A MODEL OF GENTRIFICATION: MONITORING COMMUNITY CHANGE IN SELECTED NEIGHBORHOODS OF ST. PETERSBURG, FLORIDA USING THE ANALYTIC HIERARCHY PROCESS

By

ASHON J. NESBITT

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To all housing and economic development planners

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Ashon J. Nesbitt

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Chair: Kristin Larsen
Cochair: Rhonda Phillips
Major Department: Urban and Regional Planning

Gentrification has emerged as a major issue in urban and regional planning, particularly in the central cities of large metropolitan areas. As more middle-class and upper-class residents begin to choose city life and reject suburban living, many older neighborhoods, once occupied exclusively by very-low income and low-income residents, are being re-inhabited by more affluent residents. Research on this topic is extensive, and several researchers have come to the same conclusions on the indicators of gentrification and the characteristics of the gentrifyer. However, there have been few attempts to develop methods to identify neighborhoods more likely to gentrify and monitor change in neighborhoods toward gentrification, which would allow planners and policy-makers to be proactive in their approach to preventing many of the negative affects of gentrification.

In our study, we developed a model for monitoring gentrification based upon the indicators of gentrification identified in previous studies on the subject. The model uses St. Petersburg, FL as its base region and identifies four neighborhoods as potential areas of gentrification. The model uses statistics derived mostly from census data and converts them into spatial data using geographic information systems, and calculates a gentrification index based upon the indicators it identifies as most important to identifying gentrification.

We found that two of the neighborhoods are indeed more likely to gentrify, and perhaps the process has already begun. Two neighborhoods may be likely to gentrify in the near future; while one may be likely in the distant future. The results of the analysis and gentrification index suggest policy changes and program implementation. Moreover, our study demonstrates that indicators, statistical analysis and the spatial analysis capabilities of geographic information systems can be used to identify complex planning issues and monitor community change related to those issues so that appropriate policy responses can be established.

CHAPTER 1
INTRODUCTION

As urban development returns to formerly distressed neighborhoods, gentrification emerges as a significant planning issue. Much of the discussion and research on this issue relates to affordable housing in general, and the plight of very-low, low and moderate-income families in terms of housing options for these income groups. As more middle- and upper-class households choose urban instead of traditional suburban living, how can cities maintain affordability for lower-income households that do not possess the financial resources to allow them to choose where to live? Planners and researchers continue to struggle with solutions to this problem.

While dealing directly with the affordable housing issue and striving to solve such a complex problem, planners and researchers have learned much about gentrification. They know much about the profiles of these middle and upper-income households that would potentially choose urban, or central city, living over suburban living. They also know the attributes these households look for in urban neighborhoods. In addition, research on gentrification identifies the major indicators of gentrification and establishes a basic understanding of each indicator in determining gentrification. However, with all of this knowledge, very few studies have sought to create a method of synthesizing quantifiable data related to these indicators in order to identify neighborhoods likely to gentrify and to monitor community during, and even prior to, the gentrification process. Our aim was to develop such a method by applying community indicators, the analytic hierarchy process and weighted suitability modeling. Thus, proper steps can be taken by

planners and policymakers to mitigate the negative effects of gentrification before the process occurs.

Developing the model involved several steps. First, we reviewed the current body of literature on gentrification to determine its major indicators. We examined information on community indicators and their application to planning as well as methods of spatial analysis and deterministic modeling currently available, yet typically unused in the field of housing planning. Second, we examined background information on St. Petersburg, Florida, the test city, and the five neighborhoods in St. Petersburg to justify the use of this area and to demonstrate implementation of the model. Finally, we discussed the findings related to each indicator; outcomes of the model; overall applicability of the model and recommendations for improvements and future research.

Our study focused on identifying gentrification specifically. We also intended to demonstrate a useful application of spatial analysis and generate discussion and further research into its use to create a more proactive culture in the field of urban and regional planning as opposed to the reactive means of operation that presently characterizes much of professional practice. Geographic modeling can be a powerful tool in planning and policymaking. Our study demonstrated its particular usefulness in housing planning, and how indicators and spatial analysis can be applied to a real planning issue.

CHAPTER 2
LITERATURE REVIEW

Our study assessed three planning issues often considered separately. Specifically associated with housing, these issues are that of gentrification, community indicators and applications of the spatial analysis capabilities of geographic information systems (GIS). Much has been written in planning journals and other related publications about all three subjects. Researchers and practitioners continue to disagree on the true meaning of gentrification. Several articles and books have been written on the effectiveness of indicators in determining a community's economic direction. The application of GIS to community, housing planning research and practice is still in its infancy; however, researchers and practitioners are beginning to look for ways to use this powerful software to examine such planning activities.

Gentrification

Origin and Introduction

According to Atkinson (2003), Ruth Glass originated the term gentrification in the United Kingdom in 1964. The word is derived from "gentry", referring to the middle and upper class households that are "seen to displace local working-class groups". According to Glass, this displacement causes a change in the area. This change is the action referred to in the term "gentrification", or the process of becoming a place for the gentry. This urban phenomenon has been studied and analyzed for forty years, since the inception of the term. Many definitions and ideas as to the causes of gentrification have been presented and debated over time. In this section, these definitions and ideas will be

explored and discussed. Throughout the discussion, recurring themes, as well as key points most relevant to our study will be highlighted. This section will conclude with a definition of gentrification framed by the researcher.

Location and Scale

Perhaps a good place to begin a discussion of gentrification would be to define where it occurs and at what scale. According to the literature, gentrification is defined as an urban phenomenon,[1] occurring in large metropolitan areas. Most of the studies on gentrification have been done in large cities, and the process was first observed in London. In the United States, studies have been done on such cities as New York, Boston, Washington, DC, San Francisco, Atlanta, and Cleveland, Ohio. Further, gentrification is typically attributed to central cities. However, there are cases in which older suburbs in large metropolitan areas are experiencing change often associated with gentrification. Examples of this are Vallejo and East Palo Alto, California (Kennedy and Leonard 2001a). In addition, questions have arisen as to whether gentrification is truly limited to large metropolitan areas. Could gentrification also occur in smaller cities? A study done by the City of Gainesville, Florida Community Redevelopment Agency looks at the possibility of gentrification occurring there in an economically distressed community west of central business district known as the Pleasant Street neighborhood. These examples challenge the notion that gentrification is only a central-city issue and perhaps speaks to the future of gentrification studies (ADP, Inc. 2002).[2]

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[1] Some recent studies show that gentrification is also taking place in small towns and rural communities

[2] As the poor are being pushed out of central cities to "inner ring" suburbs, these older suburban areas are now seen as a possible location for future waves of gentrification.

Gentrification is a process denoted by the middle and upper class reinvesting into the housing stock of poor inner city neighborhoods with high levels of abandonment, disinvestment and vacancy. Although gentrification only occurs in neighborhoods with specific attributes within cities (Gordon, Goudie and Peach 1996; Lang 1982), it is a significant phenomenon that is happening in an ever-increasing number of cities (Wyly and Hammel 1999; Wyly and Hammel 1999). For instance, in the United States the "return to the city" trend, which started in the larger, older metropolitan areas, particularly in the Northeast and Midwest, has begun to filter down to more recently urbanized areas in the South and West. Even with gentrification occurring in more and more locations, these neighborhoods have yet to outstrip the suburbs as the primary residential area for the middle and upper classes. One reason for the process of gentrification lagging behind suburban expansion is that, in most cases, neighborhoods prone to gentrification are not large enough to meet all the housing needs of a metropolitan area's growing middle and upper classes. Also, these areas tend to be attractive to a certain subset of the middle and upper class population based on such attributes as neighborhood location, urban character and architectural style.

Who and Why

Now that we know where gentrification occurs, what are the characteristics of "gentrifyers" and why do they choose to live where they do? Although there appears to be a general consensus on what the characteristics of gentrifyers are, there are some differing ideas on why gentrification occurs, and why in these areas of urban decay. Following a description of gentrifyers, this section will broadly discuss why gentrification occurs and specifically why in these urban neighborhoods.

Since gentrification generally occurs in cities, in order to understand gentrifyers, one should understand why people like city living. City dwellers “like the privacy… specialization, and the hundreds of one-of-a-kind shops…the excitement…the heterogeneity, the contrasts, the mixture of odd people.” (Land, Hughes, Danielsen 1997, p. 437). However, most people identify city dwellers as less affluent or poor. In opposition to that perception, gentrifyers, also part of this city-dwelling population, are generally moderate to upper income households normally associated with suburban communities. In “What Makes Gentrification ‘Gentrification’?”, Redfern describes the gentrifyer as being “ ‘other’ to the suburbanizing middle class.” (Redfern 2003, p.2355) What makes the gentrifyer different from their suburban as well as their urban counterparts?

First, unlike other city dwellers, such as the inhabitants of public housing complexes and working class households who cannot afford a house in the suburbs, gentrifyers can choose where they live. Second, gentrifyers are often highly educated professionals. Third, gentrifyers tend to be untraditional households. Gordon, Goudie and Peach (1996) identify gentrifyers as often being young, unmarried and childless as opposed to the typical two-parent, two-child household found in the suburbs or working class neighborhoods for that matter. Another population of gentrifyers includes empty nesters, those older couples or individuals who no longer have children living in the house with them.

Other groups associated with gentrification are artists and gay and lesbian households. Often called “urban pioneers”, these are usually the first groups to move into a deteriorating area, rehabilitate the housing, and make the area attractive again (Solnit

and Schwartzenberg 2000; Wyly and Hammel 1999). What's interesting is that these groups often become the victims of what is called a "second gentrification" where these "urban pioneers" having proven the worth of a neighborhood, are subsequently displaced by investors and more affluent households. (Solnit and Schwartzenberg 2000; Wyly and Hammel 1999)

Land, Hughes and Danielsen (1997) describe potential city dwellers, referred to in our study as gentrifyers, in the context of the environments from which they originate. They describe two different types of gentrifyers: "suburban urbanites" and "urban suburbanites". These descriptions provide more insight into what gentrifyers seek in a neighborhood based on the urban context of the metropolitan area as a whole, and will thus help determine a neighborhood's potential for gentrification.

The "suburban urbanite" is defined as a suburban resident with a similar lifestyle to a central-city resident. Suburban urbanites are found in the inner suburbs of Northeastern and Midwestern cities. Cities in these regions tend to be smaller in land area, denser, and surrounded by high-density suburbs that have "central-city-type neighborhoods." (Land, Hughes, Danielsen 1997, p.441). Because they already live in neighborhoods that have similar characteristics of central city neighborhoods, they are more likely to choose central city living.

In contrast, "urban suburbanite" would most likely be found in the suburbs of Sunbelt cities. These cities tend to be larger in land area with less dense urban cores as well as suburban-style subdivisions within the central city. These individuals are looking for areas that offer all of the advantages of urban living with all of the comforts of the

suburbs. Therefore, in different urban contexts, gentrifyers seek different characteristics. The presence of these characteristics in a neighborhood affects its gentrification potential.

The distinction between “suburban urbanite” and “urban suburbanite” is an interesting and significant one that bears importance in this particular study. The neighborhoods in our study are located in St. Petersburg, Florida. Although it is not an extremely expansive city geographically, its development pattern fits the Sunbelt City mode, with its less dense urban core and suburban-style subdivisions within its city limits. Therefore, gentrifyers in St. Petersburg would probably have the qualities of the “urban suburbanite”.

In addition to the socioeconomic status of the gentrifyer, another, perhaps more controversial attribute of the gentrifyer is addressed in the literature – race. Suburban expansion is associated with the term “white flight”, which refers to the exit of the white population from the central city to surrounding suburban communities. Gentrification counters this trend, with white residents returning to the city, sometimes going right back to the same communities they fled decades past. Still, gentrifyers are not necessarily white. For example, in certain areas of Atlanta affluent blacks are returning to the city (Kennedy and Leonard 2001a). Therefore, although “gentrifyer” usually has a clearly white racial identity, sometimes the term includes members of minority races.

Gentrification occurs in regions where the housing market is tight (Kennedy and Leonard 2001a, 2001b; Lang 1982). When new housing demand outpaces the production of new housing, the price of housing will escalate. Thus, investment in the existing housing stock becomes an option considered by those with means (Nelson 1988, p. 15). Typically, areas chosen for investment have the greatest opportunity for reinvestment due

to high levels of abandonment, disinvestment and vacancy. However, these attributes don't always guarantee a high potential for gentrification. Gentrifyers also choose areas characterized by their architectural style and high historic value of the homes as well as location near cultural amenities and/or the traditional central business district employment center (Lang 1982; Nelson 1988; Redfern 2001).

