

# THE CHANGING NATURE OF HOUSING MARKETS IN UPSTATE NEW YORK

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## Abstract

*The rapid rate of land development across the U.S. leads to what is commonly referred to as residential sprawl. This article reviewed issues related to rural residential sprawl and the forces behind it, including the role of home buyer preferences. A sample of 63,196 home sale transactions that occurred between 1998 and 2005 in the Rochester, New York housing market comprised the data set for a hedonic pricing analysis that included open space variables within the vectors of housing characteristics. Results from the analysis indicated that household preferences for more living space, site acreage, and proximity to open space were among the driving forces for residential sprawl in this housing market.*

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## Introduction

Between 1982 and 2001 nearly 34 million acres of forest land, cropland, pastureland, rangeland, and other undeveloped land in the U.S. were converted to developed land (Natural Resources Conservation Service, 2003). The rate of development between 1982 and 1992 was 1.4 million acres per year, a figure that increased to 2.2 million acres per year between 1992 and 2001 (Natural Resources Conservation Service, 2003). Although it lacks a precise and common definition, this rapid rate of land development leads to what is commonly referred to as residential and rural sprawl. The purpose of this study was to review issues related to sprawl and the forces behind it, as well as to investigate the role of home buyer preferences in driving sprawl in a housing market in Upstate New York.

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Lopez and Hynes (2003) reviewed studies of sprawl and reported that although some aspects of sprawl may be beneficial, the majority of researchers have cited sprawl as contributing to a wide range of urban and environmental problems. These authors created an index to measure sprawl across the U.S. and found that although geographic variations in sprawl exist, sprawl increased over the past decade.

The structural causes of sprawl have been extensively researched. To an extent, residential sprawl is influenced by market forces such as low land values, rising wealth, job growth in areas outside traditional central business districts, consumers' preferences for large lots, and lower density areas (Carrion-Flores & Irwin, 2004; Gordon & Richardson, 1997; O'Sullivan, 1996). Residential sprawl is also influenced by market failures and government policies, however, including inappropriate land use regulation (Pendall, 1999), excessive highway building (Jackson, 1985), the difficulty of reshaping older residential areas to meet changing tastes for housing (Morrow-Jones, 1998), and competition among local governments for tax revenue (Lewis, 1996; Rusk, 1999). These structural attributes have influences at the metropolitan level, but at the town and village levels the precise causes of sprawl—or more neutrally, land use change—are harder to identify.

### **Sprawl in New York State**

Rural sprawl in New York State has been growing, as it has in many other states. Between 1982 and 1997 Upstate New York's population grew by less than 3%, but its urbanized land area expanded by 30% (Pendall, 2003). Rapid land development in rural areas throughout the U.S. has continued since 1997 according to recent U.S. Department of Agriculture estimates, and there is little reason to suspect that Upstate New York is any exception to this rule (U.S. Department of Agriculture, 2003). Another important indicator of the extent of rural sprawl in Upstate, as evidenced by the change in population distribution, is that the 2000 Census showed that most of Upstate New York's cities and villages lost population in the 1990s while areas outside city or village limits grew significantly. An indication of this is that 26,000 acres of farmland in New York are lost to development every year (American Farmland Trust, 2007).

Sprawl has many impacts at both local and regional levels. Sprawl has been shown fairly consistently to degrade wildlife habitat, threaten agricultural productivity, and raise the cost of public services (Alberti, 1999; Ewing, 1997). The thinning of cities and villages also degrades civic capacity by reducing the pool of potential citizen leaders, straining local budgets as tax revenues stagnate or decline, and reducing the livability of Upstate's traditional population centers.

These adverse effects have generated significant interest among citizens and decision makers at all levels of government in New York (Quality Communities Interagency Task Force, 2001). While decision makers at the state level have not resolved the debate over whether and how to change the "rules of the game," local municipalities still face development pressure and must respond. Increasingly,

town and village boards must approach growth decisions with information about loss of open spaces and farmland, impacts on the quality of life, and the range of economic issues associated with development.

Widespread adoption of sound land use policies requires a better understanding of the causes of the current pattern of rural sprawl. Rural sprawl has many complex causes, but in general these causes can be divided into three groups. First, there are drivers of rural land use change that state or local policy cannot change. Second, there are drivers of land use change that can be affected and addressed by state policies and laws but not by local policy. Third, still other determinants of land use change can be affected and addressed best—and perhaps solely—at the local level.

