The Varied Impact of Greenways on Residential Property Values in a Metropolitan, Micropolitan, and Rural Area: The Case of the Catawba Regional Trail

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Abstract: This paper presents hedonic analyses designed to estimate the real estate premium from improved access to a regional greenway system in three distinct counties. The hypothesis is tested that unobservable factors relating to the overall economic structure of each county influence how and to what extent access to open space is effectively capitalized into residential sales prices.

Introduction

Policy makers and planners have begun to pay increasing attention to the issue of environmental amenities such as greenways and their impact on the economic vitality of a given region. Because residential property values translate directly into the tax revenue of a particular region, any plan or development that can be directly capitalized into those tax values can be of great benefit. In addition, there can be significant secondary impacts to greenway development: it could potentially increase tourism to the region, bringing in local and regional visitors to enjoy its recreational amenities. A greenway can contribute to a larger appeal of an urban area, attracting business and commerce, new residents and the like. Lastly, greenways can have significant environmental benefits by improving air quality and reducing run-off and erosion proximate to the trail.

The immediate determinants of residential land values include fall in three general categories: 1) structural characteristics of the property, such as number of bedrooms, square footage, and age of the structure; 2) locational attributes such as commuting distance , proximity to undesirable land uses, proximity to environmental amenities such as open space, and topography of the land; and 3) neighborhood effects such as the tax jurisdiction or school district in which a property falls. The influence of the third set of variables is not static; the market value of a property is influenced and constrained by broader economic conditions at the regional level. However, a model of residential sales by parcel that includes feedback from higher levels of the system would be exceedingly difficult to identify or perhaps even analytically intractable. Instead, we make use of so-

called "natural experiments," (Diamond 2001) where there are sufficient discontinuities in crucial factors, such as policy, across space and/or time. In this manner, we account for the broader impact of policy (i.e., the development of open space) and the underlying economic structure of each localized market, yet consider more localized variation in the underlying land-use incentives.

The purpose of this paper is threefold: 1) we consider qualitative issues about the economic structure of each of these counties that influence and shape land market activity; 2) we estimate the effect of the new Catawba Regional Trail (CRT) on property values in three counties; and 3) we test explicitly whether open space has different impacts in the each county. Particularly because interregional cooperation is paramount to the ultimate success of this trail system, it is important to understand how the effects of the trail will vary over space.

The CRT will eventually run through six counties in North and South Carolina in the Central Piedmont region. This study considers two counties in North Carolina, Mecklenburg and Gaston, and one in South Carolina, York. Mecklenburg County contains Charlotte, the largest city in the Carolinas, with a vibrant service-oriented economy centered around the banking industry. Gaston County is just to the west of Mecklenburg, so it contains some limited suburban spillover from Charlotte, and also possesses the greatest natural amenities in the immediate region. The trail runs around its largest city, Gastonia. In York County, South Carolina, the trail circles and extends out from Rock Hill. Construction and management of this trail has been a very interesting process, as it has involved extensive regional cooperation among counties and between

states, yet all parties involved have expressed a great desire for the anticipated pecuniary benefits to be realized from the trail.

While there is a growing body of literature that suggests that the value of open space will be, ceteris paribus, capitalized into residential sales values (Acharya and Bennett 2001, Geoghegan et al. 2003, Irwin 2002), some studies have not found clear empirical support for such capitalization (Smith et al. 2002, Nickerson and Lynch 2001). Because the determinants of residential sales prices are so complex, it is important to control for as many mediating factors as possible in estimating the impact of environmental amenities.

The study area represents a unique opportunity to monitor the long-term benefits of permanent, public open space in starkly differing settings: a highly urban (Mecklenburg County), rural-residential (Gaston County) and a micropolitan (York County) setting, thus providing new insights about the factors that shape and mediate the ultimate effect of the trail. The next section considers relevant literature on open space and property values. Then, we discuss overall characteristics of each of the counties. Hedonic models are estimated for each county, and pooled for all counties to test for structural stability in the estimated open space parameter.

Valuing Open Space

Several studies have employed the hedonic approach to specifically investigate the impact of open space on property values (e.g. Bockstael and Bell, 1998; Garrod and Willis, 1992; Geoghegan, Wainger, and Bockstael, 1997). These papers all estimate the effect, in terms of a real estate premium, of proximate natural areas on housing prices.

