its VMT per square mile is, correspondingly, 42 percent higher. The resulting traffic congestion levels, of course, are higher still in a concentrated setting, with the implication that forcing higher densities actually *degrades* housing-related amenities like congestion. Indeed, statistical analysis of a cross-section of metro areas reveals that VMT per capita *increases* with density.

- There is virtually no evidence that households will pay a premium for housing of the configuration advanced in the 2040 Growth Concept plan. The presumption is that conventional suburban subdivision designs are inefficient and promoted by developers out of self-interest rather than market demand. In fact, the few studies that have examined empirically the marketability of "new urbanism" designs do not support the noton that the marketplace prefers them to conventional designs.[12] Portland's transit-

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[11] John A. Charles, "Top Ten Light Rail Myths: What We've Learned From 12 Years of MAX in Portland" (Cascade Policy Institute), August 1998.

[12] See, for example, Guttery, Randall, "The Effects of Subdivision Design on Housing Values: The Case of Alleyways," *Journal of Real Estate Research*, March 2001.

oriented development (TOD) projects have required significant public subsidies to attract developer and buyer interest.[13]

For these reasons, we do not believe that there are many positive effects of smart growth that will improve housing for urban residents sufficiently to offset the higher prices caused by smart growth policies.

We now turn to the task of measuring the effects of Portland-type smart growth site supply restrictions at a national level. We look at the issue on both a state-by-state basis and a metropolitan area basis.

Site Supply Restrictions and Home Prices

In this section, we discuss the theory and empirical support for the general notion that site supply restrictions raise home prices. Although smart growth advocates are prone to discount the relationship, the theory and empirical results are clear.

The Theory of Smart Growth Restrictions and Home Prices

Home prices are influenced by two related markets — the market for sites and the market for improvements. The market for sites is the market for the land that housing occupies, and the market for improvements is the market for the construction materials, labor, utility services, and other inputs needed to improve the site for occupancy.[14]

At any given time, there is an existing stock of housing. Over time, this stock is increased by an amount equal to new housing investment minus depreciation and demolition of older stock. As a local economy grows in population, income, or both, demand for housing increases. If the demand could only be satisfied by the existing stock of housing, prices would rise sharply as more and richer households competed for the fixed supply. If there were an ample supply of vacant land on which to build new houses, however, households could choose to occupy new housing, and the effective rate of appreciation of home prices would abate.

The rate of appreciation of home prices during periods of growth is a function of the flexibility or "elasticity," of the supply of new housing and the strength of increases in housing demand. If the supply in either of its factor markets (i.e., sites or improvements) were to be restricted, this elasticity would be impaired, and home price inflation would ensue at a greater rate than otherwise would be the case.

Site supply is a particularly important factor of production because it is hard to find substitutes for the land on which homes are built. Although building housing higher or more densely economizes on the use of land, doing so requires much more expensive building techniques and/or impairs the amenity value of the resulting housing product. To a large degree, the relief that such approaches can provide is limited. In contrast, if wood or

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[13] John Charles of Portland's Cascade Policy Institute is preparing a summary of Portland's TOD project finances, to be published shortly. See www.cascadepolicy.org.

[14] See Randall J. Pozdena, *The Modern Economics of Housing*, Greenwood Press, 1988, for a thorough exposition of the economics of housing.

construction labor is in short supply, there are many ways to substitute other materials and construction techniques to minimize the impact on the supply of housing overall.

So important is the effect of site supply on housing that relative home prices are easily predicted across states, regions and even countries, by simply measuring the strength of economic demand (i.e., wealth and population) relative to the quantity of developable land. Pozdena, in work for the Federal Reserve system,[15] demonstrated that even the then-stratospheric home prices in Japan were easily explained by the paucity of sites relative to strong economic demand factors.

Measuring the Effects of Smart Growth Site Supply Restrictions

Measuring the effect of site supply restrictions is a complex undertaking, because smart growth policies are not the only factors that may constrain site supply. Indeed, many natural phenomena, such as the presence of mountains, rivers, lakes and bays may constrain the geographic range of a region's development.

Table 2 illustrates this phenomenon. It calculates, at the state level, a "Site Scarcity Index" measured as the ratio of population growth to developed land growth. This is the effective site supply scarcity that growth in the 1990s revealed. States with higher rates of population growth relative to urbanization of land have a higher Site Scarcity Index.

Oregon stands out in Table 2 with the 6th highest Site Scarcity Index, consistent with the intentions of its UGB policy. Its index value of 1.19 indicates that population growth grew 19 percent faster than site supply, on average. But it is also clear from Table 2 that factors other than smart growth policies per se affect sprawl patterns. Iowa, Nebraska, Arizona and Nevada, for example, also have high, effective Site Scarcity Indices, but relatively low housing inflation rates. Their seemingly contained growth is probably the result of the fact that limitations on access to utilities – especially water supplies in the desert areas—limits the expansion of new, urbanized land to the periphery of the existing region, but in a manner that is apparently sufficiently elastic to have avoided home price inflation.

Conversely, states that have endorsed aspects of smart growth (such as Hawaii and Vermont) don't display particularly high effective Site Scarcity Indices in Table 2. This illustrates that it is difficult to use legislative or regulatory indicators as reliable measures of the presence or absence of site-restricting conditions or policies.

The correlation between smart growth policy ranks from Table 1 and the ranks of the strength of development constraints[16] implied in Table 2 can be measured statistically. When this is done, the correlation is essentially zero. Therefore, in evaluating the effects of smart growth, the best course is to use measures of the pattern of development *that the smart growth advocates are promoting*. Clearly, the Site Scarcity Index calculated here is one such measure of the *ex post* site supply restrictions (whether natural, legislative, or regulatory) that yield results akin to those advocated by promoters of smart growth.

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[15] See Randall J. Pozdena, "Why Housing Prices Don't Fall (Much), Federal Reserve Bank of San Francisco *Letter*, January 4, 1991.

[16] The site constraint rank can be measured as 50 minus the Site Availability Index. The resulting correlation is actually a minus 2.0 percent – essentially zero.

Site Supply Constraints and Housing Prices: The State Story

Smart growth advocates are generally in a state of denial about the relationship between anti-sprawl policies and home prices. However, the data in Table 2 demonstrate clearly the close relationship between site supply constraints and home price inflation at the state level.