### ***Inevitable Causes of Sprawl***

Many of the factors that encourage sprawl are very difficult for municipalities to influence; they must simply anticipate them and respond as well as they can. First, residential sprawl is primarily driven by households seeking a bundle of housing services including the house itself, its lot, its neighborhood, schools, and the community in which it is located. The role of households in land settlement patterns has been copiously studied in research by Brown, Fuguitt, Heaton, and Waseem (1997), Clark and Dieleman (1996), Fuguitt and Brown (1990), Lee (1998), and Morrow-Jones (1998). Households look for housing when they become dissatisfied with their current residences. This dissatisfaction has many causes—children become young adults and wish to form their own households, people marry and form one household from two, and people age and move to facilities better equipped for seniors (Clark & Dieleman, 1996). Household satisfaction also relates to the package of amenities and public services they will enjoy as a function of their house's location. They will pay more for homes in areas with environmental amenities and locations based on the quality of local public services, especially school districts (Jud & Bennett, 1986). If high quality amenities and public services are either too costly or unattainable in settled areas, households will look for them elsewhere.

Demand by households for new and different housing is an important structural cause of rural sprawl in Upstate New York. The number of households in Upstate is increasing faster than the very slow rate of population growth because average household size is decreasing (U.S. Census Bureau, 1980, 1990, 2000). Furthermore, households in Upstate are earning higher incomes than ever before, especially the top 20% of earners, a trend that will probably continue in the future. Upstate's population is also aging, with baby boomers currently aged 45 to 60 making up a very large component of the population. Many of these people live in families that have accumulated significant wealth in the form of home equity. As households' income and wealth grow, citizens are better able to consume housing based on their tastes and preferences for the residential amenities they wish to enjoy and to avoid the locational disamenities. In recent years, households in

Upstate have purchased their most desirable residential “packages” in suburban and rural locations. It is unclear, however, whether they prefer these packages because of their locations or because their preferred houses, lots, neighborhoods, and communities can only be found in rural or suburban areas.

Families and households are making choices about where to live within the context of a dramatically changing Upstate economy (Pendall, Drennan, & Christopherson, 2004). Manufacturing has declined in economic importance with a shift toward service-sector, financial, and technology-related employment. The economic transition has led to a great demand for new kinds of space for workplaces, which is currently met on greenfield sites rather than through expensive redevelopment of manufacturing facilities. As these fringe locations add employment, residential development can—and does—extend its range much farther into rural areas. Furthermore, Upstate’s farm economy has been depressed. Farms have been consolidated and in some cases expanded, but the total amount of farmland is declining. Slack demand for farmland from both farmers and would-be urban users reduces prices, enhancing the incentive for urban and suburban users to consume more land.

Rural growth has also been facilitated by Upstate’s widely dispersed pattern of rural roads, which reduce the cost of needed new infrastructure and increase the incentive for development in strips. In addition, septic systems and wells are inexpensive to install, increasing the pressure for lower density development, especially since federal and state support for investment in urban infrastructure has all but disappeared.

### ***Policies and Laws that Encourage Sprawl***

Fundamental economic, demographic, and geographic forces are important in driving sprawl, but public policies can translate these forces into urbanization in larger or smaller amounts and in patterns that are more or less harmful. State policy plays an important role in exacerbating or dampening rural sprawl. Areas whose local governments rely primarily on property taxes—as does New York—have more sprawl than areas whose local governments use fees and charges (Carruthers & Ulfarsson, 2003; Fischel, 2001; Pendall, 1999). Furthermore, metropolitan areas with a multiplicity of local governments sprawl more than those with a small number of local governments, in part because large differences among local tax rates can sway location decisions by some households and businesses. State policy governs the fiscal rules, as well as rules and laws on local government and special district structure. A change in these rules could produce a change in rural sprawl.

Local policies can also exacerbate or reduce rural sprawl. Municipalities that practice exclusive large-lot zoning are especially culpable in the process of sprawl. Most of the developers who are “zoned out” of these communities do not shift their search for sites back into villages or cities; instead, they search farther out. But too little, and weak, regulation can also be an incentive for sprawl. Jurisdictions that fail to identify and mitigate the impacts of new growth on infrastructure will

eventually be forced to raise taxes on all property owners if they do not wish to suffer from congested facilities. Those that allow development to degrade the environment are likely to suffer declining property values, and thus less robust property tax bases, again requiring higher tax rates to provide needed services.

Congested, environmentally degraded towns are also much less attractive areas for new development, agents of which will look for unspoiled, low-tax, less congested locations. In addition, local governments (including counties) make decisions about how to spend limited public funds. They can use those funds in ways that encourage and accommodate reuse and expansion of established settled areas, but they can also use them to facilitate and subsidize rural sprawl. This issue was examined by Ferguson, Hanrahan, Huberman, Ryther, Tarbell, Taylor, & Toohey (2004), who cited the following as contributing factors to residential sprawl: local government use of federal and state road subsidies, corporate subsidies in the form of tax incentives, construction of new suburban schools as conditions in existing schools deteriorate, expansion of police and fire services to outlying areas, and the extension of water and sewer lines.