The results suggest that, all else equal, proximity to open space adds to the sales price of a house (Irwin 2002). Residential sales price is considered to the best available measure of the true "market value" of a property. The general approach has been to estimate the influence of open space, but little attention (with a few notable exceptions) has been given to addressing explicitly why the effect of open space may differ in different regions.

There are several issues discussed within the literature regarding the impacts of open space on residential land values. Increasingly, studies make use of new GIS technology and associated spatial modeling techniques to investigate the spatial structural of these spillover effects. It is of great usefulness to quantify over what range open space can have an effect on property values. A second issue relates to the type of open space. Empirically, differential impacts of public vs. private open space have been noted. Furtherthe credibility of long-term preservation is also important. There is also a time lag in the process of this capitalization; the positive spillover of an environmental externality into real estate values does not happen immediately, but may take up to several years for a new equilibrium (Riddel 2001). Lastly, it has also been suggested that characteristics of the local land market matter; i.e., two regions with a similar greenway may experience different results in terms of how much of the environmental amenities associated with that greenway can be effectively capitalized into land values. The reasons for these differences can include the relative density of each urban area within localized developments (i.e., high vs. low density residential areas [Irwin 2002]), or the location of the greenway within the city (Wu and Plantinga 2003).

There are myriad types of open space that can constitute an environmental amenity and have a spillover effect on land values. However, there is not necessarily uniformity in these effects. As mentioned above, there is some discussion in the literature about the difference between private and public open space. Public open space may have a positive benefit, but there can also be disamenities or negative effects from public land. For example, public open space may be perceived as "noisy" by residents immediately proximate to the greenway if the greenway is used by many people outside the immediate neighborhoods through which it runs (Geoghegan et al 2003, Irwin 2002). Also, a public greenway could potentially increase crime in the immediate area by giving access in and out of neighborhood. Some studies report differing results for private vs. public open space (Irwin 2002), or note that public open space behaves significantly different from private open space (Smith et al. 2003), but it is difficult to identify and control fully for the exact characteristics of additional disamenities associated with public space that may have influenced these estimates, and this issue is probably best studied on a case-by-case basis within one land market.

Another issue that has been discussed in the literature is the perceived permanence of open space. Certain programs like conservation easements or farmland preservation programs have observed to have mixed success in terms of capitalization into housing values (Nickerson and Lynch 2001). One clear reason for this mixed result is simply that in the face of extreme development pressure, residents may doubt the long-term credibility of these preservation programs. Therefore, preserved open space in areas that are seen as "permanently undevelopable" is much more likely to have a strong effect

on market land values. For maximum capitalization of environmental amenities into land values, open space must be seen as permanent (Irwin 2002).

The benefits of greenways have a distinct spatial structure, which is often underestimated due to the difficulty in quantifying these effects. There is an overall benefit to the general public living within a region in that more recreational/leisure opportunities will be available, improving the overall quality of life. In addition, the landowners who live proximate to the greenway will receive direct benefits (Geoghegan et al. 2003). Other aspects relating to the location of greenways also matter; beyond their absolute location in space, their location relative to other land uses has proven to be important. Smith et al. (2002) did not find any significant benefit associated with the greenway in the Raleigh-Durham area, and indicated that proximity to the interstate may offset any positive effect the greenway might have. In a pure simulation of land rents via a Alonso bid-rent model, Wu and Plantinga (2003) found that the closer the open space is to a CBD, the higher the overall benefits on land values.

One significant question in the literature has been the time necessary for the real estate market to incorporate the full benefit of open space into housing prices. Therefore, estimated price effects of the amenity may change over time, and a researcher may want to wait a significant amount of time before attempting to measure this benefit. However, land markets are constantly changing: the urban region expands due to new development, labor markets change, and while overall land values rise, local depreciation also occurs. These myriad effects become difficult to identify separately over time. A study by Riddel (2001) postulated that four years was a sufficiently long period of time to expect

to see the full impact of capitalization of environmental amenities into residential property values.

Thus, the literature provides useful examples of how best to measure the impact of the greenway, but given the complexities of land markets and the sheer number of location-specific factors that influence residential sales prices, these studies by large can only point to qualitative conclusions. The hedonic approach is by nature data-driven, and therefore the ability of a particular study to inform researchers and policy makers on the ultimate value of greenways depends strongly on the patterns, if any, within the particular case study.