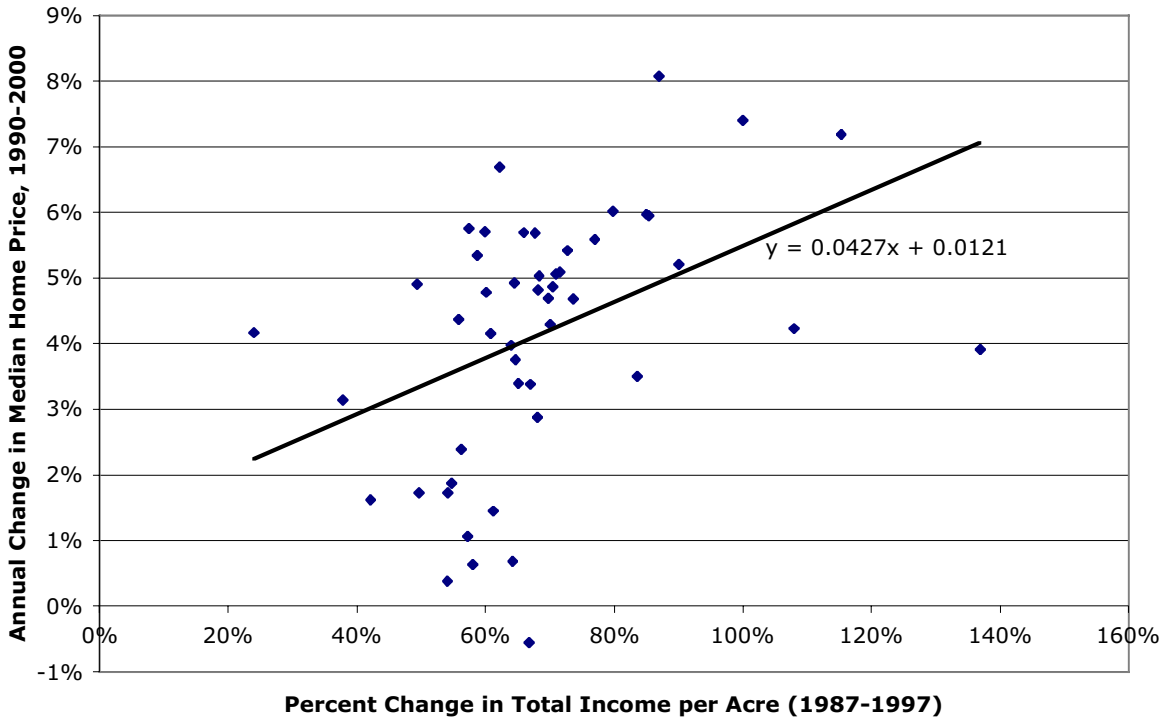
First, Oregon stands out with the highest rate of growth of home prices attending its very high Site Scarcity Index. This is a particularly strong indictment of what site supply restrictions can do. Oregon actually has a tremendous amount of available land. Only about four percent of its non-federal land is developed, versus almost 35 percent in Massachusetts, for example. Oregon has apparently successfully engineered a shortage of sites in a state with plentiful land.

Second, a statistically significant negative relationship between site availability and home price inflation pervades the data across all of the states.[17] This notion is illustrated in Figure 8, which uses information on total state personal income, and site supply growth in the 1990 to 2000 time period. Note that, despite the aggregate nature of the data, the statistical trend line indicates that, on average, home price inflation is in direct proportion to growth in income per capita per acre, as theory would predict. That is, in order for home prices to remain approximately stable, sites need to grow at the rate of income growth per developable acre. If the number of developable acres is restricted, home price inflation ensues for some period in response to income growth. The figure confirms that if growth of income acre had been zero, home price inflation would have been nearly zero (actually, about 1.2% per annum).

It is also important to note that some states' experience fits this relationship exactly, while others' experience with housing inflation is greater or less than this amount. There are undoubtedly some errors in measurement in the data that underlies this analysis, and there is a wide mix of regulatory and other policies and factors beside site supply that affect housing. In addition, if the market *expects* significant future growth, site values may escalate *before* the actual increase in demand, confounding the timing of simple statistical relationships. Despite theory and evidence to the contrary, smart growth advocates claim that the savings in infrastructure development costs and other factors would *lower* the cost of improvements in "compact" development locales. The implication is that such factors would offset the effects of the artificial site scarcity created by the anti-sprawl aspects of smart growth, and would keep housing affordable.

[17] The necessary data is not available for Alaska.

Figure 8: Home Prices Rise in Proportion to Growth in Income per Acre of Available Sites during 1990s.



Source: Quantecon, Inc., from U.S. Census and NRI data. The formula in the figure represents the *linear regression* estimate of the fitted line. Linear regression is a statistical technique used to develop quantitative relationships among variables. This figure and others in this report rely on this technique.

