GENTRIFICATION IN OKLAHOMA CITY: EXAMINING URBAN REVITALIZATION IN MIDDLE AMERICA

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Gentrification applies not only to the largest and oldest cities; it is a multi-scalar phenomenon playing out in smaller and less prominent settings as well. This study examines temporal changes in property values, demographic characteristics, and types of businesses in the central Oklahoma City area. A major urban revitalization project which began in 1993 created strong gentrification characteristics near the renewal's epicenter, the Bricktown entertainment district. Data suggest that several specific neighborhoods in the surrounding area exhibited rising property values, improving educational attainment rates, decreasing household sizes, and a shift toward cosmopolitan retail activity. While it is evident that Bricktown has been transformed, the socio-economic traits of surrounding neighborhoods have been altered by the ripple effects of urban renewal.
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By

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>ii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF ILLUSTRATIONS</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF EQUATIONS</td>
<td>vii</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>LITERATURE REVIEW</td>
<td>3</td>
</tr>
<tr>
<td>Economic Factors</td>
<td></td>
</tr>
<tr>
<td>Cultural Factors</td>
<td></td>
</tr>
<tr>
<td>Demographic Impacts</td>
<td></td>
</tr>
<tr>
<td>Analysis of Literature</td>
<td></td>
</tr>
<tr>
<td>CASE STUDY</td>
<td>14</td>
</tr>
<tr>
<td>DATA AND METHODOLOGY</td>
<td>19</td>
</tr>
<tr>
<td>Housing</td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
</tr>
<tr>
<td>Business Types and Densities</td>
<td></td>
</tr>
<tr>
<td>Inferential Statistics</td>
<td></td>
</tr>
<tr>
<td>Research Objectives</td>
<td></td>
</tr>
<tr>
<td>RESULTS</td>
<td>25</td>
</tr>
<tr>
<td>Descriptive Statistics</td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
</tr>
<tr>
<td>Business Types and Densities</td>
<td></td>
</tr>
<tr>
<td>Inferential Statistics</td>
<td></td>
</tr>
<tr>
<td>CONCLUSIONS</td>
<td>52</td>
</tr>
<tr>
<td>Research Limitations and Future Opportunities</td>
<td></td>
</tr>
<tr>
<td>REFERENCES</td>
<td>59</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Oklahoma County Descriptive Statistics</td>
<td>25</td>
</tr>
<tr>
<td>Table 2</td>
<td>Central Oklahoma City Study Area Descriptive Statistics</td>
<td>26</td>
</tr>
<tr>
<td>Table 3</td>
<td>Mean Property Values for Study Area Residential Parcels</td>
<td>29</td>
</tr>
<tr>
<td>Table 4</td>
<td>Restaurants Added by Census Tract Type</td>
<td>42</td>
</tr>
<tr>
<td>Table 5</td>
<td>Factor Loadings of Study Area Variables</td>
<td>46</td>
</tr>
<tr>
<td>Table 6</td>
<td>Eigenvalues and Factor Variance for Factor Analysis</td>
<td>46</td>
</tr>
<tr>
<td>Table 7</td>
<td>Correlation Matrix of Factor Analysis Variables</td>
<td>47</td>
</tr>
</tbody>
</table>
# LIST OF ILLUSTRATIONS