The Study Area

The study consists of ribbons of real estate that meander through three counties -- Gaston and Mecklenburg Counties, North Carolina and York County, South Carolina -- of the seven county Charlotte MSA (Figure 1). Totaling 65 miles in length, the planned Catawba Regional Trail is a testament to interjurisdicational cooperation as the trail winds through three counties, at least four municipalities and two states. Along its route, the trail passes through both neighborhoods of high and low income, homogenous and diverse populations in both built-up and undeveloped areas. Developing the trail is seen not only as a way to provide an amenity for those who live nearby, but also as a way to preserve land and open space in an otherwise rapidly growing area that epitomizes the New South of the sunbelt.

Over the past thirty years, the Charlotte MSA has experienced rapid population growth coupled with structural economic change. While textile production and

distribution activities have historically defined its economic base, the region has undergone significant structural change since the mid-1980s. However, shifts in the composition of the region's economy have been uneven both temporally and spatially. For example, Mecklenburg County, the region's core, has been transformed from a light manufacturing/ distribution economy to the second largest financial center in the US, while the local economy of Gaston County, once the center of American textile production, struggles in the face of plant closings. Although textile employment in Gaston County peaked in 1974, it still contains a sizable textile industry (employment LQ=23.46 in 2000). Its attempts to diversify, especially into transportation equipment, have been met by a spate of recent plant closings. The fortunes of York County fall somewhere in between as it too has lost much of its prominent textile employment, though workers increasingly commute to employment in the financial- and service-sector rich Mecklenburg County immediately to its north.

These counties, to varying degrees, have shared in the region's robust growth over recent decades. The region has grown rapidly over the past thirty years, nearly doubling in population since 1970, as new industries and migrants relocate to the area. Mild climate, low rates of unionization, inexpensive power, and relatively low corporate income rates are characteristics of many sunbelt regions that grew rapidly in the 1990s (Glaeser and Shapiro, 2003) which helps explain the region's success in attracting new firms and those relocating from other parts of the country and other regions of the world. Indeed, by the late 1990s North Carolina ranked third nationally (behind Hawaii and South Carolina) in the proportion of its labor force working in foreign-owned firms;

within the state, the Charlotte metro area contained the disproportionate share of them (Campbell and Stuart, 1998).

Though some jurisdictions experienced more growth than others, the dynamics of housing and land markets can be largely traced to population change driven by the region's robust employment growth. While MSA population as whole grew by 29 percent during the 1990s, growth was somewhat uneven among the study area counties as shown in Table 1. While still very much a monocentric region, much of recent population growth has occurred in the region's core of Mecklenburg County. Approximately two-thirds of the county's 36 percent growth since 1990 was due to net in-migration. At the other extreme, the population of neighboring Gaston County increased only 8 percent, the lowest growth rate among all counties in the MSA. In fact, Gaston County is a somewhat curious case in that all other counties surrounding the core grew at double-digit rates as job holders in Mecklenburg increasingly made their residential location choices in neighboring counties that provide lower property tax rates while providing reasonable commutes to, and near, the CDB. This was especially true for neighboring counties with Interstate highways or other major thoroughfares. Although linked by an Interstate and neighboring a rapidly growing employment center, Gaston County population grew by less than 1 percent per year during the 1990s.

Patterns of population change and underlying structural change in the region's economy are reflected in local income (Table 2). For example, growth of producer services and the relatively high wage financial sectors have raised per capita and median household income in Mecklenburg well above the national average and helped lower local poverty rates. Similarly, though to a lesser extent, incomes in York County now

approximate the national average. Lower-than-average income levels in Gaston County are related to its lackluster population growth as few employment opportunities and a generally depressed local economy discourage net in-migration. It should also be noted that there is substantial variation, both economically and demographically, *within* each of these jurisdictions. High rates of poverty and dependence on transfer payments characterize many census tracts in Mecklenburg (especially to the North and West of the CBD) while the local captains of industry occupy pockets of affluence in both Gaston and York Counties.