Table 2: State Trends in Population, Development and Home Prices

State	Population, 1990	Population, 2000	Developed Area, 1987	Developed Area, 1997	Median Housing Value, 1990	Median Home Value, 2000	Site Scarcity Index	Site Scarcity Rank	Home Price Inflation 1990-2000	Home Price Inflation Rank
Alabama	4,040,587	4,447,100	1,807	2,252	53,200	85,818	0.41	36	61%	23
Alaska	550,043	626,932			94,400	144,271			53%	28
Arizona	3,665,228	5,130,632	1,271	1,491	79,700	121,686	2.31	2	53%	29
Arkansas	2,350,725	2,673,400	1,180	1,409	46,000	73,474	0.71	15	60%	25
California	29,760,021	33,871,648	4,404	5,456	194,300	216,063	0.58	26	11%	47
Colorado	3,294,394	4,301,261	1,387	1,652	82,400	169,157	1.60	3	105%	3
Connecticut	3,287,116	3,405,565	796	874	176,700	167,178	0.37	38	-5%	51
Delaware	666,168	783,600	185	226	99,700	132,951	0.81	12	33%	40
District of Col	606,900	572,059			121,700	164,787			35%	39
Florida	12,937,926	15,982,378	3,642	5,185	76,500	107,448	0.56	27	40%	36
Georgia	6,478,216	8,186,453	2,629	3,957	70,700	114,473	0.52	30	62%	22
Hawaii	1,108,229	1,211,537	153	180	242,600	288,332	0.54	29	19%	43
Idaho	1,006,749	1,293,953	610	755	58,000	105,183	1.21	5	81%	7
Illinois	11,430,602	12,419,293	2,832	3,181	80,100	130,288	0.70	16	63%	21
Indiana	5,544,159	6,080,485	1,957	2,260	53,500	94,694	0.62	20	77%	9
Iowa	2,776,755	2,926,324	1,607	1,702	45,500	80,416	0.91	10	77%	10
Kansas	2,477,574	2,688,418	1,745	1,940	51,800	84,773	0.76	13	64%	19
Kentucky	3,685,296	4,041,769	1,340	1,738	50,100	89,043	0.33	43	78%	8
Louisiana	4,219,973	4,468,976	1,386	1,624	58,000	84,417	0.34	39	46%	34
Maine	1,227,928	1,274,923	558	712	87,300	102,655	0.14	46	18%	45
Maryland	4,781,468	5,296,486	993	1,236	115,500	146,723	0.44	34	27%	41
Massachusetts	6,016,425	6,349,097	1,139	1,479	162,200	192,694	0.19	45	19%	44
Michigan	9,295,297	9,938,444	2,926	3,546	60,100	117,349	0.33	42	95%	4
Minnesota	4,375,099	4,919,479	1,843	2,186	73,700	124,096	0.67	17	68%	15
Mississippi	2,573,216	2,844,658	1,193	1,474	45,100	75,052	0.45	32	66%	16
Missouri	5,117,073	5,595,211	2,184	2,517	59,300	91,154	0.61	22	54%	27
Montana	799,065	902,195	890	1,032	56,500	98,849	0.81	11	75%	12
Nebraska	1,578,385	1,711,263	1,129	1,206	50,000	85,958	1.23	4	72%	13
Nevada	1,201,833	1,998,257	320	381	95,300	140,867	3.47	1	48%	33
New Hampshire	1,109,252	1,235,786	469	589	129,300	137,806	0.45	33	7%	49
New Jersey	7,730,188	8,414,350	1,489	1,778	161,200	172,563	0.46	31	7%	48
New Mexico	1,515,069	1,819,046	863	1,153	69,800	105,770	0.60	25	52%	31
New York	17,990,455	18,976,457	2,736	3,184	130,400	150,784	0.33	41	16%	46
North Carolina	6,628,637	8,049,313	2,855	3,856	65,300	108,356	0.61	23	66%	17
North Dakota	638,800	642,200	944	992	50,500	75,154	0.11	47	49%	32
Ohio	10,847,115	11,353,140	2,984	3,611	62,900	102,733	0.22	44	63%	20
Oklahoma	3,145,585	3,450,654	1,678	1,926	47,600	73,700	0.65	18	55%	26
Oregon	2,842,321	3,421,399	1,044	1,222	66,800	149,795	1.19	6	124%	1
Pennsylvania	11,881,643	12,281,054	3,001	3,983	69,100	94,580	0.10	48	37%	38
Rhode Island	1,003,464	1,048,319	177	201	132,700	137,843	0.34	40	4%	50
South Carolina	3,486,703	4,012,012	1,513	2,097	60,700	103,588	0.39	37	71%	14
South Dakota	696,004	754,844	844	960	45,000	82,140	0.62	21	83%	5
Tennessee	4,877,185	5,689,283	1,715	2,371	58,000	95,954	0.44	35	65%	18
Texas	16,986,510	20,851,820	6,957	8,567	58,900	83,593	0.98	9	42%	35
Utah	1,722,850	2,233,169	516	662	68,700	144,037	1.05	8	110%	2
Vermont	562,758	608,827	280	318	95,600	115,291	0.61	24	21%	42
Virginia	6,187,358	7,078,515	2,080	2,626	90,400	126,780	0.55	28	40%	37
Washington	4,866,692	5,894,121	1,614	2,065	93,200	169,394	0.75	14	82%	6
West Virginia	1,793,477	1,808,344	621	874	47,600	72,214	0.02	49	52%	30
Wisconsin	4,891,769	5,363,675	2,103	2,418	62,100	109,689	0.64	19	77%	11
Wyoming	453,588	493,782	597	644	61,600	98,455	1.13	7	60%	24

Sources: QuantEcon, Inc. from USDA and US Census Bureau Data

Note: The Site Availability Index is the ratio of the percent growth in developed land relative to percent change in population.

In fact, home price inflation is greater than expected in most of the states that have embraced smart growth policies at a state level. Table 3 compares the level of home price inflation that would be expected (given income, population and site growth) and the level that was actually experienced. Oregon, again, stands out with the second highest "deviation" from what would be expected, given its growth during the period. The data suggest that Oregon home prices increased at nearly twice the rate expected given its economic context.

Indeed, most of the states that have embraced smart growth during this period stand out as having higher-than-expected home price inflation, including Oregon, Washington, Tennessee, Kentucky, Pennsylvania, and Colorado. Notable exceptions are California, Hawaii and Vermont. The first two were in economic recession, and had home price bubbles that burst during that decade. Vermont is possibly an anomaly, although the site availability index indicates that it was not practicing a particularly effective variation of site supply restriction.

Using regression analysis that relates home price inflation to site scarcity, it is possible to estimate how much home price inflation would have been if it fit the average relationship among all of the states. Table 3 shows that many states had higher or lower than expected housing price inflation in the face of economic growth. This indicates that there are many state-level anomalies in the economy — regulation, geography, etc. — that are not captured by a single, simple model. The consistency of the effects for states advocating smart growth, however, is a strong indictment of this policy.