Because these neighborhoods are so undesirable at the time of initial investment, the housing is cheap. In fact, Nelson (1988) argues that cheaper housing and the perceived profitability is more important than being fashionable. The reality of the situation most likely involves affordability, architectural style and profit.

Thus, a gentrifyer is a middle or upper class, nontraditional household that prefers urban living. Gentrifyers are usually affluent whites, although this is not always the case. Further, gentrification is the result of a tightening housing market, making cheap inner city housing appear more desirable due to its affordability, profitability, location and style.

Displacement

One major issue of debate regarding what defines gentrification involves the issue of displacement. As more is invested in an area and property values rise, the poor and working class households that comprise the original residential population of a neighborhood will no longer be able to afford to stay there, resulting in displacement. While such displacement may be of economic benefit to cities overall as the rising property values increase the tax base (Kennedy and Leonard 2001a, 2001b), many view it

as an unavoidable, socially detrimental consequence that overburdens the original residents, particularly renters in the neighborhood(Lang 1982, LaPeter 2004).[3]

Many definitions and studies of gentrification require displacement to occur in order for an area to be declared gentrified (Kennedy and Leonard 2001a, 2001b). However, Wyly and Hammel (1999) speak of "urban pioneers", the initial investors, as *possibly* displacing the original residents and *oftentimes* displaced by a second group of gentrifyers. Lang (1982) also uses the word *often* to describe displacement in the gentrification process (Lang 1982, p.6). Freeman and Braconi's (2003) study of New York found that significant displacement does not have to occur for gentrification to take place. For instance, if the abandonment and vacancy rate is extremely high, then the likelihood of displacement is very low. Similarly, a study done by the City of Gainesville, Florida for its Pleasant Street neighborhood found that abandonment and vacancy were high enough for reinvestment to occur without large numbers of residents being displaced (ADP, Inc. 2002).

Researcher's Definition

Based upon the various characterizations of gentrification explored in previous studies and their applicability to our study, we offer the following definition for gentrification:

> Gentrification is the process by which the socioeconomic status of a neighborhood populated mostly by lower-income households is substantially elevated by renewed interests and investments by higher-income households, including homebuyers, renters and commercial interests from outside the neighborhood so as to change the overall character of the neighborhood, and usually results in widespread

[3] Gentrification changes the character of a neighborhood. The new middle and upper income residents not only upgrade the housing stock, they also bring with them new consumer demands, which affect area amenities, such as public spaces and retail offerings. Sometimes businesses are displaced as well as residents. However, this study has a residential focus.

> displacement of the lower-income residents already living in the neighborhood as well as the businesses they support.

This definition includes the social as well as economic implications of gentrification. It also addresses both the residential and commercial aspects of gentrification. Although our study and previous studies on the subject tend to focus on the residential, the commercial component of gentrification is worth mentioning in any definition or discussion.

Indicators

Often used in community planning and economic development planning, community indicators evaluate social and economic change in an area. Different types of indicators function on different scales. Gentrification definitely has economic ramifications, thus certain types of indicators are typically present when it is occurring or likely to occur in a given area. This section defines indicators and outlines those relevant to gentrification. These specific indicators will become the basis of the gentrification model.

Definition and Applications

Phillips (2003) defines indicators as “measurements that provide information about past and current trends to assist planners and community leaders in making decisions that effect outcomes” (p.1). These measurements quantify the social, environmental and economic factors that work together to create change in a community or region. She describes them as “gauges” that document how much progress is being made toward reaching a certain goal or to show what a community or region is likely to become according to data gathered on the indicators. According to Hart (2003) and Oleari (2000), combining several indicators together to create a “measuring system”, or model, can

"provide (useful) information about past trends, current realities and future direction in order to aid decision making" (quoted in Phillips 2003, p.2).

Two basic types of indicators are defined in the literature. They are system (descriptive) indicators and performance indicators. System indicators condense individual measurements that describe multiple characteristics of a specific system in order to communicate the most pertinent information to decision-makers (Phillips, 2003; Hardi et al. 1997). System indicators work best with painting a picture of the current state of a system and are used to guide policy writing. Performance indicators are similar to system indicators in that they are both descriptive. However, performance indicators are also "prescriptive". This type of indicator has a goal, reference value or target attached to it and measures how much progress is being made toward reaching that goal or target. Performance indicators are good for policy or program evaluation; therefore, these indicators can guide policy or program changes. Our study accurately describes the current situation in a neighborhood and assesses where the neighborhood is headed if the current trends continue, which will guide decision-making and policy writing. Therefore, performance indicators are most appropriate for our study.

Indicator studies comprise three basic categories: economic, environmental and social. Indicators are most often employed in economic studies, which is what our study is. Of course, environmental studies assess ecosystems. An example of a social indicator study is the School Readiness Pilot Study for a Social Infrastructure Network completed by the Hillsborough County Planning Commission in 2003. This study measured several indicators derived from research in the field of education, and formulated a model that determines the likelihood of school readiness in neighborhoods throughout Hillsborough

County, Florida. Although it is a social study, it provides a helpful example of how to use indicators in building a model for monitoring a community.

Another important aspect of indicators is their scale. Phillips (2003) defines four levels of indicators in her publication. They are national and multinational, regional, local, and neighborhood indicators. National and multinational indicators measure trends on a national or international level. Regional indicators may exist on many different levels, as regions are defined in different ways. A region could be one state or a large section of a state, encompassing many different cities, towns and metropolitan areas. It could be a group of states, or it could be just one metropolitan area. Therefore, the scope of regional indicators is defined based on how the region is defined. Local indicators deal with specific municipalities. However, they assess the municipality holistically. Just like regional indicators, local indicators have varying scopes. They could be for one small town, a large city or an entire county. Neighborhood indicators look at the conditions in individual neighborhoods within cities or towns. For our study, regional to local comparisons as well as neighborhood-specific indicators will be used to develop the model.[4]

In order to build a model that produces meaningful results, the proper indicators must be used. Phillips (2003) lists several criteria for the successful selection of indicators. Those criteria are: validity, relevance, consistency and reliability, measurability, clarity, comprehensiveness, cost-effectiveness, comparability and attractiveness to the media. Validity involves insuring the indicator is based on accurate data. Relevance is making sure the indicator relates directly to the issue at hand.

[4] More specifics on the indicators and their justifications will be given in the Methodology chapter of this thesis.

Consistency and reliability relate to the ability to collect the same quality of data over a period of time. Measurability addresses the ability of the indicator data to be collected directly from the neighborhood, locality, region or nation(s) being studied.[5] Clarity concerns how well the indicator is understood. Comprehensiveness measures the ability of one indicator to cover a wide range of issues yet retain the focus of the overall model. Cost-effectiveness reflects how much money (or time) must be put into collecting the data. Comparability involves how effectively the indicators can be used in different communities. Attractiveness to the media deals with how well the indicators and model are accepted by the press.[6]

Although the aforementioned criteria are important in selecting indicators for monitoring community change, Phillips (2003) states that the true test of the success of an indicator or a model is whether or not the data collected in relation to that indicator or the results of the model prompt government officials to take action. However, out of all the criteria previously discussed, perhaps the most emphasis should be placed on the validity or accuracy of the data. In order for proper action to take place, the data associated with the indicators must be accurate. Indicators and models can then produce meaningful information that decision-makers can work with to affect proper change. Producing results that support proper shifts in policies and programs is the aim of our study.

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[5] Lindley Higgins' "Gathering and Presenting Information About Your Neighborhood" published in 2001 by the Local Initiatives Support Corporation provides useful advice on collecting data (how and where).

[6] In this case, the "press" would be journals and other respected publications.

The use of indicators has a strong foundation in economic development planning and research. Most applications have targeted sustainable development, which is defined as development that seeks to meet the needs of the present without compromising the needs of the future. Most indicator projects evaluate community progress. However, indicators research presents very little on how individual indicators can be evaluated together to monitor community change. Our study creates a model for monitoring gentrification that involves the use of several indicators evaluated together.

Gentrification Indicators

The literature describes several indicators of the likelihood of gentrification. Some are regional; others are local or relevant at the neighborhood level. Further, gentrification is "notoriously difficult to measure and the results (of the model) are sensitive to the indicators chosen", the time periods over which the indicators are measured and how neighborhoods are defined (Wyly and Hammel 1999, p. 726).

Kennedy and Leonard (2001a) identify rapid job creation, a regional indicator, as the most significant indicator of potential gentrification. Rapid job creation provides more opportunity for those already living in the region as well as attracts new residents. Second on the list comes the supply of housing units in relation to demand. As more residents move to an area and current residents earn higher incomes, the demand for housing increases. If the current supply of housing cannot meet the demand, then housing prices will increase to curb demand. Thus, cheaper inner city housing becomes a viable alternative to more expensive, suburban housing. Other regional or local indicators include increased commute times, growth in certain population groups and nontraditional households and public investments. At the neighborhood level, the historic value of the housing stock, level of abandonment and percentage of owner-occupied housing are all

indicators. For our study, these indicators and several others were chosen based on the literature. They will be identified and explained in the Methodology chapter of this paper.

Thresholds

Galster, Quercia and Cortes (2003) define "threshold" as the critical value of an indicator that triggers more rapid change. Another way to view a threshold is the point when change is completely apparent and cannot be easily stopped or reversed. Knowledge of the correct indicators is important to monitoring community change. Just as important is knowledge of the threshold related to each indicator. Thresholds are not arbitrary values. Accuracy in determining the threshold value plays a huge role in determining the success or failure of a model for monitoring change.

Quercia and Galster (1997) describe four aspects of thresholds: geographic scale, absolute or relative impacts, time of impacts and pattern of relationship. Geographic scale is the area over which each variable is measured, and the corresponding threshold applies at that geographic scale. For instance, the threshold for a regional indicator should apply in the same manner throughout the region; whereas, the threshold for a local indicator will only apply to that specific locality. Absolute or relative impacts reflect, respectively, thresholds measured by absolute numbers or by percentages. For example, does the growth in the number of people from the ages of twenty-five through thirty-four have to increase by ten thousand in order to indicate change, or does it have to increase by ten percent? Time of impact addresses whether change has to continue for a certain period of time before rapid change occurs. For instance, does job growth have to continue for a certain number of years before there is a surge of interest in companies wanting to add jobs to an area? Finally, observing a pattern of relationship helps determine how the threshold of each indicator relates to those of other variables. For instance, how does job

growth relate to population growth? Do job growth and population growth increase at the same rate all the time? Or, is there some point when jobs are increasing at such a rate as to cause an exponential increase in population from in migration? Is this job growth rate related to a rapid decrease in housing vacancy in the same manner as it relates to population growth? Data on each indicator should be tested against all other variables to determine the best value for each threshold.

Several articles have been written on thresholds that relate to the study of gentrification Quercia and Galster (1997) determine that there is a threshold of middle-class households that must be reached before significant benefits, such as increased property values and retail demand. Downs (2002), Peng and Wheaton (1994) study the effects of restrictive land supply on housing prices, finding the point at which the amount of developable land available begins to effect housing price; however, housing output remains fairly constant. Chapple et al. (2004) study the effects of job growth on housing prices, finding that rapid job growth (particularly in certain industries) begins to effect housing prices over a certain period of time in certain locations depending on the structure of the metropolitan area.[7] The last example of threshold-related literature is Goodman and Thibodeau (1995) who found that the relationship between the age of housing units and price is a nonlinear relationship. All of these examples demonstrate that thresholds exist, they are very specific, they vary by indicator, and they possibly vary by location. Therefore, gentrification can be measured by the value of each indicator in relation to its threshold.

[7] Growth in industries with the potential for rapid expansion, such as technology-based industries, could indicate the potential for a high rate of job creation over a short period of time in a region, creating new wealth and drawing new residents at a rapid pace. This results in a tightening housing market, leading to gentrification.

Geographic Information Systems (GIS)

Introduction

Due to its spatial applications and analysis capabilities, a geographical information system (GIS) is a critical component of our study. The following paragraphs define what GIS is, examine the functions of GIS, and review how GIS has and can be used in real estate research. Some of this information is similar to the material presented on indicators. These overlaps will also be highlighted.

Definition

Luc Anselin (1998) defines GIS as "a powerful set of tools for collecting, storing retrieving at will, transforming and displaying spatial data from the real world for a particular set of purposes" (p. 116). Most people associate GIS with specific software packages. Generally, GIS synthesizes value information with locational and topological information into a searchable database. Value information, or attributes, include the price or size of a housing unit. Locational and topological information include the address or census block where the unit is located.