To the extent that land markets and housing values are related to income and marginal changes in new housing respond to both population and upper levels of income, it comes as no surprise that median house values are higher in higher income areas (Mecklenburg) and lower in more depressed areas (Gaston). Table 3 presents median home values for the counties of the study area while Table 4 reveals the distribution of home values among various price ranges. In Table 3, it is clear that median values of owner-occupied homes closely parallel per capita income levels. For example, York per capita income is 95 percent of the national average, and median home value is 94 percent of the average ($111,800). Similar relationships exists in the other two counties. If new construction tends to operate at the higher ends of the housing value spectrum, relying on a filtering process to supply housing at the lower ends, distribution of house values it is also worth noting (Table 4). In Mecklenburg, for example, where incomes are generally higher, more than 24 percent of the housing stock is valued at $200,000 or more; in York and Gaston, comparable values are 15 and 6 percent, respectively. Consequently, nearly

two-thirds of the Gaston County housing stock, and almost half of York's, is valued at less than $100,000.

This broad profile of the housing market has implications for our expectations of the impact of open space on land values generally, and the Catawba Regional Trail greenway specifically. To the extent that households value access to open space and recreational opportunities, we should expect that a land value premium should be associated with proximity to the Catawba Regional Trail. Further, to the extent that housing development is disproportionately concentrated in at the higher ends of the housing spectrum, and higher income households can more readily afford the premium, we should also expect that amenity capitalization, even if it is a small percentage of total value, will have larger aggregate impacts in faster growing, wealthier jurisdictions. The extent to which these observations bear out in the current study depends, of course on the extent to which county aggregates reflect the underlying demographics and market characteristics of the neighborhoods though which the trail passes.

Methodology

The hedonic pricing function posits price as a function of the quantities of a good's attributes (Can 1990). Through the interactions of myriad buyers and sellers in the market, sales prices should reflect the point of equilibrium. We specify the hedonic residential pricing model as:

$$P_i = f(H_i, L_{i,}; \beta, \delta), \qquad (1)$$

where P_i is the residential sales price of the i^{th} property, H_i is a vector of structural characteristics associated with the house, L_i is a vector of locational variables, and β and

δ are the respective parameter vectors to be estimated. The functional form of the above relationship may not be linear; thus, careful consideration must be given to specification testing (Can 1992). A log-log transformation conforms well to economic theory, in that estimated β coefficients then represent the elasticity of sales price with regard to that factor. The impact of the greenway on parcel value is subject to distance decay; that is, parcels closer to the greenway will, everything else equal, have a higher sales value. Separate estimates are provided for each subregion, and tests are conducted to determine whether these values are significantly different.

Parcel data were obtained for each county from the tax assessor's database and associated GIS coverage. To reduce overall spatial autocorrelation, a stratified, spatial sample was drawn so that roughly 10% of all available single-family residential parcels that were sold between 2000-2003 were included in the estimation. Structural characteristics for the parcel (bedrooms, bathrooms, sq footage) were not available for York County at the time of this study. Slope and elevation were derived for each parcel, but because of extreme multicollinearity issues, they were dropped from the analysis[1]. Sadly, one of the largest determinants of land values in the region is the percent African-American population, measured at the block group level; generally, the higher the concentration of African-Americans, the lower the sales price[2]. Income at the block group level was also included. For Mecklenburg, home school area has a huge influence on property values, in that houses in a school area perceived to be superior command a large premium, whereas houses in a perceived inferior school area are much cheaper, all

[1] As indicated in the discussion, a next step would be to include these variables as instruments to proxy endogenous heterogeneous land quality.
[2] We did have a crime variable for Mecklenburg County, which may be a better representation than what % African-American captures, but this variable was not available for the other two counties.

things equal. Because Gaston is the most rural county, distance to Gastonia, the county seat, was included. For Mecklenburg, there are multiple modes of employment, and these accessibility effects were dwarfed by the school area effect. For all counties, Euclidean distance to the Catawba Regional Trail was calculated. The trail system is still under construction in York and Gaston counties, though portions of the Gaston county system have been completed. Therefore, the accessibility to all types of public open space was used for comparisons across counties, in case the time needed for full capitalization of the greenway's amenity benefit was insufficient. A log transformation was used for all continuous variables.