<table>
<thead>
<tr>
<th>Figure</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>OKC Population and Population Change (1960-2009)</td>
<td>14</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Oklahoma County Map with Study Area</td>
<td>17</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Central OKC Study Area</td>
<td>18</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Number of Restaurants in Study Area</td>
<td>29</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Fast Food versus Non-Fast Food Restaurants in Study Area</td>
<td>30</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Upscale vs. Downscale Businesses</td>
<td>31</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Residential Property Value Increases (2000-2010)</td>
<td>33</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Mean Residential Property Values (2000)</td>
<td>35</td>
</tr>
<tr>
<td>Figure 9</td>
<td>Mean Residential Property Values (2010)</td>
<td>35</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Educational Attainment Rate Change (1990-2000)</td>
<td>36</td>
</tr>
<tr>
<td>Figure 11</td>
<td>Median Household Size Percent Change (1990-2000)</td>
<td>37</td>
</tr>
<tr>
<td>Figure 12</td>
<td>Residential Mobility for Census Tracts (2000)</td>
<td>38</td>
</tr>
<tr>
<td>Figure 13</td>
<td>Restaurant Density in Study Area (1989)</td>
<td>40</td>
</tr>
<tr>
<td>Figure 14</td>
<td>Restaurant Density in Study Area (2010)</td>
<td>40</td>
</tr>
<tr>
<td>Figure 15</td>
<td>Restaurant Density Change in Study Area (1989-2010)</td>
<td>41</td>
</tr>
<tr>
<td>Figure 16</td>
<td>Upscale Business Density Change in Study Area (1990-2010)</td>
<td>44</td>
</tr>
<tr>
<td>Figure 17</td>
<td>Downscale Business Density Change in Study Area (1990-2010)</td>
<td>45</td>
</tr>
<tr>
<td>Figure 18</td>
<td>Factor One Factor Score per Census Tract</td>
<td>49</td>
</tr>
<tr>
<td>Figure 19</td>
<td>Factor Two Factor Score per Census Tract</td>
<td>51</td>
</tr>
</tbody>
</table>
LIST OF EQUATIONS

Equation 1: Factor Score Regression Formula ............................................................. 52
INTRODUCTION

Gentrification processes within changing urban landscapes have attracted much attention in recent decades. As both a social and physical restructuring, gentrification involves the arrival of the middle and upper class to an urban area which had previously undergone economic disinvestment and physical decline. Concurrent arrival of capital to renovate older buildings and create new businesses causes property values to rise in the immediate and adjoining neighborhoods. A frequent and much maligned side effect of this process is the displacement of existing residents and businesses, which struggle financially when property values and rents rise. Although gentrification is both idealized and bemoaned by differing segments of the population, it undoubtedly has tremendous impacts on urban form and function.

Research investigating gentrification focuses on economic (Smith, 1979; 1982; 1996; Clark, 1995) and cultural factors (Ley, 1996; Caulfield, 1994). To gain a more thorough explanation, it is necessary to recognize that “economic and cultural analyses [are] both important for a sensitive investigation of gentrification” (Lees, 1994: 137-150). Geographers have primarily focused on global cities such as New York and London; although regional centers (Atkinson & Bridge, 2005) such as Barcelona and Seattle have been examined to a smaller degree, as have rural sites like upstate New York (Smith & Phillips, 2001). These studies reveal the global nature of gentrification which occurs at different scales and in cities with different histories; but they all look at older cities. To date, few studies have examined the nature of gentrification in younger cities.

Oklahoma City (OKC) was founded in 1889 and was a well-established midsize city only by the middle of the 20th century. OKC suburbanized like the rest of the
country, leaving sections of the inner city neglected and rundown. An urban revitalization project began in the 1990s that sparked interest in its downtown, especially in the Bricktown area east of the Central Business District, creating an economic and social rebirth after decades of inner city stagnation. Today, those trends are reversing and there is strong evidence of gentrification.

What factors are contributing to the process? Has there been an identifiable inner city rent gap that promoted the return of the middle class? Beyond the economic driver of a rent gap, have there been major business type or business density changes that indicate a shift in consumer preference? Likewise, is gentrification impacting demographic characteristics like ethnicity, socioeconomic status, or family structure of OKC neighborhoods through population displacement and redistribution?

This study seeks to define specific areas in OKC that are exhibiting signs of gentrification. Based on proximity, it is expected that areas of the city nearest Bricktown will show the largest changes in property values, business types, and demographics. Meaningful findings will provide an important understanding toward the changing nature of young and mid-sized American cities.
LITERATURE REVIEW

Although its roots date back more than 100 years, gentrification is a relatively young research phenomenon. Smith (1996) describes the beginnings of gentrification in the late 1850s and early 1860s in Paris, when Baron Hausmann’s monumental rebuilding program began to exemplify this form of urban renewal. By Smith's account however, the historical occurrence of gentrification was sporadic through the 1930s and 1940s and only picked up momentum in the United States beginning in the 1970s and 1980s. Though most research on the subject has concerned large and old metropolitan areas, the Urban Land Institute (1976) estimated in 1976 that 50% of U.S. cities with a population over 50,000 were gentrifying. By the late 1980s and early 1990s, gentrification was described as “one of the leading edges of contemporary metropolitan restructuring” (Hamnett, 1991: 173-189).