Functions and Applications

Anselin (1998) also outlines the four major functions of GIS: input, storage, output and analysis. Of the four functions, analysis, or spatial analysis, is the focus of our study. Spatial analysis has four sub-functions. They are selection, manipulation, exploration and confirmation. Selection involves obtaining information relating to certain variables specific to a certain location from a spatial database. Data manipulation involves the creation of spatial data and is done through attribute values (averaging, summation), spatial information (coordinates) and data integration (combination of attribute values and spatial information).

The next two capacities of spatial analysis are exploration and confirmation. These two are considered the heart of spatial analysis. Exploration, or exploratory spatial data analysis (ESDA) is described as being a body of techniques used to “describe and visualize spatial distributions”, find patterns of association (spatial clustering), identify extremely unique observations (outliers) and “suggest different spatial regimes or other forms of spatial instability (nonstationarity)” (Anselin, 1998 p. 120). ESDA identifies two classifications of indicators of spatial association. They are global and local. Most of the recent research and literature has focused on the use of local indicators of spatial association (LISA). These indicators can detect patterns of association as well as test a specific pattern’s uniformity. LISAs are well suited for map visualization, and overlaying LISA maps of different variables is very helpful in deciding variables that should be used in models. For these reasons, our study focuses on LISAs – how they illustrate patterns and are used to build models.

Confirmation, or confirmatory spatial data analysis is described as “model-driven.” It involves four steps: model specification, estimation, diagnostics and prediction. These four steps imply an iterative process in which models are tested until the best one is found. As mentioned in the previous section on indicators, studies such as this one should result in recommendations for government action based on the results. Therefore, it is important to find the best model for studying and producing the most meaningful results for the issue at hand. Also, in the discussion on confirmatory spatial analysis, Anselin (1998) addresses regression models and their usefulness in predicting values. One previous study uses a regression model to predict rental rates in several markets and geographically illustrate their results for Atlanta and Boston. This model incorporates the

physical attributes of apartments and their relation to price based upon previous research. The model illustrates geographically how rents are likely to vary in relation to the average rent based on location and demonstrates how variables, or indicators, can be analyzed using GIS to graphically display a neighborhood reality.

The aforementioned study testifies to the effectiveness of regression analysis, demonstrating how the interaction of variables can be assessed to accurately display and monitor an issue. Our study uses a deterministic model involving the pairwise comparison method to determine the weight of each variable associated with gentrification. This method, developed by Saaty in 1980, involves comparing each variable to the other variables individually, creating a ratio matrix that outputs the relative weights of each variable. This method was chosen based on the knowledge of the general effects of each indicator on the likelihood of gentrification expressed in the literature as well as research as well as its compatibility with the spatial analysis functions of GIS.

The application of GIS, and its spatial analysis capabilities, to housing research has been very minimal. According to Can (1998) this lack of research is due to ignorance of available tools; difficulty in obtaining the updated, detailed and accurate information required for GIS-based analysis; and the relatively recent availability of “special processing requirements” for housing research. These reasons are valid, particularly the availability of data to make using GIS worthwhile and meaningful. Most of the specific data collected on housing is done through the census. Some data is estimated on a yearly basis, but these estimations are generally not done at the census block level (Can 1998, p. 69). However, some information not available in its most recent version may be available through other non-traditional sources such as the local Property Appraiser or Chamber of

Commerce. In fact, it is possible to get more specific information from a source such as the Property Appraiser down to the parcel as opposed to census data, which only measures down to census tract for certain types of data. One important issue to consider when gathering information from a variety of sources is consistency. While accuracy is very important, ensuring that all data for all variables relates to the same year and is measured at the same geographic level is equally important when using GIS to conduct research and build models.

Despite the challenges, GIS is an appropriate tool for housing research. The visualization capacity of GIS allows researchers to see patterns and trends that might not be evident just by examining tables and graphs (Ghose and Huxold, 2004, p. 19). Also, its analysis capabilities allow for the examination of several forces and indicators at one time to determine their effect and guide policy action.

Summary

The goal of this review of the literature was to establish a working definition of gentrification and examine indicator studies and GIS tools to show their application to the study of gentrification and the creation of a model for monitoring gentrification. The review discussed the major issues and debates in the study of gentrification, resulting in a definition of gentrification for use in our study. Next a discussion of indicators outlined how they have been used (particularly in economic development planning) and how they can be applied to the study of housing and model building. Finally, an overview of GIS and its application to housing research continued to build on themes offered in the discussion on indicators as well as demonstrated the practicality of GIS in relation to housing research and community monitoring. In all of these discussions, important points were highlighted and analyzed in their relation to our study. The next two chapters

describe the specific geographic area used for our study and the specific details of our model.

CHAPTER 3
STUDY AREA

Our study focuses on St. Petersburg, Florida as the test region due to its growing population, rapid job growth, geographic constraints, dwindling availability of large developable parcels, and growing affluence. With a population of nearly 250,000 residents, St. Petersburg ranks as the fourth largest city in the state of Florida, and functions as one of the urban centers in the Tampa Bay metropolitan area – the state's second largest metropolitan statistical area and one of its fastest growing. St. Petersburg is located in Pinellas County, a densely populated, nearly built-out county along the west coast of Florida. The county itself is a large peninsula, surrounded on three sides by water. St. Petersburg, at the southern end of the county, is also surrounded by water on three sides. Also like the county, St. Petersburg is nearing build-out in terms of undeveloped land. Due to its geography, no outward expansion can take place, including typical large-scale, suburban-style developments that characterize current development in much of the rest of Florida. Moreover, the city is experiencing significant job growth, particularly in high-paying financial services and technological-oriented jobs, attracting thousands of new residents in recent years. Therefore, as these trends continue, we contend some St. Petersburg neighborhoods are bound to experience gentrification.

Our study identifies four neighborhoods as probable targets for gentrification: Bartlett Park, Old Southeast, Roser Park, and Crescent Lake. Although each neighborhood is unique, they all share aspects that attract gentrifyers. All are located immediately adjacent or within 1.5 miles from the central business district. All are among

the oldest neighborhoods in the city. Roser Park, Old Southeast, and a portion of Crescent Lake called Round Lake are designated historic districts on the national level, local level or both.

One neighborhood, Uptown, has been identified as the control neighborhood. This neighborhood features many of the same characteristics of the four neighborhoods identified as gentrification targets. It is a historic district and sits directly adjacent to St. Petersburg's central business district. However, it does not receive the same attention from officials, planners, residents and the press as the other neighborhoods in terms of the characteristics of and potential for gentrification. Therefore, our study asserts that change occurring in Uptown will most accurately reflect the overall change taking place in the city of St. Petersburg.

The national trend of central city redevelopment has not missed St. Petersburg. In fact, St. Petersburg's central business district has been recognized several times as an example of successful downtown redevelopment. As the central business district generates more activity, we hypothesize that the identified four surrounding neighborhoods will begin to feel the effects of eminent gentrification. The model developed for our study will prove or disprove the correctness of that hypothesis.

CHAPTER 4
METHODOLOGY

Gentrification literature describes the various measurable indicators of gentrification. It also describes the difficulty in reversing the negative effects of gentrification, most notably the displacement of residents. Since the indicators are known, gentrification must be measurable. However, no attempts to quantify these indicators and relate all of them empirically to some index of the likelihood of gentrification occurring in a neighborhood have been found in previous studies. This chapter describes the method created for monitoring gentrification in our study, determines specific indicators outlined in the gentrification literature using common statistical methods and GIS technology, and tests the model on the five neighborhoods described in the previous section.

Explanation of Model

Building the model for monitoring gentrification involved four basic steps, each of which contained smaller steps. The first basic step was the identification of the indicators of gentrification to be used in the model. The second basic step involved collecting the appropriate data for those indicators, converting that data into usable statistics, and mapping those statistics for each indicator using GIS independently. The third step involved determining relationships between the indicators and the threshold values for each indicator. The fourth and final step established an equation for a gentrification index based on the statistics and thresholds to determine the likelihood of gentrification occurring in the study area and mapped the results of the equation using GIS.

Identifying the Indicators

This first step in developing the model identified the appropriate indicators. Perhaps the most important step in the process, choosing the right indicators to use, greatly determined the effectiveness of the model. Our study considers sixteen indicators based upon gentrification literature and the researcher's definition of gentrification. The majority of the indicators chosen use census data and other data readily available to researchers, demonstrating the accessibility of the model for practicing planners.

We divided the indicators into two groups: regional to neighborhood comparisons and neighborhood-specific indicators. Regional to neighborhood comparisons describe conditions that exist or changes in regional demographics that should reflect on all areas of the metropolitan region. For instance, if area median income (AMI) increased by a large percentage for the region, one expects to find a large increase in the AMI of each neighborhood in the region. Neighborhood-specific indicators describe conditions and qualities specific to a particular neighborhood. A neighborhood's location would classify as a neighborhood-specific indicator. We chose twelve regional to neighborhood comparison indicators and four neighborhood-specific indicators (Tables 4-1 and 4-2).

Table 4-1: Regional to neighborhood comparison indicators

Name	**Description**	**Justification**
Change in Professional Employment	The change in the number of people working jobs requiring post-secondary education (AA, AS, BA, BS, MA, MS, Ph. D., technical certificate) as a percentage of overall employment	These tend to be higher-wage jobs. An increase in the number of higher-paid workers increases area median income (AMI), driving up housing costs.

Table 4-1 Continued

Name	**Description**	**Justification**
Change in Population	The change in the total population	A rapid population increase usually relates to a growing job market, one of the leading indicators of gentrification.
Change in Housing Units	The change in the total number of housing units	A slow growth in the number of housing units with respect to population and job growth leads to rising housing costs.
Change in college-educated population	The change in the percentage of the population that is college-educated	One of the characteristics of a likely gentrifyer; tend to have higher incomes and affinity for city amenities.
Change in Age Cohort 25-34	The change in the percentage of the population in this age range	This cohort relates to one of the characteristics of a likely gentrifyer (high-wage, young, single or married w/ no children).
Change in Age Cohort 55-65	The change in the percentage of the population in this age range	This cohort relates to one of the characteristics of a likely gentrifyer (empty-nester; active lifestyle).
Change in area median income (AMI)	The percentage change in AMI	Growing AMI usually relates to a growing job base, increased educational level of residents, and relates to an increase in housing costs.
Change in Median Owner-Occupied Unit Value	The percentage change in the value of owner-occupied single-family residential units attached as well as detached.	Rising housing costs signifies increase demand for housing, a leading indicator of gentrification.
Change in Average Commute Times	The number of minutes commute times have increased/decreased over time	One main reason residents are choosing to move back to central cities relates to increased commute times.
% Housing units occupied	The change in the percentage of housing units that are occupied by either renters or their owners	Higher occupancy in combination with high demand raises housing prices.

Table 4-1 Continued.

Name	Description	Justification
% Owner-occupied units	The change in the percentage of housing units actually occupied by their owners	Rising homeownership tends to reflect a greater amount of income within households as well as growing neighborhood stability – an attractive quality.
Unit Size	The number of rooms in a housing unit	Larger homes tend to attract higher-incomes. Therefore larger homes in older areas are likely to attract gentrifyers.

Table 4-2: Neighborhood-specific indicators

Name	Description	Justification
% Housing Built Pre-1950	The percentage of all the housing units built prior to 1950	The historical value of the houses is part of the allure of inner-city neighborhoods to gentrifyers.
Proximity to Central Business District (CBD)	The number of miles the census tract is from those tracts making up the CBD	Part of the attraction is the closeness to CBD, where jobs, culture and entertainment are located.
Proximity to Major Transportation Corridors (Interstate Highways)	If interstates run through city, the number of miles to the nearest interchange; if not, the number of miles to the nearest major corridor	Easy access to corridors leading to CBD as well as suburban markets one of the important factors to gentrifyers.
Historical Designations	Number of historic structures or if entire tract is within historic district	Designations curtail demolition, encouraging renovation; historic value attractive to gentrifyers.

Data Collection

Most of the data collected comes from the United States Bureau of the Census (Census). However, some data was collected from other sources.