All models were estimated in GeoDa 0.95 (Anselin et al. 2002) and OLS residuals were tested extensively for spatial effects. Both models required a spatial error correction, indicating there was significant spatial autocorrelation in the unexplained variation in sales price. For both Mecklenburg and Gaston counties, a spatial error correction was warranted, so the final functional form was as follows:

$$Log(P_i) = \beta\, log(H_i) + \delta\, log(L_i) + \varepsilon W\lambda + \varepsilon, \qquad (2)$$

where $\varepsilon W\lambda + \varepsilon$ represents a spatially autoregressive process in the unmodeled or unexplained variation in the model. The interpretation of this process is that unmeasured effects that influence the equilibrium sales price of a parcel are correlated in space, which is likely in hedonic analyses (Anselin 2002), and without explicitly correcting for the underlying spatial process, standard errors of the coefficients are biased and hypothesis tests are flawed.

Results

The results for the analyses in Mecklenburg and Gaston counties are provided in Table 5. Overall, both models fit well, though the specification for Mecklenburg County accounted for more variation in sales price. All variables had the expected sign, except age of the structure, which indicated that older houses commanded a higher sales price. This finding may be picking up some of the gentrification patterns, in that current "trendy" neighborhoods tend to be the older neighborhoods, or multicollinearity affected the identification of this variable's true effect.

In both counties, the assessed value was the strongest determinant of sales prices. The second most important factor in magnitude for Mecklenburg County was percent African-American, which had a significantly negative impact on sales prices. This coefficient was also negative, but insignificant in Gaston. In Gaston, the number of bedrooms was the second highest coefficient. As to be expected, the dummies for home school area in Mecklenburg County were significant in all but one case, with East and South Charlotte, respectively, having the least attractive and most attractive schools. Proximity to greenways had a significantly positive impact (i.e., as distance to the greenway increases, sales price decreases) in both counties, though the magnitude in Gaston County was more than three times that in Charlotte.

To test whether the impact of open space was significantly different in the different counties, pooled models were estimated, with dummy variables to provide signals whether structural differences existed across regions. Specifically, the following model was tested:

$$P=a+br+cx+dr*x, \qquad (3)$$

where P is the sales price, a is the intercept across all observations, b represents a coefficient on the regional dummy variable r, c is the coefficient on the independent variable x, and dr*x is the interaction coefficient for variable x in region r. So, for example, to test whether there are overall differnces across regions, we test the null hypothesis that the coefficient on the region-specific dummy variable (b) is equal to 0. To test whether the impact of an explanatory variable (e.g., access to open space) has a different slope in the different regions, we test the null hypothesis that the coefficient on the region-open space interaction term (d) is equal to zero. First, Mecklenburg County and Gaston County data were pooled, and a dummy variable to represent Gaston County and the Gaston-distance to park interaction was included. Then, all available data for all three counties was pooled. Unfortunately, the lack of parcel characteristics for York County meant that only assessed value and distance to open space was available for each parcel, but income at the block group level was included, as an attempt to capture neighborhood effects (i.e., neighborhoods with higher income levels tend to have nicer houses).

Tables 6 and 7 present the results of these analyses. For Mecklenburg vs. Gaston, the regional dummy on Gaston was not significant, indicating there is no measurable average structural difference between Gaston and Mecklenburg, as defined by these data. However, the Gaston/park interaction coefficient was significant, indicating that the impact of access to open space was stronger and more positive. In other words, across both counties, a 1% increase in proximity to a park increases the sales price by 0.0094%, but a parcel in Gaston receives and additional premium of 0.08%, which is roughly 8.5 times greater an effect. When all three counties were pooled, with fewer explanatory

variables, there were no longer any significant differences across Gaston and Mecklenburg, nor was there a discernible average difference between York and the other two, except in the York/park interaction term. Thus, across all three counties a 1% increase in proximity to a park increases the sales price by 0.0184%, but York commands an additional premium of 0.05%.

Discussion

Generally, the hedonic results followed theoretical and a priori expectations. Comparing Gaston to Mecklenburg, Gaston commanded a much higher premium for proximate open space. Comparing Gaston, Mecklenburg and York, York commanded a significantly higher premium than the other two counties. Thus, this analysis indicates that though open space provides a significant benefit across the region, it is qualitatively strongest in the micropolitan region, and lowest in the metropolitan region, with the rural region falling in between.