Table 3: Actual vs. Expected Home Price Inflation, 1990-2000

	Home Price Inflation 1990-2000		Deviation from Expected Level		
State	Predicted	Actual	Higher or Lower?	Percent Higher than Expected	Rank of Percent Deviation
Alabama	48.9%	61.3%	Higher	25.4%	17
Arizona	69.0%	52.7%	Lower	-23.6%	35
Arkansas	59.9%	59.7%	Same	-0.3%	28
California	41.4%	11.2%	Lower	-73.0%	45
Colorado	87.7%	105.3%	Higher	20.1%	19
Connecticut	63.5%	-5.4%	Lower	-108.5%	49
Delaware	49.2%	33.4%	Lower	-32.3%	37
Florida	39.4%	40.5%	Same	2.7%	26
Georgia	39.6%	61.9%	Higher	56.3%	7
Hawaii	38.0%	18.9%	Lower	-50.4%	40
Idaho	56.4%	81.4%	Higher	44.2%	10
Illinois	62.0%	62.7%	Same	1.1%	27
Indiana	49.1%	77.0%	Higher	56.9%	6
Iowa	60.6%	76.7%	Higher	26.6%	16
Kansas	55.5%	63.7%	Higher	14.7%	22
Kentucky	46.2%	77.7%	Higher	68.1%	5
Louisiana	58.6%	45.5%	Lower	-22.2%	33
Maine	35.7%	17.6%	Lower	-50.8%	41
Maryland	43.8%	27.0%	Lower	-38.2%	39
Massachusetts	47.3%	18.8%	Lower	-60.2%	43
Michigan	54.7%	95.3%	Higher	74.2%	3
Minnesota	79.7%	68.4%	Lower	-14.2%	31
Mississippi	61.1%	66.4%	Same	8.6%	25
Missouri	60.7%	53.7%	Lower	-11.6%	30
Montana	64.5%	75.0%	Higher	16.1%	21
Nebraska	64.8%	71.9%	Higher	11.0%	24
Nevada	71.9%	47.8%	Lower	-33.5%	38
New Hampshire	45.0%	6.6%	Lower	-85.4%	46
New Jersey	54.8%	7.0%	Lower	-87.1%	47
New Mexico	38.5%	51.5%	Higher	33.9%	12
New York	55.2%	15.6%	Lower	-71.7%	44
North Carolina	48.3%	65.9%	Higher	36.6%	11
North Dakota	63.8%	48.8%	Lower	-23.5%	34
Ohio	42.9%	63.3%	Higher	47.6%	9
Oklahoma	44.5%	54.8%	Higher	23.3%	18
Oregon	67.4%	124.2%	Higher	84.4%	2
Pennsylvania	31.4%	36.9%	Higher	17.3%	20
Rhode Island	48.3%	3.9%	Lower	-92.0%	48
South Carolina	41.7%	70.7%	Higher	69.4%	4
South Dakota	72.7%	82.5%	Higher	13.5%	23
Tennessee	50.7%	65.4%	Higher	29.2%	14
Texas	60.9%	41.9%	Lower	-31.1%	36
Utah	71.6%	109.7%	Higher	53.1%	8
Vermont	45.0%	20.6%	Lower	-54.2%	42
Virginia	51.7%	40.2%	Lower	-22.1%	32
Washington	64.4%	81.8%	Higher	27.0%	15
West Virginia	18.8%	51.7%	Higher	174.9%	1
Wisconsin	57.8%	76.6%	Higher	32.6%	13
Wyoming	61.0%	59.8%	Same	-1.9%	29

Sources: QuantEcon, Inc. from USDA and US Census Bureau Data

The Effect of Smart Growth on Minority Households: Metro Data

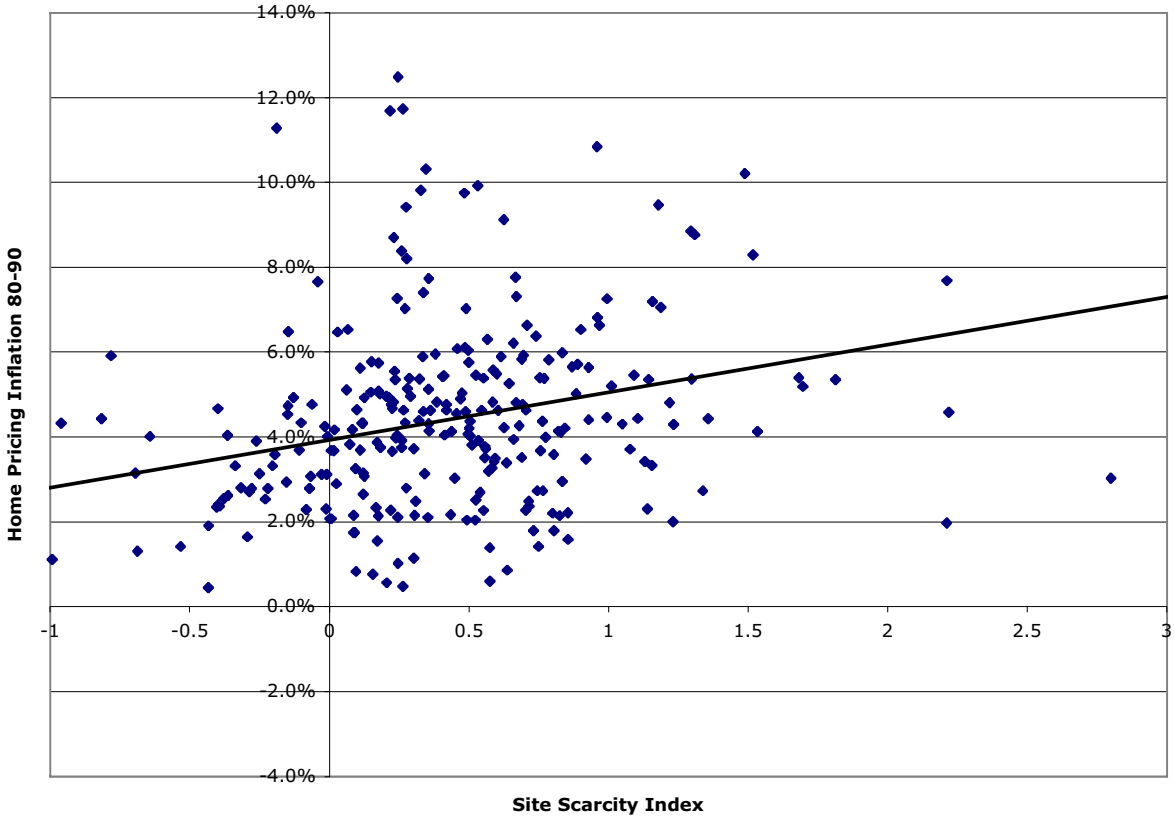
In order to study the effect of smart growth on minority households, analysis at the state level is inadequate. It is necessary to examine specific housing markets within the state, because there is considerable variation in the racial composition of metropolitan areas within a given state.