Table 4-3: Sources for regional to neighborhood comparison indicators

Name	**Units**	**Source**
Change in Professional Employment	Percentage	Census
Change in Population	Percentage	Census
Change in Housing Units	Percentage	Census
Change in college-educated population	Percentage	Census
Change in Age Cohort 25-34	Percentage	Census
Change in Age Cohorts 55-65	Percentage	Census
Change in AMI (area median income)	Percentage	Census
Change in Owner-Occupied Unit Value	Percentage	Census
Change in Average Commute Times	Percentage	Census
% Housing units occupied	Percentage	Census
% Owner-occupied units	Percentage	Census
Unit Size	Number	Census

Table 4-4: Sources for Neighborhood-specific indicators

Name	**Units**	**Source**
% Housing Built Pre-1950	Percentage	Census
Proximity to Central Business District (CBD)	Number	Scaled street map of city
Proximity to Major Transportation Corridors	Number	Scaled street map of city
Historical Designations	Percentage	City Government, National Register of Historic Places

In order to gauge change and show a clear trend, data collection encompassed a 20-year period (three decennial censuses) for each indicator whose source is the Census (2000, 1990 and 1980). Data gathered on other indicators also spanned the same twenty-year timeframe where available. If data was available only over a shorter time period, data collection began with the earliest year available. Collecting data in this manner kept the intervals the same to establish trends over the same number of years as the indicators

based on the Census. In addition to consistency in time intervals, the values must also be geographically consistent. Thus, data not available from the Census was appropriately scaled or proportioned to match the census tracts used for the neighborhoods analyzed in our study.

We defined the "region" as the city where the neighborhoods are located – St. Petersburg, Florida. The "neighborhood" refers to each of the five neighborhoods analyzed in our study area separately. The boundaries of each neighborhood matched up almost perfectly with the boundaries of their respective census tracts (Figures B-1 and B-2).

Census data generally comes as a simple count (integer) or where appropriate, as a dollar amount. However, in this research, percentage change bears more relevance. For instance, the median income in the city could increase by more absolute dollars than a neighborhood, but the neighborhood could show a higher percentage increase, reflecting a greater rate of change. Therefore, the counts for each regional to neighborhood comparison indicator were transformed into a percentage change value using the following formula:

Percent Change = $[(X - Y)/Y] * 100$

where
X = Value from 2000 Census or most recent available, and
Y = Value from 1980 Census

For neighborhood-specific indicators, no rate of change was measured between 1980 and 2000, as they reflect neighborhood characteristics at their present state based on the 2000 census, demonstrating potential based on current conditions.

Most of the indicators are dynamic and measured by percentage change. However two indicators describe static conditions and carry number measurements -- distance to central business district and distance to major transportation corridors. It is quite possible for distance to major transportation corridors to change due to construction of new corridors.[1] Yet, we determined that no new transportation corridors affecting these neighborhoods were constructed during the study period. Also, the locations of the traditional central business district (downtown) and the location of each neighborhood remain stationary. For these reasons, a number value is the appropriate measure for these indicators.

Each indicator is then mapped using ArcGIS[2] according to the percentage or integer value associated with each. First, the GIS shape files for the appropriate city boundary and the census tracts are downloaded from the Florida Geographic Data Library[3] into GIS creating the base map. Then the attribute table for the census tract layer was edited to include the fields for the values relating to each indicator. Next, the values in each of these fields were converted from "vector" attributes to "raster" attributes.[4] These values

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[1] If new major transportation corridors are constructed, then the distance from a study area to a major transportation corridor may change; thus making this a dynamic variable that may be more appropriately measured by percentage change.

[2] ArcGIS is a GIS software package from ESRI most often used by planners, developers and researchers

[3] The Florida Geographic Data Library is an electronic resource providing free access to GIS shape files for all counties in the State of Florida and their corresponding attribute tables and metadata files.

[4] Vector data associate attributes with each feature – point, line, and polygon; whereas raster data represents surfaces as grids of equally sized cells that contain attribute values and location coordinates. With raster data, groups of cells that share the same value represent the same type of geographic feature. For instance, all census tracts would be represented with the same color regardless of their associated rate of population increase when displayed as vector data; whereas, with raster data, only tracts with the same rate of increase in population would share the same color on the map.

are then reclassified using the binary system of 0 and 1 according to their value in relation to the regional percentages.[5] The reclassification assigned a value of 0 to all values less than the regional percentage, and assigned a value of 1 to all values greater than the regional percentage in most cases. In a few instances, the reclassification was based on the opposite relationship. For example, a reclassification value of 1 was assigned to tracts with a change in vacancy rates less than the regional rate. The reclassified values were converted to individual shape files and added to the base map as separate layers. The purpose of doing this was to spatially and visually reinforce the change occurring in the study area in relation to each indicator.

Developing the Equation

The equation used to analyze the five neighborhoods utilizes deterministic neighborhood value analysis in combination with weighted suitability analysis to determine a gentrification index. The following sections outline this process

Deterministic Neighborhood Value Analysis

Since monitoring gentrification engages several indicators, the study used deterministic neighborhood value analysis to weight the values of several variables to get one final index for gentrification. Deterministic neighborhood value analysis uses the following equation:

$$I = C_1X_1 + C_2X_2 + C_3X_3 + \ldots + C_nX_n$$

where
I = index
C_1 = weight of the first indicator X_1
C_2 = weight of the second indicator X_2

[5] Since the current body of literature establishes no generic thresholds for these gentrification indicators, the most appropriate measures of change are the regional percentages.

C_3 = weight of the third indicator X_3
C_n = weight of the nth indicator X_n

The weights for each value were determined using the pairwise comparison method established by Saaty in 1980 described in the literature review.[6] This method determines the weight of variables in decision-making using the comparison matrix (Table 4-5), testing each variable against all other variables individually:

Table 4-5: Pairwise comparison matrix

	Variable X_1	Variable X_2	Variable X_3	…	Variable X_n
Variable X_1	1	X_2:X_1	X_3:X_1	…	X_n:X_1
Variable X_2	X_1:X_2	1	X_3:X_2	…	X_n:X_2
Variable X_3	X_1:X_3	X_2:X3	1	…	X_n:X_3
. . .	. . .	. . .	. . .	1 “ “	. . .
Variable X_n	X_1:X_n	X_2:X_n	X_3:X_n	…:X_n	1

Comparisons were done on a scale of 1 to 9 using the following descriptions:

1 = equally important
2 = slightly more important
3 = somewhat more important
4 = moderately more important
5 = more important
6 = much more important
7 = significantly more important
8 = very much more important
9 = extremely more important

When comparing variables to themselves, the value always equals one. If the comparison of variable X_2 to X_1 yields one value, then the comparison of X_1 to X_2 yields

[6] An alternative to the researcher developing the weights would be to survey local professional planners with housing expertise as well as area residents using the same criteria and develop the weights through a method of consensus building – an iterative process by which all those involved would come to an agreement on the value of each indicator to the whole equation.

the reciprocal value. For example, if variable X_2 is significantly more important than X_1 (value =7), then variable X_1 is significantly less important than X_2 (value = 1/7).

Table 4-6: Pairwise comparison matrix value pattern

	Variable X_1	Variable X_2	Variable X_3	…	Variable X_n
Variable X_1	1	$1/X_1:X_2$	$1/X_3:X_1$	…	$1/X_1:X_n$
Variable X_2	$X_1:X_2$	1	$1/X_2:X_3$	…	$1/X_2:X_n$
Variable X_3	$X_1:X_3$	$X_2:X_3$	1	…	$1/X_3:X_n$
. . .	. . .	. . .	. . .	1 “ “	. . .
Variable X_n	$X_1:X_n$	$X_2:X_n$	$X_3:X_n$	…:X_n	1

These comparison values were then normalized by the following equation:

Normalized Value = Comparison Value * (1/ Total of all values in column).

Then these normalized values were summed up by column. This total became the weight, or coefficient C, assigned to each indicator.

After establishing the C values for each indicator, the deterministic neighborhood value analysis equation uses reclassified values for each indicator described in the previous section as X values to measure their total effect. For each neighborhood, the study analyzed the regional to neighborhood comparisons and neighborhood-specific indicators separately, providing a total for both to be used later in the weighted suitability analysis. Although the study analyzed the five neighborhoods separately, it used the same equations for each, employing the same C values. Using the same equation demonstrates the regional applicability of this analysis. The uniqueness of the totals for a neighborhood would come from its X values.

Weighted Suitability Model

The weighted suitability model is a method of spatial analysis often used in real estate development to determine the suitability of a site for a specific type of

development targeting a specific demographic. It assigns weights to multiple groups of variables in the same manner that multivariate regression applies weights to individual variables. Since our study uses two categories of indicators, the weighted suitability model effectively illustrates the relationship between the two sets of indicators and their effect on the overall decision-making of potential gentrifyers.

The weighted suitability model is used to establish the equation for the final index of the likelihood of gentrification, G. For our study, regional to neighborhood comparison indicators $Y_{Regional}$ carried a coefficient of 0.8, accounting for 80% of the result, and neighborhood-specific indicators $Y_{Neighborhood}$ carried a coefficient of 0.20, accounting for 20% of the result. We derived these proportions from the gentrification literature that identifies the major indicators for gentrification as increasing commute times, rapid job and population growth, and changes in demographics of age and income, all issues accounted for in the regional to neighborhood comparisons. Neighborhood-specific attributes, such as proximity to the central business district and architectural character, also bear much significance. However, according to the gentrification literature, these characteristics carry less importance than the regional to neighborhood comparisons. For this reason, the 80% to 20% ratio applied well to the model, giving the regional to neighborhood comparison indicators the majority of the weight without marginalizing the effects of the neighborhood-specific indicators.

Using the weighted suitability model, the data accurately produces a gentrification index (G) for each neighborhood in the study area with the following equation:

$$G = 0.8Y_{Regional} + 0.2Y_{Neighborhood}$$

Where

$Y_{Regional}$ = deterministic neighborhood value analysis of regional to local comparison indicators, and
$Y_{neighborhood}$ = deterministic neighborhood value analysis of neighborhood-specific indicators.

The Raster Calculator in the Spatial Analyst menu of ArcGIS calculated the G values for each neighborhood and added their graphic representation to the base map as a separate layer. The G values were measured on a scale of 0 to 1, with 0 equal to 0% likelihood of gentrification and 1 equal to 100% likelihood of gentrification.

This process outlines a method for empirically measuring and graphically displaying the potential for gentrification. It provides a means to quantify physical and social attributes of an area and relate them mathematically to describe neighborhood change.

CHAPTER 5
FINDINGS AND RESULTS

This thesis focuses on the use of census and other relevant data to reveal long-term patterns of change and use them to monitor gentrification in a neighborhood. The following chapter will report the findings for each indicator separately, looking at overall trends from 1980 to 2000 as well the differences between the rate of change in the 1980s and the rate of change in the 1990s. Although our model does not use the rates of change from 1990 to 2000, the trends they reveal are worth discussing.

Regional to Local Comparisons

In many cases, indicators in the local areas (neighborhoods) were consistent with the general trend in the region. However, in some cases, the local areas and region registered opposite trends. Overall, the findings for these indicators revealed that although these neighborhoods share common characteristics, such as their geographic locations, they are each unique; therefore, lending themselves to a range of possibilities in their likelihood for gentrification.

Professional Job Growth

Between 1980 and 2000, the city of St. Petersburg experienced a 10.09% increase in the number of residents with professional jobs. Further analysis reveals that the majority of that increase occurred between 1990 and 2000, a 7.38% increase.

From 1980 to 2000, all five neighborhoods in the study area register an increase in the number of residents with professional jobs. Two neighborhoods, Roser Park and Crescent Lake, show an increase much higher than the city. With a 19.82% increase in

professional jobs, Roser Parks' rate of increase is nearly twice that of the city. Crescent Lake's 16.38% increase is also significantly higher. This shows the strong appeal of these neighborhoods to professionals. Bartlett Park, Old Southeast and Uptown also showed increases of 5.2%, 9.82% and 8.36% respectively, perhaps implying a growing interest, but not yet on the level of the other two neighborhoods.

Change in Population

The census reports that the population of the city of St. Petersburg increased from 238,547 in 1980 to 248,232 in 2000, a 4.02% increase in population. Further examination shows that the majority of this population increase occurred between 1990 and 2000, as the census reports a population of 238,629 in 1990.

The trend of increasing population for the city of St. Petersburg as a whole does not hold true in any of the neighborhoods in the study area. In fact, some neighborhoods experienced a sharp decline in population. The Crescent Lake neighborhood, represented by Census Tract 235, had the smallest change, with a 0.94% decrease in population from 1980 to 2000. In ascending order, Old Southeast (Tract 204) shows a 3.31% decrease, Uptown (Tract 234) shows a 9.6% decrease, Bartlett Park (Tract 205) shows a 18.26% decrease, and Roser Park (Tract 213) shows a 51.0% decrease.