The Endogeneity of Land Development

Irwin (2002) has discussed the need to control for endogenous factors that influence land markets in an hedonic analysis, specifically, variations in land quality that shape development. For example, development may occur in a particular location due to socioeconomic pressures (e.g., proximity to a new employment center), but the exact location of that development may be influenced by local topographical variation such as slope and soil quality. Development costs that will figure in the price of the house will also be influenced by these geophysical characteristics. Mecklenburg County provides perhaps the clearest example of such effects, because the location of the creeks that flow

through the city have influenced every aspect of urban design, from transportation and utility infrastructure, to land use zoning, etc. The greenway system also follows these creeks, but due to industrial land uses, many portions of the greenway go through more modest neighborhoods than average. In this analysis, there was no way to account for spatial dependence and control for endogeneity effects, but this test is planned for future research.

The Endogeneity of Open Space Amenities

As the paper by Wu and Plantinga (2003) indicates, there may be an interaction between economic and cultural amenities and environmental amenities. In local land markets that have a critical mass of both, the greatest capitalization of amenity benefits into sales prices are to be expected.

In Mecklenburg County, there are several factors that influence whether and to what extent open space amenities are effectively capitalized into residential sales prices. On the one hand, it is an urban setting, and as land conversion continues at a fast pace, open space is becoming relatively scarcer. As the region grows, and new residents, particularly newly wealthy residents move to the region, we can expect to see sharply rising residential values, particularly in those neighborhoods seen to be desirable to begin with. This effect is likely, ceteris paribus, to increase the premium from access to the greenway.

On the other hand, this urban setting also contains poorer neighbors, with high rates of poverty, vacant housing, and crime. In such settings, the impact of increased public open space may actually pull down property values. One concern about a greenway is that it gives potential criminals much greater access to commit burglary, by

providing a transportation corridor and easy access through residential neighborhoods. This preliminary analysis indicates that the latter effect may be outweighing the former at this time. For future research, it may be useful to divide the parcels in Mecklenburg County into geographic subsets to investigate structural differences within the county itself.

The pooled analysis across the three counties indicates that the variation in residential sales prices attributable to access to open space was not significantly different in Gaston County vs. the other two, but it was significantly stronger in York County. This finding confirmed our initial expectations. There is a small, but growing literature on "micropolitan" regions; York County is defined as a micropolitan region according to the Census. Micropolitan areas have been said to represent the best tradeoff between urban and rural living, yielding the best elements of a small-town lifestyle (e.g., less traffic and crime), but with relative proximity to larger cities, the residents can take advantage of the cultural and economic benefits of the larger region (Vias et al. 2002).

Conclusion

In the light of increasing residential development, the loss of open space, and other environmental concerns, provision of environmental amenities such as greenways benefit residents directly, and local governments indirectly through the tax base. This analysis shows that all other factors equal, access to the Catawba Regional Trail as well as other types of public open space in region do raise the sales value of proximate parcels. Precisely because interregional cooperation is crucial to the ultimate success of this trail system, it is important to understand how the effects of the trail will vary over

space. It may very well be the case that some counties will benefit much more than others in terms of increased property tax revenues, and the local revenues may not necessarily be proportional to the investments each locality must make in construction and maintenance of the trail.

It is interesting to compare the different qualitative results across the different counties. As we expected, the impact of open space was highest in York County, which is not urban enough to have the degree of crime and poverty that is seen in Mecklenburg County, but also has substantial employment and population growth, unlike Gaston. Also, employment and population growth clearly are not enough to obtain the maximum benefit from open space. Mecklenburg County is much better off than either Gaston or York, but there is much greater variation in that County. Though Mecklenburg County has been prospering relative to Gaston County, the impact of open space was higher in Gaston. This finding may relate to an endogeneity; timing of development may have been different in Gaston. If the nicest newer houses were those built near to a greenway in Gaston as compared to the older, gentrified neighborhoods in Charlotte, the hedonic model will not capture this influence, and it warrants further investigation.

Lastly, hedonic analyses do not always adequately capture the employment-land market link. It is clear that many residents of Gaston and York Counties work in Charlotte-Mecklenburg, but live across the border because of easy interstate access and lower taxes. Therefore, there are significant spillovers from Mecklenburg to the surrounding counties that likely have an impact on real estate markets that are not adequately captured in this analysis.