Measuring the effect of site restrictions at the metropolitan level is inherently more difficult than doing so at the state level because the available data, even from the Census, becomes less reliable at small geographical units. It is probably necessary not to draw conclusions for individual metropolitan areas from the available data. Nevertheless, one would expect a general relationship between site restriction and home price inflation similar to that observed at the state level to emerge.

In Figure 9 below, a *site scarcity index* is constructed from the ratio of the percent change in population growth and the percent change in urbanized land for the major MSAs in the United States.[18] Note from the trend line in Figure 9 that the rate of housing price inflation is positively related to site scarcity.

[18] This analysis uses the National Resources Inventory (NRI) data prepared by the U.S. Department of Agriculture. This data measures the amount of land in various uses, including urban uses. The author built the metropolitan urban land data from county subtotals. It is important to emphasize that the NRI data has many measurement and sampling features that make the data imprecise at small geographies.

Figure 9: Housing Price Inflation and Site Scarcity



Source: Quantecon, Inc., from U.S. Census and NRI data.

When this is examined econometrically in a regression that includes income in addition to the scarcity index, the scarcity index bears a very significant positive statistical relationship with housing price inflation (as does income). Indeed, as theory would suggest, housing price inflation is slightly negative (due to depreciation of the structure, but for the effects of rising incomes and site restrictions. (From this regression, each increase in the site scarcity index by 1.0 increases the inflation rate by 1.4 percent.)

The figure also shows that the relationship is fairly "noisy" statistically. Income and the scarcity index together explain about 47 percent of the total variation in housing price inflation. This is not bad for a simple, empirical relationship, but clearly there are many idiosyncratic factors in each region that explain the rest of the observed variability in observed housing inflation.

Tables 4 through 7 present site scarcity indices for two periods for each major MSA. The measurement limitations of metropolitan data suggest that one should not put great reliance on individual metropolitan indicators. Nevertheless, it is interesting to note that the major Oregon MSAs (Portland, Eugene, Corvallis, and Ashland) are rated and ranked as restrictive by the measure in the tables.

It is also important to reemphasize that site scarcity can arise from natural as well as policy sources. Hence, the fact that a metro area rates poorly in making land available to accommodate new growth does not mean that

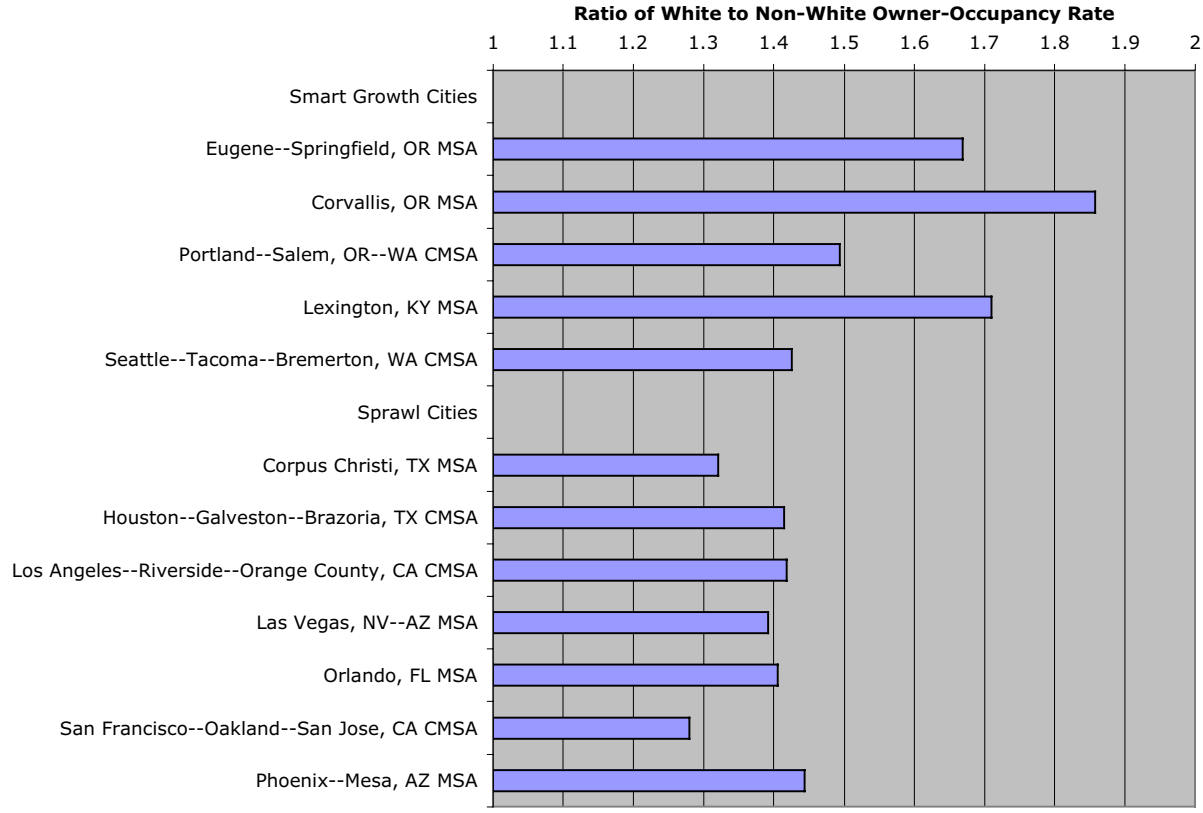
restrictive land use policies necessarily are in place. We would expect, however, such natural restrictions to have equally potent impacts on housing prices when economic growth is occurring.