Considering the increase in city population, these neighborhood-level decreases are unexpected. On face value, these decreases in population could represent disinterest and disinvestment. However, this population decrease may be explained by trends relating to other indicators.

Change in Housing Units

Between 1980 and 2000, the number of housing units in the city of St. Petersburg increased 4.3%. However, over both censuses, all five neighborhoods report a decreasing

number of housing units. Still, Roser Park shows a strikingly high decrease in housing units, reporting a 78.46% decrease. The second-highest decrease occurred in Uptown, reporting a 24.84% decrease. Bartlett Park ranks third, with an 18.26% decrease, followed by Crescent Lake and Old Southeast, with 16.35% and 10.56% decreases respectively.

These decreases in housing units may be explained by conversion of housing units to office space. For instance, due to its location near a large hospital district and university campus, some housing units in the Roser Park neighborhood may have been purchased by those institutions for future expansion or by businesses wishing to be close to them. Another explanation could be the conversion of large structures back to single-family uses that were formerly rented as multiple units.

Change in College-Educated Population

From 1980 to 2000, the number of persons with Bachelors, Graduate and Professional degrees in the city of St. Petersburg has increased 8.25%, from 14.57% in 1980 to 22.82% in 2000. This increase appears to be steady, with 4.19% occurring between 1990 and 2000.

All five neighborhoods also report an increase in the number of residents with four-year degrees or higher. Three neighborhoods show a rate of increase higher than that of the city. They are Old Southeast, Roser Park and Crescent Lake, with 19.82%, 8.36% and 16.09% increases respectively. These larger increases imply that these are clearly neighborhoods of interest for college-educated persons. Bartlett Park and Uptown report increase of 5.2% and 6.12% respectively. Although these represent a gain in college-educated residents, the smaller values indicate these neighborhoods aren’t as popular as the other three.

Change in Age 25 through 34 Population

From 1980 to 2000, St. Petersburg shows a slight increase in the number of residents from the age of 25 through 34 with an overall increase of 0.74% from 13.02% of the population in 1980 to 13.76% of the population in 2000. There was a larger increase from 1980 to 1990, going from 13.02% to 14.96%, then decreasing in 2000 to 13.76%.

The population in this cohort increased during the twenty-year period in two of the neighborhoods and decreased in the other three. Uptown's increase of 0.95% is slightly above the city's rate of increase. Crescent Lake experienced a more significant 3.86% increase. However, Bartlett Park, Old Southeast and Roser Park all experienced decreases – 6.19%, 3.78% and 5.24% respectively. Although the rate of increase appears slow for Uptown and Crescent Lake, both are gaining residents of this age faster than the city, indicating an attractiveness of these neighborhoods to younger adults. The decreases in Bartlett Park, Old Southeast and Roser Park imply an unattractiveness of these neighborhoods to younger adults.

Change in Age 55 through 64 Population

The population aged 55 through 64 has decreased in St. Petersburg from 12.15% in 1980 to 9.17% in 2000, a 2.98% decrease. The majority of this decrease occurred between 1990 and 2000 when the 55 to 64 population decreased 1.69% from 10.86% to 9.17%.

Two neighborhoods registered an increase in this age group, whereas the population in this age group declined in three of the neighborhoods. Bartlett Park experienced an increase of 3.72% from 1980 to 2000, the majority occurring between 1980 and 1990 (2.87%). This slowing increase may imply a developing disinterest in the

area from this age group. Old Southeast reports an overall increase of 0.38%. Although the population in this age group decreased between 1980 and 1990 from 9.79% to 8.43% of the total population, it increased again between 1990 and 2000 to 10.17%. This indicates that the Old Southeast may be developing into a neighborhood of interest for this age group. Roser Park, Uptown and Crescent Lake report decreases of 1.17%, 2.05% and 3.91% respectively. In all three cases, the majority of decrease occurred between 1980 and 1990. This slowing decrease may also indicate increasing interest in these three neighborhoods for this age group.

Change in Area Median Income

The area median income has increased dramatically in St. Petersburg, going from $11,798 in 1980 to $34,597 in 2000, a 193% increase, or nearly tripling in twenty years. The majority of that increase took place between 1980 and 1990, when median income experienced a 146.26% increase from $11,798 to $23,577. This significant increase in median income could be explained by an increasing number of two-wage earner households and the greater upward mobility of women during this time period.

All five neighborhoods experienced significant increases in median income. Crescent Lake experienced the largest increase (234%), going from $6,964 in 1980 to $23,225 in 2000. Not far behind with a 200% increase is Old Southeast, rising from $10,386 in 1980 to $31,163 in 2000. Uptown experienced a 169% increase from $8,466 in 1980 to $22,768 in 2000. The smallest increases were in Bartlett Park and Roser Park, reporting 135% and 158% increases respectively. Bartlett Park increased from $8,135 to $19,125, while Roser Park increased from $7,584 to $19,531. Just as with the city, all five neighborhoods experienced their greatest gains between 1980 and 1990.

Although all five neighborhoods have gained significantly, their median incomes still lag behind that of the city of St. Petersburg as a whole. However, with gains of 200% and 234%, incomes in Old Southeast and Crescent Lake are growing at a faster rate than the city's rate of increase, indicating interest in these areas from higher-income households. Moreover, of the five neighborhoods, Roser Park is the only neighborhood in which a higher rate of increase in income occurred from 1990 to 2000 than the city's rate during that same period – an increase of 69.76% for the neighborhood compared to 46.74% for the city, implying that Roser Park has caught the attention of higher-income households. Yet the overall numbers from 1980 to 2000 reveal that there still remains a large presence of low-income households in the neighborhood.

Change in Median Single-family Unit Value

From 1980 to 2000, single-family homes in the city of St. Petersburg increased in value by 126%, going from $35,800 in 1980 to $81,000 in 2000. This increase mostly took place during the 1980s, when values increased by 96.81%, or nearly doubled. Both Bartlett Park and Old Southeast experienced similar rates of increase – 122% and 125% respectively. Values in Bartlett Park grew from $20,600 in 1980 to $45,800 in 2000; whereas values in Old Southeast grew from $37,900 in 1980 to $85,400 in 2000.

The three other neighborhoods saw values rise at a higher rate than the city. Roser Park and Crescent Lake experienced the greatest increase in single-family home values. In Roser Park, values rose an impressive 255%, more than tripling from $19,200 in 1980 to $68,100 in 2000. Likewise, Crescent Lake values grew by 211%, also more than tripling from $28,700 in 1980 to $89,200 in 2000. Although not as high, Uptown values rose 170% from $29,000 in 1980 to $78,200 in 2000. In addition, all three neighborhoods had higher rates of increase between 1990 and 2000 than the 29.19% rate of the city, with

Roser Park reporting a 51.33% increase, Crescent Lake reporting a 50.42% increase and Uptown reporting a 48.95% increase. Of these three neighborhoods, values in two – Roser Park and Uptown – still lag behind the regional median value. Still, the rising values generally relate to rising demand, implying specific interest of homebuyers in these three neighborhoods.

Change in Housing Vacancy

Interestingly, from 1980 to 2000 the city reports an overall increase in vacancy of 2.24% from 1980 to 2000. However, the vacancy rate decreased by 3.74% between 1990 and 2000, indicating increased absorption of housing units in the city overall.

Four of the five neighborhoods followed similar patterns. Bartlett Park experienced the highest increase in vacancy, rising from 17.02% in 1980 to 28.77% in 2000. Vacancy in Crescent Lake rose 6.67% over the same time period. In Uptown, the rate grew 3.77%. Roser Park reported the smallest increase with 0.36%. However, all four experienced decreases in their vacancy rates in the 1990s. Crescent Lake reports a 10.04% decrease during that decade. Roser Park had the second-highest decrease of 6.9%. Uptown and Bartlett Park experienced decreases of 2.16% and 0.02% respectively. Old Southeast is the only neighborhood to experience an overall decrease in vacancy from 1980 to 2000. Vacancy decreased by 2.41%, going from 15.97% in 1980 to 13.56% in 2000. Still, all five neighborhoods continue to have higher rates of vacancy than the city as a whole. However, with vacancy rates decreasing at a faster rate than the city between 1990 and 2000, both Roser Park and Crescent Lake appear to be neighborhoods of interest.

Change in Owner-Occupancy

Surprisingly, owner-occupancy decreased over the twenty-year period by 1.17% in the city of St. Petersburg from 57.04% in 1980 to 55.87% in 2000. However, the rate of

owner-occupancy increased by 2.8% between 1990 and 2000. Only one other neighborhood followed a similar pattern – Bartlett Park. Here, owner-occupancy decreased by 2.16% between 1980 and 2000, but it increased by 5.04% between 1990 and 2000.

The other four neighborhoods experienced growing owner-occupancy over both time periods. Ownership in Roser Park grew 9.64% from 1980 to 2000, with 95% of that growth taking place in the 1990s. Old Southeast, Uptown and Crescent Lake also experienced an increase in ownership from 1980 to 2000, with increases of 2.54%, 0.68% and 1.23% respectively. However, these neighborhoods saw greater rates of increase in the 1990s than over the twenty-year span of 1980 to 2000. Old Southeast reports an increase of 9.78% during the 1990s. Uptown and Crescent Lake saw increases of 4.3% and 5.15% respectively.

With the exception of Bartlett Park, owner-occupancy increased faster in the neighborhoods than in the city overall from 1980 to 2000. However, ownership increased faster in Bartlett Park than the city overall from 1990 to 2000. Both trends imply a growing number of homeowners, associated with a stabilizing neighborhood. Moreover, these rates indicate the growing appeal of these neighborhoods to homebuyers.

Unit Size

The median number of rooms in owner-occupied units in 2000 was 5.5 rooms for the city. Of the five neighborhoods, Old Southeast and Roser Park had a higher median number of rooms, with 6 and 7.4 rooms respectively. Bartlett Park homes tend to be smaller than that of the city, with a median of 5.3 rooms. The same applies to Uptown, with a median of 5.2 rooms. Crescent Lake reflects the citywide median of 5.5 rooms.

The larger homes of Old Southeast and Roser Park lend themselves to greater attractiveness; whereas, the smaller homes of Bartlett Park and Uptown may not be as attractive. As the homes of Crescent Lake tend mirror the city as a whole, other indicators would have a greater effect on the likelihood of gentrification taking place there.

Change in Commute Times

Over the twenty-year period the average commute times increased in all instances. The city average commute time increased 5.64% from 19.5 minutes in 1980 to 20.6 minutes in 2000. Uptown reports the greatest increase in commute times, rising 37.84% from 14.8 minutes in 1980 to 20.4 minutes in 2000. The second-largest increase happened in Old Southeast, with a 24.57% increase from 17.5 minutes in 1980 to 21.8 minutes in 2000. Crescent Lake, Roser Park and Bartlett Park experienced increases of 6.96%, 7.21% and 1.39% respectively. If gentrification is happening in these areas, then these commute times are still low enough to attract new residents. An alternative explanation may be that a change in commute times is not a significant indicator of gentrification.

Neighborhood-Specific Indicators

Percentage of Housing Constructed before 1950

All neighborhoods have relatively high percentages of housing units built prior to 1950. Two neighborhoods, Uptown and Crescent Lake, have maintained the majority of their older residential units, reporting that 57.47% and 56.04% of their units were built prior to 1950. However, the three of the four neighborhoods believed to be targets of gentrification reported the lowest percentages of old homes. Bartlett Park reports in 2000 that 41.16% of its units were constructed before 1950. The percentages for Old Southeast and Roser Park were 44.08% and 42.17% respectively. It appears that Uptown and

Crescent Lake did a better job of preserving historic character over the years than has Bartlett Park, Old Southeast and Roser Park. If these three neighborhoods are gentrifying, this data may counter the hypothesis that gentrifyers are generally attracted to the architecture of older neighborhoods.

Proximity to the Central Business District and Interstate Highways

Roser Park, Uptown and Crescent Lake are directly adjacent to the business district, and are all bordered on at least one side by an interstate highway. In all cases, the bordering interstate highway is the divider between the neighborhood and the central business district. Bartlett Park and Old Southeast are located further away – one mile and 1.5 miles respectively. However, they are both within a five minute drive of the central business district. Their proximity to the central business district and the interstate highways, which provide access to suburban job markets, make these neighborhoods attractive to gentrifyers looking for shorter commutes to the central business district or who don't mind the "reverse" commute to the suburbs in exchange for easy access to the cultural and entertainment amenities of the central business district.