Understanding the complex processes of gentrification requires both a broad temporal as well as interdisciplinary lens. The real estate industry defined gentrification during the mid 1980s as “the upgrading of housing and retail businesses in a neighborhood with an influx generally of private investment” (Smith, 1996). Gentrification is most typically viewed as occurring in the inner city sections of a major city, near the central business district (CBD). Sociologist Ruth Glass (1964) explored the social processes, focusing not just on the neighborhood upgrade but also on the displacement of previous residents by the incoming gentry. Others have delved into changing cultural factors that drive middle class people to move into these previously lower class areas. These other factors include changes in consumption habits, household composition, and urban planning policy. In order to best understand
gentrification, it is important to recognize not only these different facets, but also “the complementarity of economics and culture” (Lees, 1994: 141-44) on the process.

Economic Factors

*Evolution of American Urban Structure*

To better explain economic patterns of gentrification, the history of urban spatial development and subsequent economic investment patterns must be unpacked. As William Alonso (1960) argued in the mid 20th century, bid-rent theory states that centrally located sites within a city are most attractive and therefore demand the highest property values. Demand for accessibility to the CBD is the primary driver of land values according to urban economists such as Muth (1969). During the industrial era, from the mid 19th century through the mid 20th century, the bid-rent curve created a predictable pattern of urban structure in many U.S. cities. Financially successful businesses and wealthy homeowners resided in the inner city. Although horsecars allowed the super-wealthy to move to the suburbs as early as 1829, most of the urban periphery was occupied by the lower socioeconomic groups (Knox & McCarthy, 2005). The suburbs were distant and inconvenient, far from the city’s pulse. Rail and trolleys allowed some middle class suburbanization along transit lines in the 19th century, but fares were expensive and only affordable for a limited segment of the population. The early automobiles were equally luxurious, limiting its impact on urban population diffusion in the early part of the 20th century.

After World War II, the United States entered a period of prolonged economic prosperity which created new challenges to the traditional urban structure. Mass
produced and affordable automobiles allowed the middle class to live in the suburbs and commute longer distances. Suburbanization exploded thanks in part to low property taxes and government sponsored Federal Housing Authority (FHA) home loans. In conjunction with these financial incentives, many families demanded more space for their growing families. The suburban push was underway. A socioeconomic spatial divide widened at this time in what has become known as “white flight,” where wealthy and typically white families formed the bulk of most new suburbanites (Coleman, 1975; Rossell, 1975).

Despite this residential shuffling, the implications of bid-rent theory did not fundamentally change. Land values were still highest in the CBD at a city’s core, although a large valley emerged in a spatial zone immediately outside of the CBD. This phenomenon was identified early in the 1930s by Homer Hoyt in Chicago (Hoyt, 1933). As Neil Smith points out (Smith, 1996: 60), “a combination of neglect and concerted disinvestment by investors, due to high risk and low rates of return, initiated a long period of deterioration and a lack of new capital investment in the inner city.” In other words, as the middle class fled the city, most investment capital moved with it. Suburbanization left an investment void leading to the deterioration of the inner city surrounding the CBD.

Until the middle of the 20th century, much of the American economy was focused around heavy manufacturing, most of which was in the urban cores of the Rustbelt. As the United States shifted from manufacturing to a service sector economy during the second half of the 20th century, the industrial base contracted. Cheaper corporate taxes, milder climates, and an absence of organized labor attracted some industry to
the Sunbelt. However, when these industries moved to the Sunbelt, they moved to the suburbs more than to Southern inner cities. Therefore the same pattern of inner city decline is recognizable in the Sunbelt, though to a somewhat lesser degree as compared with the Rustbelt. This industrial spatial reconfiguration mimicked the suburban residential migration and magnified the disinvestment of inner cities.

These changes in American urban structure after World War II are major factors in initiating gentrification in the U.S. Although the late 20\textsuperscript{th} century American CBD still contained a good portion of the commercial sector in most American cities, industry and middle class neighborhoods nearly vanished from the urban core. Disinvestment within inner cities created the financial conditions which sparked a downtown rebound across the country.