The Impact Methodology

The MSA data confirm the result observed in the state data –namely, that site supply restrictions cause home price inflation in the face of economic growth. Closer inspection of data from a few, selected MSAs that can be characterized as having adopted smart growth policies is consistent with the notion that the effects of smart growth tend to burden minority and young families disproportionately. Figure 10, for example, suggests that the effect of smart growth is to depress the homeownership rates of minorities. This could easily be the case, since theory would suggest that homeownership will decline among poorer households as home prices rise and affordability declines. Figure 11 suggests that smart growth may also affect young families adversely. Specifically, it appears that young households have lower homeownership rates in smart growth communities.

Although these anecdotal results are suggestive of the burdens of smart growth policy, it would be more informative if the effect could be quantified and extrapolated to metro areas that do not yet embrace site supply restrictions. This can be done by using the statistical relationship between the site scarcity index and housing price inflation to estimate the effect of widespread implementation of smart growth site supply restrictions on metropolitan housing prices. If one then also measured the statistical relationship between housing prices and minority homeownership, one could then measure the effects of a hypothetical proliferation of smart growth on minority and non-minority homeownership, by metro area.

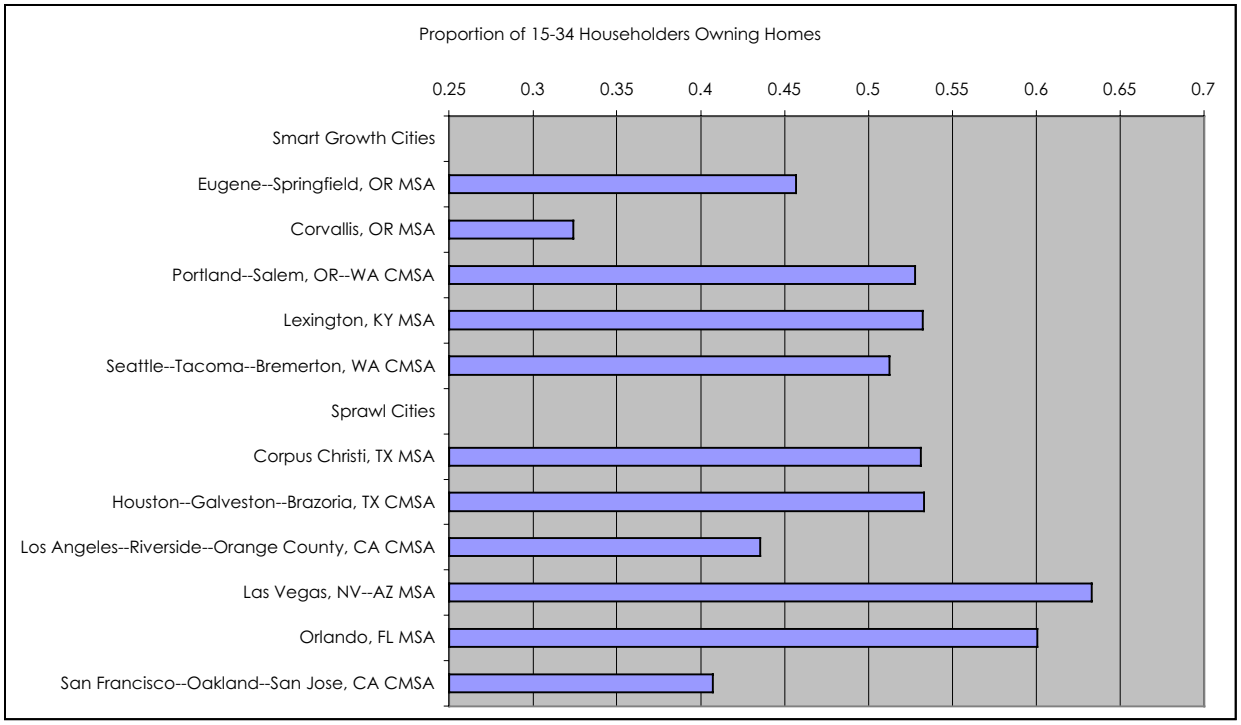
Figure 10: Non-Whites are Put at a Disadvantage by Smart Growth



Source: Quantecon, Inc., from U.S. Census data.

Key: MSA = metropolitan statistical area, CMSA = consolidated metropolitan statistical area

Figure 11: Smart Growth Policy Disadvantages Young Households' Homeownership



Source: Quantecon, Inc., from U.S. Census data.

Key: MSA = metropolitan statistical area, CMSA = consolidated metropolitan statistical area

In this regard, the data underlying Figure 9, along with data on household income, was used above to derive the statistical relationship between the site scarcity index and housing inflation. Similarly, the data underlying Figure 1 can be used to establish the effect of incremental increases in housing prices on minority and non-minority homeownership share. Specifically, using regression analysis on the data underlying Figure 1 and a log-linear formulation, it can be shown that the percent of black or Hispanic households that can afford homes declines by an amount equal to 0.34 times the log of the home price. (For non-minority households, the coefficient is 0.41.)

Using these two relationships, we can answer the following question: "What would the consequence be if smart growth supply restrictions akin to those practiced in Portland were implemented in all MSAs?" Specifically, we examine what the effect would be if all metro areas embraced policies that resulted in site scarcity indices identical to those of Portland. We measure the effect in two dimensions: (a) the total impact on the price of housing in the region and (b) the percentage of minority and non-minority households that, as a consequence, would no longer be able to own a home.

The Impact of Portlandization on Minority and Non-Minority Home Ownership

Table 4 displays the results of applying Portland-type site-scarcity levels to other metropolitan areas. That is, for each metro area, the existing site-scarcity index is increased to the Portland level. For those areas that had a

site-scarcity index that was already at or above the Portland level, no impact of "Portlandization" is assumed. To be consistent with the underlying data used to measure the effects of site supply, the effects of Portlandization are assumed to evolve over a ten-year time period. In essence, therefore, the table suggests what might have happened between 1987 and 1997 if smart growth policies had been embraced in 1987.

As Table 4 indicates, the effect of widespread Portlandization of site availability would have been dramatic. Urban home prices would have increased in the aggregate by 45 to 52 billion dollars (in 1990 dollars) each year — a total increase of half a trillion dollars over the ten-year time frame of the analysis.[19] This is tantamount to an increase in the average home price across all metro areas of about six percent, or approximately $7000 (in 1990 dollars).