Historic Designations

Old Southeast contains the greatest number of historic designations with a local historic district designation and three individual historic structure designations, two national and one local. Crescent Lake follows with a portion of the area designated as the Round Lake national historic district and one historic structure. Lastly, Roser Park is designated a national historic district. Both Bartlett Park and Uptown have no historic designations.

According to previous studies (Redfern, 2001; Nelson, 1988; Lang, 1982), maintenance of historic character makes an area more attractive to gentrifyers. Historic

designations in a neighborhood or the designation of an entire neighborhood as a historic district attest to the neighborhood's commitment to maintain that character. Therefore, two of the four neighborhoods believed to be targets for gentrification – Old Southeast, Roser Park – are likely to succeed; whereas, Bartlett Park and Uptown may not attract as many gentrifyers as they are not designated like the other two.

Major Relationships

Examination of these statistics revealed some relationships between indicators. There were some expected correlations, such as that between population and housing units. However, some relationships didn't follow usual patters, such as that between housing vacancy, number of units and value. The following paragraphs will discuss relationships found between these indicators.

Overall, the number of housing units in the city increased at the same rate as population increase, indicating that housing production in the city has generally kept pace with population increase. However, although population has decreased in the neighborhoods, the number of housing units has decreased at a much higher rate in all cases except Bartlett Park. Although the city's growing population may be redistributing itself in other areas, there still remains interest in these neighborhoods in 2000, perhaps by larger households than had previously occupied them in 1980. This theory runs counter to how gentrification research identifies a gentrifyer -- described as a nontraditional household (young, single persons or unrelated individuals), or a married couple with no children living in the house (younger couple or older yet active, empty-nest couple). The theory of growing household size is further supported by the overall decrease in population of the age cohorts generally associated with these two demographics – ages 25 through 34 and ages 55 through 64. An increasing household

size may also indicate that gentrification does not necessarily relate to growth in those demographics, but could possibly relate to growth in families with upwardly mobile householders; thus, adding another dynamic to ideas of how gentrification manifests itself in different cities.

Likewise, as the number of residents with bachelor's degrees or higher increases, the number of residents with professional jobs increases. In most cases, the number of professional workers has increased at a higher rate than the number of college-educated residents. This, perhaps, indicates an increasingly competitive job market that continues to attract new, highly-educated residents. In addition to possibly reflecting an increasing number of two-income households, the increase in area median income in all geographic areas also relates to the growing number of highly-educated professional workers as demonstrated by the statistics gathered for this research. This increase in income and percentage of college-educated residents supports the hypothesis that these neighborhoods are targets for gentrification, as previous studies on the subject indicate that job growth, particularly professional job growth, is the major indicator of the potential for gentrification.

Finally, interesting relationships exist among the statistics relating directly to the housing units. As the number of units decreases, one expects the vacancy rate to also decrease. Conversely, as the number of units decreased, the vacancy rate increased in nearly all instances. Despite an increasing vacancy rate, the value of single-family units continued to rise. This increase in value probably relates to the general increase in owner-occupancy, which also supports previous gentrification research that points to increasing home-ownership as a sign of gentrification. In addition, the two neighborhoods with the

largest homes, Old Southeast and Roser Park experienced the highest rates of increase in homeownership. Roser Park, with the largest homes, experienced the highest rate of increase in home value, while Uptown and Crescent Lake, with the largest collection of homes constructed before 1950, experienced the second and third-largest increases in home value. Moreover, these three neighborhoods immediately adjacent to the central business district – Roser Park, Uptown and Crescent Lake – experienced the highest rates of home value increase. This supports gentrification research on the attractiveness of large, older homes close to the central business district to gentrifyers.

Results

Using the model described in the previous chapter the results strongly support the hypothesis in one neighborhood. In other neighborhoods, the results counter the hypothesis. The following paragraphs will describe the application of the statistics developed from the census data, the relationships discovered among the statistics related to each indicator in the model, and the resulting gentrification index.

Weights

The weights for each indicator were calculated using the pairwise comparison described in the methodology chapter. Each indicator was compared to the other indicators individually based in part on their ranking of importance as expressed in the literature on gentrification and in part on their specific relevance to gentrification in St. Petersburg. For instance, the change in commute time is a major indicator of gentrification according to the gentrification literature, as neighborhoods experiencing gentrification should register decreasing commute times. However, four of the five neighborhoods report commute times increasing at a higher rate than the region (the city of St. Petersburg). Therefore, in fitting with the hypothesis, change in commute times

carries a smaller weight with neighborhoods in St. Petersburg. Tables 5-1 and 5-2 display the weights calculated for each indicator:

Table 5-1: Regional to neighborhood comparison indicators

Name	**Weight**	**Percent of Total Weight**
% Change in Population	0.0864	8.64%
% Change in Housing Units	0.1684	16.84%
% Change in Professional Jobs	0.1875	18.75%
% Change in College Educated Population	0.0712	7.12%
% Change in Age Cohort 25-34	0.0362	3.62%
% Change in Age Cohort 55-64	0.0439	4.39%
% Change in Area Median Income	0.0630	6.30%
% Change in Single-Family Unit Value	0.1062	10.62%
% Change in Commute Time	0.0379	3.79%
% Change in Housing Vacancy	0.1141	11.41%
% Change in Owner-Occupancy	0.0419	4.19%
Unit Size	0.0380	3.8%

Table 5-2: Neighborhood-specific indicators

Name	**Weight**	**Percent of Total Weight**
% Housing Pre-1950	0.43175	43.17%
Proximity to Central Business District	0.26025	26.03%
Proximity to Major Transportation Corridors (Interstate Highways)	0.2076	20.76%
Historic Designations	0.3478	34.67%

Values

For use in the equation, the model reclassified the statistics for each indicator using the binary system values of 0 and 1. The regional (city) values were used as the

thresholds to determine how indicator value was reclassified. Since gentrification literature gives neither universal thresholds nor any direction on how to stratify the reclassification of values based on preset thresholds, reclassification based on the city values using the binary system was the most appropriate and effective means of evaluating each indicator. The reclassification for each indicator is as follows:

% Change in Population
1 = Tract > 4.02%
0 = Tract < 4.02%

% Change in Housing Units
1 = Tract < 4.3%
0 = Tract > 4.3%

% Change in Professional Employment
1 = Tract > 10.09%
0 = Tract < 10.09%

% Change in College-Educated Pop.
1 = Tract > 8.25%
2 = Tract < 8/25%

% Change in Age 25-34 Population
1 = Tract > 0.74%
0 = Tract < 0.74%

% Change in Age 55-64 Population
1 = Tract > -2.98%
0 = Tract < -2.98%

% Change in AMI
1 = Tract > 193%
0 = Tract < 193%

% Change in Single-Family Home Value
1 = Tract > 126%
0 = Tract < 126%

% Change in Commute Times
1 = Tract < 5.64%
0 = Tract > 5.64%

% Change in Housing Vacancy
1 = Tract < 2.24%
0 = Tract > 2.24%

% Change in Owner-Occupancy
1 = Tract > -1.17%
0 = Tract < -1.17%

Unit Size
1 = Tract > 5.5 Rooms
0 = Tract < 5.5 Rooms

% Housing Pre-1950
1 = Tract > 0%
0 = Tract = 0%

Proximity to Central Business District
1 = Tract = 0 miles (directly adjacent)
0 = Tract > 0 miles

Proximity to Transportation Corridor
1 = Tract = 0 miles (directly adjacent)
0 = Tract > 0 miles

Historic Designations
1 = Historic designations present
0 = No historic designations present

This reclassification was done using the “reclass” function in the Spatial Analyst menu of ArcGIS. The resulting equation for the gentrification index (G) was

G = 0.8 * [(0.0864 * Δ in population) + (0.1684 * Δ in units) + (0.1875 * Δ in professional jobs) + 0.0712 * Δ in college-educated) + (0.0362 * Δ in age 25-34) + (0.0439 * Δ in age 55-64) + (0.0630 * Δ in AMI) + (0.1062 * Δ in single-family value) + (0.0379 * Δ in commute time) + (0.1141 * Δ in housing vacancy) + (0.0419 * Δ in owner-occupancy) + (0.0380 * unit size)] + 0.2 * [(0.43175 * housing pre-1950) + (0.26025 * proximity to CBD) + (0.2076 * proximity to transportation corridors) + (0.3478 * historic designations)]

This equation used the reclassified values for each indicator to calculate the gentrification index G. We used the trends from 1980 to 2000 to establish the values for each indicator in the gentrification index calculation. This equation was inputted into the Raster Calculator in the Spatial Analyst menu of ArcGIS, which inputted the reclassified values into the equation and yielded gentrification indices with the following values:

Bartlett Park = 0.1559
Old Southeast = 0.4577
Roser Park = 0.7358
Uptown = 0.4072
Crescent Lake = 0.6277

Multiplying those values by 100 more clearly communicates the relative likelihood of gentrification:

Bartlett Park = 15.59%
Old Southeast = 45.77%
Roser Park = 73.58%
Uptown = 40.72%
Crescent Lake = 62.77%

Both Roser Park and Crescent Lake show the greatest likelihood for gentrification with gentrification indexes (probabilities) of 73.58% and 62.77% respectively. Old Southeast and Uptown have lower likelihoods of gentrification, with indexes of 45.77% and 40.72%. Bartlett Park's index comes in substantially lower than Uptown at 15.59%. These indexes strongly support the hypothesis with Roser Park and Crescent Lake, moderately support the hypothesis with Old Southeast, and disprove the hypothesis for

Bartlett Park. With a likelihood of 40.72%, Uptown proves not to be representative of the city of St. Petersburg and should be re-evaluated in its role as the control neighborhood.

Clearly, Roser Park and Crescent Lake are experiencing the most rapid change, and likely would gentrify before the other neighborhoods in the study area. Perhaps, the process has already begun in these two neighborhoods. What differentiates these two neighborhoods from the others that explain this higher likelihood? Geographically speaking, Roser Park, Crescent and Uptown are adjacent to the central business district. However, Roser Park and Crescent Lake are closest to the core of the central business district where most of the activity takes place. Both neighborhoods showed great increases in the percentage of residents in professional employment, the only two with higher rates of increase than the city. Uptown and Crescent Lake both have high percentages of older housing, Uptown with the highest of all neighborhoods in the study area. However Crescent Lake homes are larger, equal to the city average. Similarly, Old Southeast has a slightly larger collection of older homes; however, single-family homes are significantly larger in Roser Park than in Old Southeast. Neither Bartlett Park nor Old Southeast are directly adjacent to the central business district. However, Bartlett Park has shown the smallest increase in professional employment and college-educated residents; its average home size is smaller than the city average, and it has the smallest collection of older homes of all the neighborhoods in the study area. While these explanations do not address every indicator, they begin to explain why Roser Park and Crescent Lake exhibit high potential for gentrification and Bartlett Park trails so far behind. Perhaps, the process has already begun in those neighborhoods, with Old Southeast and Uptown poised to

follow them in a second wave of gentrification and Bartlett Park in the distant future – if ever at all.

CHAPTER 6
CONCLUSION

In our study, we identified several indicators of gentrification according to previous research on the subject and used them to develop a model that monitors community change and assesses the likelihood of gentrification with a deterministic statistical analysis method and a weighted suitability analysis that uses the spatial analyst capabilities of geographic information systems. Our hypothesis defines four neighborhoods as targets of gentrification (Bartlett Park, Old Southeast, Roser Park and Crescent Lake) and one control neighborhood (Uptown). The results are mixed. Our model proves our hypothesis correct for Roser Park, Crescent Lake, and arguably Old Southeast. Our hypothesis is proved wrong for Bartlett Park, found not to be a target of gentrification (yet) and Uptown, found to be more of a target than expected. However, our study demonstrates the capabilities of statistical analysis and geographic information systems to address housing issues in a proactive manner by anticipating the likelihood of gentrification.

Universal Applicability

Since gentrification manifests itself in accordance with the unique dynamics of a local housing market, it is impossible to develop an equation with coefficients that can be used for analyzing any neighborhood in any city. However, the indicators of gentrification are generally the same everywhere. Therefore, in order to apply our model to other cities, the coefficient values associated with each indicator should be adjusted to reflect how they interact in that specific market.