Upstate New York is among the slowest growing regions of the nation. In the 1990s its population increased only 1.1% and Census Bureau estimates from 2000-2005 suggested that slow growth has continued in the past five years. Population growth has been flat west of the Hudson Valley and south of the rural North Country, except in Western New York, which lost over 25,000 residents in the early 2000s. The north-south axis along the Hudson River has prospered relative to the rest of Upstate because of its specialization in information-intensive activities and because of the continuing extension of metropolitan New York City. As a consequence, many of the most intense battles over growth occur in this area.

In spite of Western New York's population loss, the extent of rural sprawl in the region is as prevalent as it is in other parts of the U.S. An important indicator of the extent of rural sprawl in Upstate is evidenced by the change in population distribution. The 2000 Census showed that most of Upstate New York's cities and villages lost population in the 1990s, while areas outside city or village limits grew significantly (U.S. Census Bureau, 1980, 1990, 2000).

One factor that contributes to development in this manner is a consumer preference for homes near open space. Irwin (2002) described this by citing often-quoted benefits of open space such as wildlife habitat, biodiversity, and scenic views, but suggested that open space is valued for what it is not; namely, developed land. In her study she observed that open space within 400 meters of a house has a significant and positive impact on house price and that conservation easements and public ownership of open land have similar impacts. Similarly, Ready and Abdalla (2005) found that open space, including agricultural open space within 400 meters of a house, has a positive impact on house price. These authors also found that open spaces used for animal and mushroom production had negative

impacts on house price. McConnell and Walls (2005) reviewed 40 studies on the value of open space undertaken between 1967 and 2003. They observed broad fluctuation on open space values that depended on size and uses of these spaces, proximity to residential land uses, and methodological methods. Some specific findings they reported were that wetlands have higher values in urban locations than in rural areas and that urban growth boundaries have values that change over time. These authors cited difficulties policymakers have in open space preservation issues and recommended further research on its valuation.

### **Analytical Framework**

To examine if revealed home buyer preferences comprise a factor that is driving sprawl in Upstate New York, the hedonic price index is used in the commute shed of the Rochester housing market. The hedonic price index is an application of multiple regression analysis that calculates implicit prices of bundled goods. The work of Rosen (1974) is often cited in hedonic studies for his characterization of a single-family home as a bundle of attributes that include physical characteristics of the home, neighborhood characteristics, and locational characteristics. By controlling for the effects of these variables in a regression, implicit prices of other characteristics can be observed. The present analysis follows this approach.

Parcel and structural characteristics were obtained from the State Office of Real Property Services' data set for the Rochester area. Census tract data were used to capture neighborhood characteristics, and data on school quality at the elementary school level captures locational effects. The study focused on lots with sizes between 0.1 and 5 acres and on houses with 600 or more square feet of living area, to ensure that the sample is composed only of residential single-family housing. The final study area is composed of residential transactions in all townships in which at least 5% of the population commutes to Rochester for employment. Overall, data from 63,196 transactions that occurred between 1998 and 2005 are evaluated.

### **Results**

A hedonic price index was constructed to identify revealed preferences for physical, neighborhood, and locational housing characteristics. The index includes two open space variables: waterfront property and proximity to a public park or forested open space. Table 1 shows hedonic regression results for selected variables. Those included in the regression, but omitted from the table, include month of sale, heating system type, exterior wall finish, and others. In Table 1, the unstandardized coefficients ( $B$ ) measure the predicted change in the natural log of home price for a one unit change in the variable. The standardized coefficients (Beta) are calculated by performing the same regression on observations that are standardized by removing the sample means and dividing by the sample standard deviation. This allows us to compare directly the relative influence of each variable on home price.