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Table 1. Study Area Population 1990-2000

			Change	
	1990	2000	Number	Percent
Gaston	175,093	190,365	15,272	8.7
Mecklenburg	511,433	695,454	184,021	36.0
York	131,497	164,614	33,117	25.2

Source: U.S. Census Bureau, Census 2000

Table 2. Income Statistics, 1999

	Per Capita Income ($)	% of US	Median Household Income ($)	% of US	Household Poverty Rate (%)
Gaston	19,225	89.1	39,482	94.0	10.9
Mecklenburg	27,352	126.7	50,579	120.4	8.2
York	20,536	95.1	44,539	106.1	10.1
US	21,587		41,994		11.8

Source: U.S. Census Bureau, Census 2000

Table 3 Median Owner-Occupied Home Value, 2000 ($)

	Median Value($)	As % of US
Gaston	86,600	77.5
Mecklenburg	139,000	124.3
York	104,900	93.8

Source: U.S. Census Bureau, Census 2000; Note: Median US value is $111,800

Table 4. Distribution of Owner-Occupied Home Values, 2000 (%)

Value ($)	Gaston	Mecklenburg	York	US
<50,000	17.3	3.8	15.2	14.9
50-99,999	45.9	22.9	32.3	29.6
100,000-199,999	30.3	47.1	37.8	35.2
200,000-299,999	4.6	14.2	9.8	11.2
300,000+	2.0	12.0	5.0	9.1

Source: U.S. Census Bureau, Census 2000

Table 5. Hedonic Results, Mecklenburg and Gaston Counties

	Mecklenburg			Gaston		
Variable	Coefficient	Std. Error	Prob	Coefficient	Std. Error	Prob
Constant	6.1023	0.1280	0.00	5.0716	0.9274	0.00
Number of Bedrooms	0.1629	0.0170	0.00	0.2657	0.1228	0.03
Number of Bathrooms	0.0881	0.0126	0.00	0.1834	0.0874	0.04
Age	0.0124	0.0047	0.01	0.0855	0.0450	0.06
Assessed Value	0.5275	0.0106	0.00	0.5381	0.0626	0.00
% African-American	-0.1712	0.0079	0.00	-0.0091	0.0161	0.57
School Area 1	-0.0941	0.0282	0.00			
School Area 2	0.0076	0.0288	0.79			
School Area 3	-0.0689	0.0304	0.02			
School Area 4	0.1164	0.0259	0.00			
School Area 5	-0.1345	0.0229	0.00			
Distance to CBD				0.0057	0.0296	0.85
Distance to Greenway	-0.0112	0.0038	0.00	-0.0376	0.0331	0.03
Lambda	0.6453	0.0111	0.00	0.7319	0.0404	0.00
Adjusted R^2	0.8238			0.6115		
Log-likelihood	-115.5410			-194.3866		
Akaike I.C.	255.0820			404.7730		
Schwarz I.C.	339.7837			437.2648		
N	8591			430		

Table 6. Pooled estimation, Mecklenburg and Gaston

Variable	Coefficient	Std. Error	Prob
Constant	5.4640	0.1147	0.00
Number of Bedrooms	0.2240	0.0200	0.00
Number of Bathrooms	0.1430	0.0150	0.00
Age	0.0483	0.0035	0.00
Assessed Value	0.5578	0.0103	0.00
% African-American	-0.1498	0.0033	0.00
Distance to Park	-0.0094	0.0019	0.00
Gaston dummy	0.1472	0.1394	0.29
Gaston*park	-0.0801	0.0177	0.00
Adjusted R2	0.69		
log-likelihood	-2373.21		
Akaike I.C.	4764.41		
Schwarz I.C.	4828.38		
N	9020.00		

Table 7. Pooled estimation, all three counties

Variable	Coefficient	Std. Error	Prob
Constant	-0.0504	0.3157	0.87
Assessed Value	0.7292	0.0188	0.00
Income	0.3365	0.0349	0.00
Distance to Park	-0.0184	0.0061	0.00
Gaston dummy	-0.1256	0.7560	0.87
Gaston*park	-0.0140	0.0740	0.85
York dummy	-0.2181	0.2395	0.36
York*park	-0.0507	0.0261	0.05
Adjusted R2	0.27		
log-likelihood	-15350.70		
Akaike I.C.	30717.40		
Schwarz I.C.	30775.70		
N	10822		

Figure 1. Study Area