Policy Implications

Any model for monitoring a planning issue should produce meaningful results for use in the development of policies and programs. Our deterministic model of gentrification allows planners to accurately identify those neighborhoods more likely to gentrify and use that information a basis for changes to or the creation of new policies, programs and planning initiatives.

Planning, overall, has developed into a reactionary practice. More proactive planning needs to take place. However, in order for planners to work proactively, they must be equipped with the tools necessary to provide solid analysis on which to base their recommendations. Our model provides an excellent example of how common planning tools and resources can be used for analysis of a complex planning issue – gentrification. The results of the model can be used to guide the implementation of specific programs, such as tax credit and grant programs for rehabilitation or new construction to encourage a mix of incomes and discourage the displacement of low-income residents that often occurs with gentrification. Implementing such programs before gentrification begins in earnest will increase the effectiveness of the programs by intervening before any negative effects can occur.

For St. Petersburg specifically, efforts should focus affordable construction and rehabilitation dollars in neighborhoods such as Roser Park and Crescent Lake immediately, as developers and speculators will surely start to purchase properties, if they have not already. The same should be done in Old Southeast and Uptown as they both will likely follow the same path of gentrification as Roser Park and Crescent Lake. As for Bartlett Park, perhaps the city may want to encourage the development of more middle-income housing to strengthen the neighborhood. However, realizing Bartlett Park shares

many things in common with gentrifying areas, policies should be written to prevent the neighborhood from falling victim to its own success. For instance, amendments to the housing and future land use elements of the city of St. Petersburg's Comprehensive Plan could be written to specifically address the possibility of gentrification in Bartlett Park and similar neighborhoods. In addition to policy changes, programs such as a community land trust, municipal purchase of residential properties or tax increment financing for affordable housing could be implemented to insure that low and moderate-income households will continue to have housing opportunities in the neighborhood.

Recommendations for Future Research

Overall, our model appears to be effective in calculating a gentrification index and establishing a model for monitoring community change based on trends over long time periods. However, specific aspects of the model could be adjusted to increase its effectiveness, calling for additional research:

Studying the change in the same indicators over a shorter period of time. In several cases, the statistics revealed different trends between 1980 and 2000, and 1990 and 2000. Although comparing changes in values and statistics associated with the indicators over a longer period of time gives a broader base of knowledge, examining the short term trends may help to balance the perspective in assessing the likelihood of gentrification. Since real estate markets can be very volatile, it may prove beneficial to run this deterministic gentrification model based on ten year intervals. For instance, in addition to obtaining the index with a base year of 1980, the gentrification index could be calculated using 1990 as the base year instead. Based on the data collected, the results would probably be somewhat different.

Projecting beyond the census. Reliance on census data lends itself to inaccuracy as years pass. For example, the 2000 census could describe 2001 and 2002 demographics fairly accurately. However, the 2000 census would not reflect 2005 demographics accurately. The overall effectiveness of the model depends upon the accuracy of the statistics inputted. Therefore, one may consider calculating projections of the census data, such as those done by the Bureau of Economic and Business Research at the University of Florida, for each indicator to more accurately relate the current situation to that of the base year.

Use of other indicators in addition to those measured by the census. Previous research on gentrification identifies several other potential indicators that are not used in this model. However, some data was collected on these indicators. One major indicator of gentrification is increased sales activity. According to the Pinellas County Property Appraiser, Bartlett Park had 33 sales in 2000 as opposed to 10 in 1980. Crescent Lake had 125 sales in 2000 as opposed to only 13 in 1980. Comparison of these rates of increase to the rate of change in the city's sales activity would strengthen the model more. Other indicators include the change in the number of residential (new construction or major renovation) permits issued as well as the number and type of capital improvement projects planned or that have occurred in the neighborhood over time. In addition, surveying local residents may identify indicators not mentioned in the literature. Incorporation of these other indicators not measured by the census as well as those identified by residents (and not mentioned in the literature) would further support changes related to other indicators and greatly enhance the effectiveness of the model.

Develop weights and thresholds through survey. Community involvement in determining the weights and acceptable thresholds could greatly strengthen the validity of the model, as the value and thresholds related to community indicators are usually decided upon by members of the community. The weights for each indicator were developed based on the researcher's interpretation of information presented in the literature search and the data gathered on each indicator, lending itself to a certain amount of subjectivity some may consider problematic. More accurate weights could be developed by surveying other housing and planning experts as well as area residents through public meetings or written surveys. The range of weights relating to each indicator reported in the surveys could, perhaps, be averaged to determine the actual weight used in the model; therefore, creating a better equation with more accurate results.

Run model again in the future to see if results change. As implied by the indexes for each neighborhood in our study, some neighborhoods are further into the process of gentrification than others. As neighborhoods, cities and regions are dynamic entities, the gentrification index as calculated by the model may be different in the future for each neighborhood. One possible extension of this research would be to re-evaluate these neighborhoods at the time of the 2010 census to monitor how they have changed since 2000.

Determine a "tipping point" index and assigning appropriate policies and programs to specific indexes. One of the major goals of our study is to create a monitoring tool for use in policy decision-making. Therefore, determining the index value that describes a neighborhood in the early or moderate states of gentrification as opposed to when the process of gentrification is fully underway and therefore quite

difficult to address would be excellent continuations of our study. Then proper policy and programs to could be related to specific index ranges through testing this model on neighborhoods in other cities to show that neighborhoods with the same index generally display similar attributes. Similarly, neighborhoods could be re-evaluated over time to discover how long it takes neighborhoods to cycle through the gentrification process.

Our study successfully accomplishes its goal of developing a model for measuring gentrification and monitoring community change with results that can have meaningful effects on policy and program decisions. It is also a good example of how qualitative information, such as the affinity for architectural style or the desire to be close to the amenities of the central business district, can be combined with quantitative data, such as the percentage of housing built before 1950 and the measured distance of a neighborhood from the central business district, to produce usable information on community change. Although several revisions could possibly improve the model, it provides an excellent foundation for future research into the development of more effective models relating to monitoring gentrification as well as a wide range of other related planning issues.

APPENDIX A
DATA TABLES

Regional to Local Comparison Indicators

Table A-1: Total population

Area	1980	1990	2000	Change ('80-'00)
St. Petersburg	238647	238629	248232	4.02%
Bartlett Park	4827	4269	3912	-18.96%
Old Southeast	2625	2775	2538	-3.31%
Roser Park	2302	1349	1128	-51.0%
Uptown	2250	2207	2034	-9.6%
Crescent Lake	3847	3724	3811	-0.94%

Table A-2: Housing units

Area	1980	1990	2000	Change ('80-'00)
St. Petersburg	119486	125452	124618	4.3%
Bartlett Park	2256	2261	1844	-18.26%
Old Southeast	1459	1380	1305	-10.56%
Roser Park	1541	591	332	-78.48%
Uptown	1414	1259	1062	-24.84%
Crescent Lake	2821	2759	2359	-16.38%

Table A-3: Professional job employment (as defined by US Census)

Area	1980	1990	2000	Change ('80-'00)
St. Petersburg	23.96%	26.67%	34.05%	10.09%
Bartlett Park	9.27%	7.36%	14.47%	5.20%
Old Southeast	23.93%	25.03%	33.75%	9.82%
Roser Park	9.28%	15.67%	29.10%	19.82%
Uptown	23.96%	15.00%	32.32%	8.36%
Crescent Lake	15.86%	24.32%	31.95%	16.09%

Table A-4: College-educated population (bachelor's degrees or higher)

Area	1980	1990	2000	Change ('80-'00)
St. Petersburg	14.57%	18.63%	22.82%	8.25%
Bartlett Park	5.13%	6.02%	6.02%	0.89%
Old Southeast	17.29%	28.43%	29.59%	12.30%
Roser Park	6.08%	6.86%	17.93%	11.85%
Uptown	9.22%	13.95%	14.06%	4.84%
Crescent Lake	13.85%	16.85%	19.97%	6.12%

Table A-5: Age 25 through 34

Area	1980	1990	2000	Change ('80-'00)
St. Petersburg	13.02%	14.96%	13.76%	0.74%
Bartlett Park	19.81%	16.34%	13.62%	-6.19%
Old Southeast	16.11%	18.27%	12.33%	-3.78%

Table A-5 Continued

Area	1980	1990	2000	Change ('80-'00)
Roser Park	14.81%	20.24%	9.57%	-5.24%
Uptown	15.96%	19.80%	16.91%	0.95%
Crescent Lake	14.04%	20.62%	17.90%	3.86%

Table A-6: Age 55 through 64

Area	1980	1990	2000	Change ('80-'00)
St. Petersburg	12.15%	10.86%	9.17%	-2.98%
Bartlett Park	4.56%	7.33%	8.28%	3.72%
Old Southeast	9.79%	8.43%	10.17%	0.38%
Roser Park	7.91%	6.89%	6.74%	-1.17%
Uptown	9.42%	7.70%	7.37%	-2.05%
Crescent Lake	11.62%	7.00%	7.71%	-3.91%

Table A-7: Area Median income (AMI in dollars)

Area	1980	1990	2000	Change ('80-'00)
St. Petersburg	11798	23577	34597	193%
Bartlett Park	8135	13224	19125	135%
Old Southeast	10386	25047	31163	200%
Roser Park	7584	11505	19531	158%
Uptown	8466	16824	22768	169%
Crescent Lake	6964	15846	23225	234%

Table A-8: Single-family home value (dollars)

Area	1980	1990	2000	Change ('80-'00)
St. Petersburg	35800	62700	81000	126%
Bartlett Park	20600	37200	45800	122%
Old Southeast	37900	70700	85400	125%
Roser Park	19200	45000	68100	255%
Uptown	29000	52500	78200	170%
Crescent Lake	28700	59300	89200	211%

Table A-9: Mean commute time (minutes)

Area	1980	1990	2000	Change ('80-'00)
St. Petersburg	19.5	19.2	20.6	5.64%
Bartlett Park	21.5	21.2	21.8	1.39%
Old Southeast	17.5	19.4	21.8	24.57%
Roser Park	22.2	19.7	23.8	7.12%
Uptown	14.8	17.3	20.4	37.84%
Crescent Lake	19.4	22.1	20.75	6.96%

Table A-10: Housing vacancy

Area	1980	1990	2000	Change ('80-'00)
St. Petersburg	9.76%	15.74%	12.00%	2.24%
Bartlett Park	17.02%	28.79%	28.77%	11.75%
Old Southeast	15.97%	14.93%	13.56%	-2.42%
Roser Park	29.46%	36.72%	29.82%	0.36%
Uptown	15.91%	21.84%	19.68%	3.77%
Crescent Lake	14.82%	31.53%	21.49%	6.67%

Table A-11: Owner-occupied housing

Area	1980	1990	2000	Change ('80-'00)
St. Petersburg	57.04%	53.07%	55.87%	-1.17%
Bartlett Park	36.92%	29.72%	34.76%	-2.16%
Old Southeast	51.41%	47.17%	53.95%	2.54%
Roser Park	14.15%	14.38%	23.79%	9.64%
Uptown	31.90%	28.28%	32.58%	0.68%
Crescent Lake	25.81%	21.89%	27.04%	1.23%

Table A-12: Rooms (median number for owner-occupied units)

Area	2000
St. Petersburg	5.5
Bartlett Park	5.3
Old Southeast	6
Roser Park	7.4
Uptown	5.2
Crescent Lake	5.5

Neighborhood-Specific Indicators

Table A-13: Housing pre-1950

Area	2000
Bartlett Park	41.16%
Old Southeast	44.08%
Roser Park	42.17%
Uptown	57.47%
Crescent Lake	56.04%

Table A-14: Proximity to central business district

Area	2000
Bartlett Park	1
Old Southeast	1.5
Roser Park	0
Uptown	0
Crescent Lake	0

Table A-15: Proximity to transportation corridors (interstate highways)

Area	2000
Bartlett Park	1
Old Southeast	1.5
Roser Park	0
Uptown	0
Crescent Lake	0