**Table 1. Regression Results**

Coefficients	Unstandardized Coefficients		Standardized Coefficients		Significance
	B	Std. Error	Beta	t	
Constant	9.704	0.154		63.128	0.000
<b>Physical Variables</b>					
Square feet of finished living area	0.000	0.000	0.557	48.505	0.000
Number of bathrooms	0.125	0.005	0.172	23.080	0.000
Number of bedrooms	0.067	0.008	0.103	8.848	0.000
Site acreage	0.145	0.005	0.207	27.901	0.000
First story square feet, finished and unfinished	0.000	0.000	0.103	19.393	0.000
Number of stories (includes fractions of stories)	-0.327	0.034	-0.323	-9.658	0.000
Private water	-0.044	0.030	-0.022	-1.490	0.136
Commercial public water (No water is reference)	0.032	0.029	0.016	1.096	0.273
Private sewer	0.015	0.016	0.012	0.947	0.344
Commercial public sewer (No sewer is reference)	0.060	0.016	0.050	3.810	0.000
Building raised ranch style	-0.118	0.006	-0.050	-18.493	0.000
Building split level style	-0.038	0.005	-0.023	-7.717	0.000
Building cape cod style	-0.003	0.006	-0.002	-0.477	0.634
Building colonial style	0.077	0.006	0.070	12.084	0.000
Building contemporary style	0.108	0.007	0.048	14.482	0.000
Building mansion style	0.382	0.054	0.016	7.081	0.000
Building old style	0.022	0.007	0.017	3.270	0.001
Building cottage style	-0.094	0.014	-0.015	-6.616	0.000
Building row style	-0.200	0.123	-0.003	-1.618	0.106
Building log cabin style	0.115	0.024	0.010	4.819	0.000
Building duplex style	-0.094	0.093	-0.002	-1.007	0.314
Building bungalow style	-0.122	0.013	-0.020	-9.251	0.000
Building other style	-0.116	0.020	-0.012	-5.653	0.000
Building town house style (Building ranch style is reference)	0.003	0.007	0.002	0.502	0.615
<b>Neighborhood Variables</b>					
Percent vacant housing	0.144	0.024	0.017	6.084	0.000
Percent rental housing	-0.042	0.007	-0.015	-6.452	0.000
Percent white population	0.230	0.017	0.031	13.200	0.000
<b>Locational Variables</b>					
Combined municipal and school tax rate	-0.010	0.000	-0.090	-32.030	0.000
Elementary pupil teacher ratio (2003)	0.007	0.001	0.027	11.363	0.000
Elementary school performance index	0.005	0.000	0.082	35.519	0.000
Distance to center of Rochester	0.000	0.000	-0.124	-38.847	0.000
<b>Open Space Variables</b>					
Waterfront (yes/no)	0.613	0.008	0.192	78.615	0.000
Public park or forested open space within 400 meters	0.022	0.004	0.014	6.154	0.000

Dependent Variable: Natural Log of Sale Price  
Adjusted R-square = .731

Physical variables in the regression have expected coefficient signs. Large and significantly positive impacts are observed for site acreage and square feet of living space. A significant and negative effect is seen for number of stories, which may be indicative of preferences of an aging population. While no significance is attached to water source, public sewer does have a positive and significant impact, which likely reflects the fact that all else being equal, home buyers prefer a home with access to public sewer systems over reliance on septic. As expected, the neighborhood variable measuring the percentage of rental homes is significantly negative and the variable measuring the percent of population that is white is significantly positive. The variable measuring the percentage of vacant homes is unexpectedly positive, but this may be a result of proximity to seasonal-use homes, which are considered vacant by the Census. As expected, locational vector variables show significant and negative impacts on higher property taxes and significant and positive impacts from better school quality.

Interestingly, house values decrease as distance to Rochester increases. This could be interpreted as indicating that home buyers want larger lots than are available in the city, but at the same time do not want any longer commute time than is necessary to attain this. The two open space variables have expected coefficient signs and are significant, especially homes on waterfront property.

### **Discussion and Conclusion**

Results from this analysis indicate that household preferences for more living space, site acreage, and proximity to open space are driving forces for residential sprawl in this housing market. Local governments in rural areas of New York are facing issues relating to loss of wildlife habitat and open space, an increasing cost of public services, and impacts on quality of life. As communities expand, local and regional governments must take on the staggering costs of highway development, which in turn results in a decrease in resources allotted for public transportation. To illustrate this, in Erie County, New York between 2002 and 2006, almost \$6 was spent on roads for every \$1 spent on public transit (Taylor, 2006). To further illustrate the scope of these expenses, in 2002 the estimated cost to construct a new single lane roadway was \$4 million per mile. Additionally, each existing mile of highway cost \$4,800 a year to maintain (National Wildlife Foundation, cited in Taylor, 2006). Sprawl leads to longer travel distances, more frequent trips, and less access to public transportation, which all contribute to poorer air quality and an increased output of greenhouse gases.

In addition, essential services such as schools, police stations, and fire departments are less able to take advantage of economies of scale as sprawl trends continue. As density decreases, these services become less centralized, less efficient, and more spread out. Research around Buffalo, New York found that sprawl causes shifting demand. This sometimes forces facilities, in particular

schools in developed areas, to close as money is poured into new construction in sprawling areas (Taylor, 2006).

Town and village boards must approach growth decisions with information about these issues and respond accordingly. Cluster development is one example of a land use tool available to local governments for lessening sprawl's negative impacts. Governments can also control the expansion of infrastructure, such as sewer systems, to limit outward expansion and encourage growth in areas with existing utilities. Besides limiting sprawl, this type of policy can potentially save taxpayers money. For example, a study that looked at projected sewer costs in New Jersey found that the state could save \$1.26 billion in sewer costs over a 20 year span by enacting a policy that encourages growth in areas with existing infrastructure (Burchell & Dolphin, 2000). Fundamental economic forces are important in driving sprawl, but public policies can translate these forces into patterns of development that are less harmful to communities and the environment.

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