The effect on home ownership of such price increases is significant. As Table 4 indicates, about two percent fewer minority households would have been able to enjoy home ownership, and slightly more than this percentage of non-minority households would have been unable to afford homeownership. In 1996, there were about 56 million families living in metro areas. Black households comprised 7.3 million of the total, and Hispanic households comprised about 6.0 million of the total. Hence, more than one million urban families, in total, would have been unable to afford their own home had smart growth policy been more widespread. About 260,000 minority households would have been affected. In some metro areas, of course, the effects might have been greater or less than this average.

The focus of our analysis has been the effects on homeownership. Homeownership, of course, is not the only way of obtaining housing services. Indeed, in the period of this analysis nearly one-half of all minority families rented, rather than owned, their own homes. However, any inflationary effect of site restrictions affects both owner-occupied as well as renter-occupied housing values. In the long run, rental prices will increase proportionately to the asset value of the rental housing. Using the data underlying Table 4, it can be shown that rental prices likely would have been 6 percent higher because of the site supply restrictions, even in the absence of general inflation.

The burden of smart growth policies will fall disproportionately on the lowest income households of every race. According to community action agencies, in 1997 7.5 million renters and 6.1 million homeowners spent more than half their income on housing or were already living in a compromised housing situation.[20] Smart growth policies would have aggravated these problems still further by eliminating homeownership opportunities or raising the housing costs of renters.

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[19] Because 2000 Census data are not available yet, the calculations are based on 1990 housing values, and thus this figure likely represents an underestimate of the effect.

[20] National Association of Community Action Agencies, Meeting the Housing Needs of People in Poverty: Findings from a National Survey of Community Action Agencies (Washington, D.C.: National Association of Community Action Agencies, 2001).

Conclusion

It is difficult to make a case for the site-supply restrictions promoted by advocates of smart growth. It is apparent both from theory and the available data that restricting the supply of development sites is bound to raise home prices, everything else being equal.

Insidiously, the burden of site-supply restrictions will fall disproportionately on poor and minority families. Families who already owned homes at the time that smart growth policies were embraced, of course, enjoy some immunity from the effects of smart growth on housing costs. But for new or young families, and families that rent their homes, the impact of higher home values and rents is a significant burden. The analysis in this report suggests that more than a million families will be adversely affected by site supply restrictions of the Portland type advanced in the name of smart growth.

Smart growth advocates argue, of course, that the amenities and efficiencies of smart growth outweigh these adverse effects on the cost of housing. From this author's viewpoint, however, these amenities and efficiencies have yet to be demonstrated. Until they are, one can only conclude that smart growth isn't particularly smart.