Table A-16: Historical designations

Area	2000
Bartlett Park	0
Old Southeast	4
Roser Park	1

Table A-16 Continued

Area	2000
Uptown	0
Crescent Lake	2

APPENDIX B
AREA MAPS

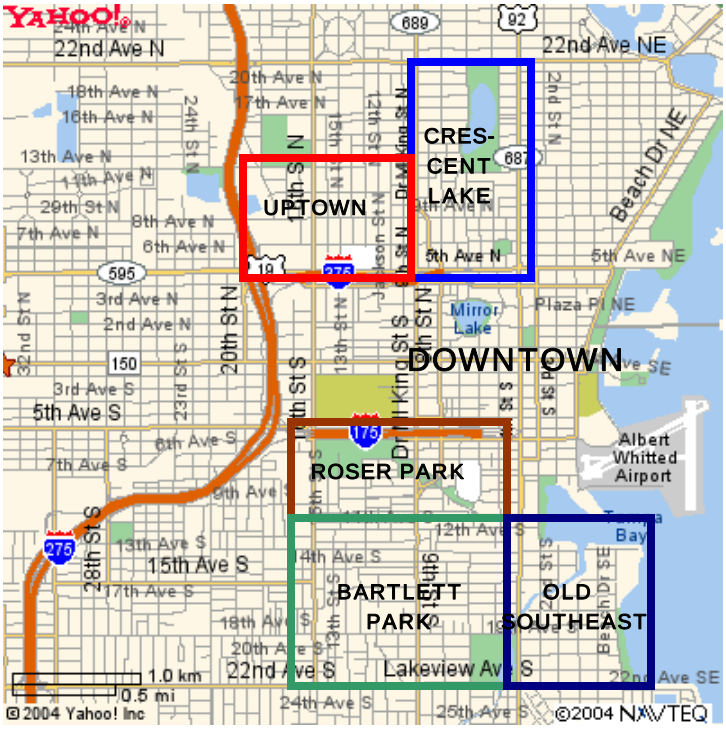


Figure B-1: Neighborhoods

Source: Yahoo! Maps (http://maps.yahoo.com)

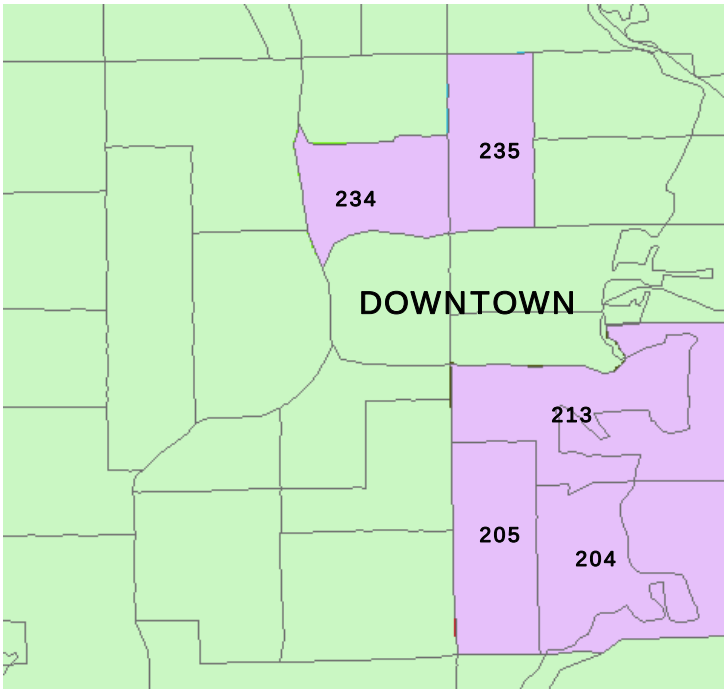


Figure B-2: Census Tracts:

Source: Florida Geographic Data Library (www.fgdl.org)

APPENDIX C
GENTRIFICATION INDEX

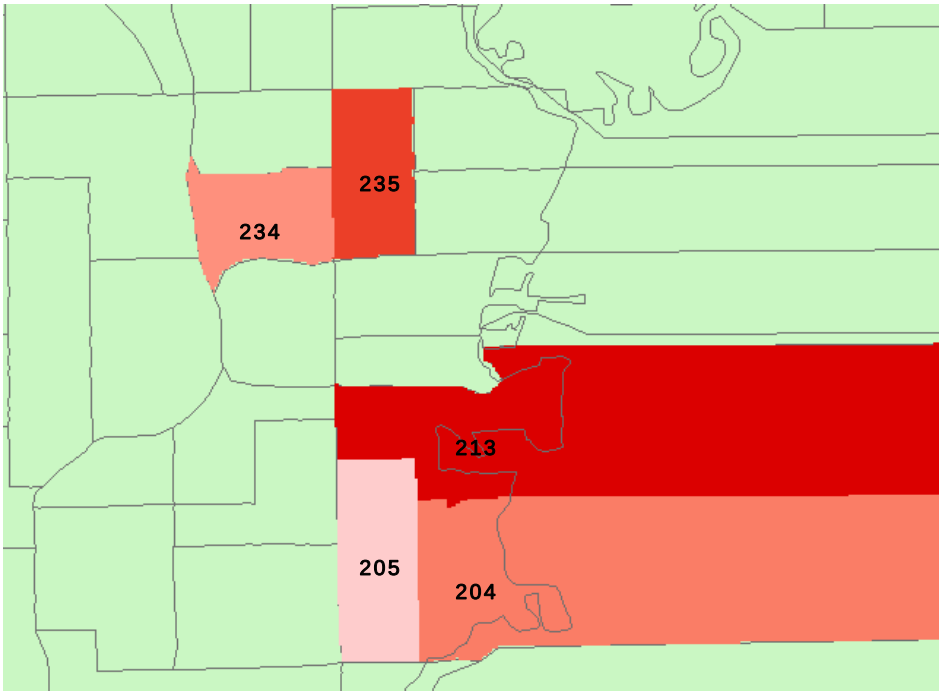
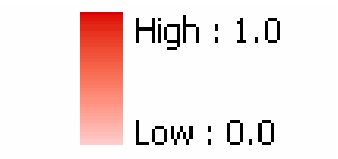


Figure C-1: Gentrification index

Index Value Range:



Census Tracts:

204 = Old Southeast
205 = Bartlett Park
213 = Roser Park
234 = Uptown
235 = Crescent Lake

LIST OF REFERENCES

Anselin, Luc. 1998. GIS Research Infrastructure for Spatial Analysis of Real Estate Markets. Journal of Housing Research 9(1): 113-133.

APD, Inc. 2002. The Fifth Avenue/Pleasant Street Neighborhoods: Controlling Gentrification. City of Gainesville, FL Community Redevelopment Agency.

Atkinson, Rowland. 2003. Introduction: Misunderstood Saviour or Vengeful Wrecker? The Many Meanings and Problems of Gentrification. Urban Studies 40(12): 2343-2350.

Berry, Brian J. L. 1999. Comments on Elvin K. Wyly and Daniel J. Hammel's "Islands of Decay in Seas of Renewal: Housing Policy and the Resurgence of Gentrification" – Gentrification Resurgent? Housing Policy Debate 10(4): 783-788.

Birkin, Mark and Graham Clark. 1998. GIS, Geodemographics , and Spatial Modeling in the U.K. Financial Service Industry. Journal of Housing Research 9(1): pp. 87-111

Can, Aayse. 1998. GIS and Spatial Analysis of Housing and Mortgage Markets. Journal of Housing Research 9(1): 61-86.

Chapple, Karen, John V. Thomas, Dena Belzer, and Gerald Autler. 2004. Fueling the Fire: Information Technology and Housing Price Appreciation in the San Francisco Bay Area and the Twin Cities. Housing Policy Debate 15(2): 347-383

Clark, Gordon, Andrew Goudie, and Ceri Peach. 1996. The New Middle Class and the Remaking of the Central City. New York, NY: Oxford University Press Inc.

Downs, Anthony. 2002. Have Housing Prices Risen Faster in Portland Then Elsewhere? Housing Policy Debate 13(1): 7-31

Freeman, Lance, and Frank Braconi. 2004. Gentrification and Displacement: New York City in the 1990s. Journal of the American Planning Association 70(1): 39-52.

Galster, George C., Roberto G. Quercia, and Alvaro Cortes. 2000. Identifying Neighborhood Thresholds: An Empirical Exploration. Housing Policy Debate 11(3): 701-732.

Goodman, Allen C., and Thomas G. Thibodeau. 1995. Age-Related Heteroske-dasticity in Hedonic House Price Equations. Journal of Housing Research 6(1): 25-42

Higgins, Lindley. 2001. Gathering and Presenting Information About Your Neighborhood. Washington, D.C.: Local Initiatives Support Corporation Center for Home Ownership and Knowledge Sharing Initiative.

Kennedy, Maureen, and Paul Leonard. 2001a. Dealing With Neighborhood Change: A Primer on Gentrification and Policy Choices. Washington, D.C.: Brookings Institution.

Kennedy, Maureen, and Paul Leonard. 2001b. Gentrification: Practice and Politics. Washington, D.C.: Local Initiatives Support Corporation Center for Homeownership and Knowledge Sharing Initiative.

Land, Robert E., James W. Hughes, and Karen A. Danielson. 1997. Targeting Suburban Urbanites: Marketing Central-City Housing. Housing Policy Debate 8(2): 437-470.

Lang, Michael H. 1982. Gentrification Amid Urban Decline: Strategies for America's Older Cities. Cambridge, MA: Ballinger Publishing Company.

LaPeter, Leonora. July 18, 2004. A Revitalization Riddle. St. Petersburg Times. Section B: pp. 1, 6

Nelson, Kathryn P. 1988. Gentrification and Distressed Cities: An Assessment of Trends in Intrametropolitan Migration. Madison, WS: University of Wisconsin Press.

Peng, Ruijue, and William C. Wheaton. 1994. Effects of Restrictive Land Supply on Housing in Hong Kong: An Econometric Analysis. Journal of Housing Research 5(2): 263-291.

Phillips, Rhonda. 2003. Community Indicators. Washington, D.C.: American Planning Association Public Advisory Report Number 517.

Quercia, Robert G., and George C. Galster. 1997. Threshold Effects and the Expected Benefits of Attracting Middle-Income Households to the Central City. Housing Policy Debate 8(2): 409-435)

Redfern, P. A. 2003. What Makes Gentrification 'Gentrification'? Urban Studies 40(12): 2351-2366.

Smith, Neil, and Peter Williams. 1986. Gentrification of the City. Boston, MA: Allen & Unwin.

Solnit, Rebecca, and Susan Schwartzenberg. 2000. Hollow City: The Seige of San Francisco and the Crisis of American Urbanism. New York, NY: Verso.

Turner, Margery Austin. 1997. Achieving a New Urban Diversity: What Have We Learned? Housing Policy Debate 8(2): 295 – 305

Williams, Brett. 1988. Upscaling Downtown: Stalled Gentrification in Washington, D.C. Ithaca, NY: Cornell University Press.

Wyly, Elvin K., and Daniel J. Hammel 1999. Islands of Decay in Seas of Renewal: Housing Policy and the Resurgence of Gentrification. Housing Policy Debate 10(4): 711-771.

BIOGRAPHICAL SKETCH

Ashon Jahi Nesbitt originates from St. Petersburg, FL – the area of focus for the study in this paper. He spent his entire childhood there before going on to attend Florida Agricultural and Mechanical University, where he majored in Architecture and participated in the world-renowned "Marching 100" as well as gained other campus activities.

Ashon graduated from Florida A&M University in the spring of 2002 with a Bachelor of Science in Architectural Studies. Although Ashon sought to pursue a professional degree in architecture, he found his home in Urban and Regional Planning at the University of Florida after a year of unsuccessful attempts to gaining employment in the field of architecture.

Ashon chose to concentrate on Housing and Economic Development. Ashon first became interested in this area due to exposure to his mom's professional career, who worked many years in real estate and as director of a leading local nonprofit housing agency in the city of St. Petersburg. As a student in the Urban and Regional Planning program at the University of Florida, Ashon has cultivated that interest through coursework, employment as a Graduate Research Assistant with the Center for Building Better Communities, and attendance at such conferences as the Florida Housing Coalition Annual Conference.

In addition to his academic pursuits, Ashon actively participated in the Student Planning Association, serving as the President for the 2004-2005 school year. He also

served on the Florida Chapter of the American Planning Association's (APA) Student Council for that year, Student Representative on the San Felasco APA Executive Committee and holds memberships with the American Planning Association and Florida Housing Coalition. Beyond the department, Ashon participated in the Black Graduate Student Organization, serving as Vice-President for the 2004-2005 school year, as well as church and other activities throughout the community.

Ashon hopes his educational and professional experiences will land him a position with the Department of Housing and Urban Planning, where he hopes to hold the top position one day. Ashon ultimately plans to obtain a Ph.D. in Public Policy, become a developer, focusing on urban infill, affordable housing developments and to teach at the university level upon retirement.