Table 4: The Impact of Portlandization on Homeownership

MSA Code	MSA/CMSA Name	Population, 1997 (000s)	Site Restriction Index (1997)	*Estimated Effects if Site Restrictions Had Been in Place, 1987-1997* Increase in Site Scarcity Index	Increase in Home Purchase Cost Per Year (1990$)	Percentage Point Reduction in Minority Homeownership	Percentage Point Reduction in Non-Minority Homeownership
5602	New York-Northern New Jersey-Long Island, NY-NJ-CT-PA CMSA	19876	0.21	0.58	13,836,920,312	-2.67%	-3.22%
4472	Los Angeles-Riverside-Orange County, CA CMSA	15609	0.59	0.20	3,183,384,502	-0.94%	-1.14%
1602	Chicago-Gary-Kenosha, IL-IN-WI CMSA	8642	0.43	0.36	1,646,894,475	-1.68%	-2.03%
8872	Washington-Baltimore, DC-MD-VA-WV CMSA	7207	0.36	0.43	2,218,232,421	-1.98%	-2.39%
7362	San Francisco-Oakland-San Jose, CA CMSA	6701	0.47	0.32	2,883,147,672	-1.49%	-1.80%
1122	Boston-Worcester-Lawrence, MA-NH-ME-CT CMSA	6673	0.11	0.68	3,989,228,393	-3.10%	-3.73%
6162	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD CMSA	5972	0.09	0.70	2,337,472,040	-3.18%	-3.83%
2162	Detroit-Ann Arbor-Flint, MI CMSA	5439	0.33	0.46	873,251,368	-2.11%	-2.55%
1922	Dallas-Fort Worth, TX CMSA	4683	0.78	0.01	24,941,203	-0.06%	-0.08%
3362	Houston-Galveston-Brazoria, TX CMSA	4320	1.00	-	-		
520	Atlanta, GA MSA	3627	0.59	0.20	304,902,411	-0.93%	-1.13%
7602	Seattle-Tacoma-Bremerton, WA CMSA	3368	0.53	0.26	539,661,440	-1.22%	-1.47%
1692	Cleveland-Akron, OH CMSA	2908	0.11	0.68	781,306,240	-3.11%	-3.75%
6200	Phoenix-Mesa, AZ MSA	2840	1.95	-	-		
5120	Minneapolis-St. Paul, MN-WI MSA	2792	0.39	0.40	493,856,748	-1.83%	-2.21%
7320	San Diego, CA MSA	2723	0.42	0.37	911,020,044	-1.71%	-2.06%
7040	St. Louis, MO-IL MSA	2580	0.22	0.57	561,372,146	-2.61%	-3.15%
6280	Pittsburgh, PA MSA	2361	(0.07)	0.86	682,472,466	-3.88%	-4.68%
2082	Denver-Boulder-Greeley, CO CMSA	2318	0.90	-	-		
8280	Tampa-St. Petersburg-Clearwater, FL MSA	2227	0.36	0.43	440,797,115	-1.99%	-2.40%
6442	Portland-Salem, OR-WA CMSA	2113	0.79	0.00	2,468,429	0.00%	0.00%
1642	Cincinnati-Hamilton, OH-KY-IN CMSA	1934	0.38	0.41	288,521,686	-1.88%	-2.26%
3760	Kansas City, MO-KS MSA	1709	0.46	0.33	202,345,272	-1.55%	-1.87%
6922	Sacramento-Yolo, CA CMSA	1656	0.52	0.27	313,153,690	-1.24%	-1.50%
5082	Milwaukee-Racine, WI CMSA	1637	0.15	0.64	414,970,911	-2.94%	-3.54%
5720	Norfolk-Virginia Beach-Newport News, VA-NC MSA	1545	0.38	0.41	273,397,800	-1.88%	-2.26%
3280	Hartford, CT MSA	1539	(0.10)	0.89	1,293,189,966	-3.98%	-4.80%
7240	San Antonio, TX MSA	1511	0.73	0.06	26,496,259	-0.31%	-0.37%
3480	Indianapolis, IN MSA	1503	0.51	0.28	145,317,476	-1.32%	-1.59%
4992	Miami-Fort Lauderdale, FL CMSA	1471	1.03	-	-		
5960	Orlando, FL MSA	1467	0.43	0.36	213,199,221	-1.66%	-2.00%
1840	Columbus, OH MSA	1460	0.53	0.26	145,266,242	-1.22%	-1.47%
5560	New Orleans, LA MSA	1355	0.22	0.57	309,092,321	-2.60%	-3.13%
1520	Charlotte-Gastonia-Rock Hill, NC-SC MSA	1350	0.51	0.28	138,777,027	-1.33%	-1.60%
4120	Las Vegas, NV-AZ MSA	1262	2.23	-	-		
7160	Salt Lake City-Ogden, UT MSA	1248	0.67	0.12	42,534,817	-0.55%	-0.66%
1280	Buffalo-Niagara Falls, NY MSA	1165	(0.28)	1.07	529,473,804	-4.74%	-5.71%
3120	Greensboro--Winston-Salem--High Point, NC MSA	1153	0.40	0.39	171,157,144	-1.79%	-2.16%
5360	Nashville, TN MSA	1135	0.39	0.40	178,254,736	-1.84%	-2.22%
6840	Rochester, NY MSA	1086	0.21	0.58	289,746,321	-2.67%	-3.21%
4920	Memphis, TN-AR-MS MSA	1083	0.27	0.52	186,158,415	-2.40%	-2.89%
640	Austin-San Marcos, TX MSA	1071	1.41	-	-		
6640	Raleigh-Durham-Chapel Hill, NC MSA	1050	0.68	0.11	49,694,971	-0.53%	-0.64%
3600	Jacksonville, FL MSA	1035	0.51	0.28	105,125,603	-1.33%	-1.60%
5880	Oklahoma City, OK MSA	1031	0.39	0.40	129,594,988	-1.87%	-2.25%
3000	Grand Rapids-Muskegon-Holland, MI MSA	1026	0.53	0.26	83,295,322	-1.20%	-1.45%
8960	West Palm Beach-Boca Raton, FL MSA	1019	0.85	-	-		
4520	Louisville, KY-IN MSA	993	0.22	0.57	174,892,492	-2.60%	-3.13%
2000	Dayton-Springfield, OH MSA	945	(0.09)	0.88	309,133,713	-3.95%	-4.76%
6760	Richmond-Petersburg, VA MSA	943	0.33	0.46	175,825,355	-2.12%	-2.55%
3160	Greenville-Spartanburg-Anderson, SC MSA	905	0.29	0.50	137,658,517	-2.28%	-2.75%
1000	Birmingham, AL MSA	900	0.42	0.37	110,881,707	-1.72%	-2.08%
160	Albany-Schenectady-Troy, NY MSA	876	0.10	0.69	347,456,057	-3.13%	-3.78%
3320	Honolulu, HI MSA	870	0.50	0.29	328,574,079	-1.37%	-1.65%
2840	Fresno, CA MSA	869	0.73	0.06	17,371,026	-0.26%	-0.32%
6480	Providence-Fall River-Warwick, RI-MA MSA	868	(0.46)	1.25	838,535,942	-5.47%	-6.60%
8520	Tucson, AZ MSA	780	1.26	-	-		
8560	Tulsa, OK MSA	764	0.52	0.27	68,293,974	-1.25%	-1.51%
8160	Syracuse, NY MSA	741	(0.01)	0.80	251,281,516	-3.61%	-4.35%
2320	El Paso, TX MSA	702	1.16	-	-		
5920	Omaha, NE-IA MSA	687	0.52	0.27	55,928,596	-1.24%	-1.49%
200	Albuquerque, NM MSA	675	0.35	0.44	124,632,902	-2.05%	-2.48%
3840	Knoxville, TN MSA	654	0.43	0.36	78,787,092	-1.69%	-2.04%
680	Bakersfield, CA MSA	629	0.33	0.46	106,976,193	-2.14%	-2.58%
7560	Scranton--Wilkes-Barre--Hazleton, PA MSA	622	(0.12)	0.91	208,115,780	-4.09%	-4.93%
3240	Harrisburg-Lebanon-Carlisle, PA MSA	615	0.16	0.63	160,886,438	-2.89%	-3.48%
240	Allentown-Bethlehem-Easton, PA MSA	614	0.13	0.66	215,666,461	-3.00%	-3.62%
8400	Toledo, OH MSA	612	(0.03)	0.82	169,413,101	-3.68%	-4.44%
9320	Youngstown-Warren, OH MSA	595	(0.09)	0.88	145,763,525	-3.94%	-4.75%
760	Baton Rouge, LA MSA	570	0.61	0.18	35,050,900	-0.84%	-1.01%
4400	Little Rock-North Little Rock, AR MSA	552	0.37	0.42	75,892,641	-1.95%	-2.36%
8120	Stockton-Lodi, CA MSA	543	0.58	0.21	58,788,603	-0.97%	-1.17%
7510	Sarasota-Bradenton, FL MSA	539	0.47	0.32	103,283,143	-1.50%	-1.81%
9040	Wichita, KS MSA	531	0.58	0.21	34,040,240	-0.99%	-1.19%
5160	Mobile, AL MSA	527	0.85	-	-		
4880	McAllen-Edinburg-Mission, TX MSA	511	0.76	0.03	1,662,474	-0.12%	-0.15%
1440	Charleston-North Charleston, SC MSA	510	0.03	0.76	153,703,211	-3.42%	-4.13%
1760	Columbia, SC MSA	504	0.32	0.47	84,633,469	-2.17%	-2.61%
	Total, MSAs with Population >500,000				45,813,222,560	-1.84%	-2.22%
	Total, All MSAs				52,095,117,504	-1.86%	-2.24%

Source: QuantEcon, Inc., from U.S. Census and NRI data.