\textit{Rent Gap and the Rise of Gentrification}

Since most urban areas lack empty land on which new development can take place, gentrification requires substantial upgrades to existing physical structures. Redevelopment of some of these existing structures is further hampered due to local economic conditions and Brownfield concerns. As noted earlier, though the CBD usually has the highest property values in a city, the middle and late 20\textsuperscript{th} century saw the inner city surrounding the CBD suffer economic decline and disinvestment which resulted in slums. This sustained property devaluation is a critical economic component of gentrification. Smith labeled this factor the “rent gap:” the difference between the actual land value and that land’s potential value (Smith, 1996: 53-74). Although
blighted, inner city land is close to the CBD and bid-rent theory dictates that it is undervalued. It is therefore said to have a large rent gap and is subject to gentrification. To many, including Smith, gentrification is driven primarily by economics. Previous inner city disinvestment depresses rents to such an extent that real estate speculators are lured into the market. Speculators buy older properties for renovation in old neighborhoods with the hope of selling or renting for a profit. Gentrification occurs as people from higher socioeconomic groups move into an inner city neighborhood near the CBD that is at least partially occupied by people from lower socioeconomic groups. The arriving higher class has more capital to invest in home renovation, as well as disposable income to support higher priced goods and services. The resulting socioeconomic shift and housing stock upgrades lead to real-estate price appreciation (Brunn & Wheeler, 1980). It should therefore be possible to examine temporal changes in property values as a significant indicator of urban gentrification.

Cultural Factors

Consumer Preferences

Although rent gap is perhaps the most quantifiable factor, rent gap alone cannot predict precisely which neighborhoods will gentrify (Beauregard, 1990). While urban out-migration characterizes the latter half of the 20th century, certain aspects of American society have recently changed and are forcing people to reevaluate their residential preference. In what some researchers call the “downtown rebound,” living downtown offers mass transit and easily accessible amenities, conveniences unavailable in the suburbs (Sohmer, 2001).
As noted earlier, the suburbanization of American cities that shifted population away from the urban core coincided with a decline in manufacturing. The subsequent expansion of the service economy, including professions such as bankers, lawyers, accountants, business executives, and real estate agents, replaced manufacturing jobs within the CBD's of global and regional cities. As time passed and commutes got longer, some of these service sector workers desired to live closer to their jobs. This demand was answered in two ways: jobs followed residents to suburban “edge cities,” (Garreau, 1991) or residents moved back toward jobs downtown. This second process created a gentrifying population capable of filling the inner city rent gap discussed by Smith. In order to live in these once run-down inner cities, this group sought many of the amenities available in the suburbs.

The explosion of businesses such as upscale restaurants, coffee shops, gift shops, boutiques, and art galleries is a sign of neighborhood change (Zukin et al, 2009). Commercial gentrification, as it is known, is the changing of local stores that serve the lower socioeconomic groups into more cosmopolitan businesses; a critical complimentary condition that accompanies residential turnover (Domosh et al, 2010). Previous staples of lower income neighborhoods, such as pawn shops and check cashers, typically decrease during the change process. Research has also linked liquor stores to this “downscale” business type (Alwitt & Donley, 1997). Spatial analysis has displayed how these changing businesses can be geographically linked with other indicators of gentrification (Clemmer, 2006).
Beginning in 1934, the FHA began financing home loans. The short term goal of this government sponsored program was to provide work to two million construction workers who had lost their jobs during the Great Depression. Home loans increased at the end of World War II, when soldiers returned to begin families and were encouraged to buy into the “American dream” of owning their own house with fresh air and a white picket fence. Since its inception, FHA has issued over 34 million home mortgages and by 2001 the U.S. home ownership rate was at an all time high of 68.1% (HUD, 2011). This increase in home ownership during the last half of the 20th century paved the way for decentralization and expanded consumption patterns (Checkoway, 1980; Harvey, 1977). This suburbanization dogma became as powerful (and available) as Manifest Destiny had been during an earlier period of American history.

Some are beginning to question the merits of suburbanization; specifically that suburbs lack community, cohesiveness, identity, and culture (Kunstler, 1993; Duany et al, 2000). Ley (1986: 521-535) argues that inner city residences “…are often selected despite cost advantages compared to the suburbs. But more to the point, it is the suburbs that are negatively valued; to gentrifiers they have spoiled identity.”

A marginal, yet growing cultural shift that spurns the perceived sterility of suburban sprawl is exemplified in the New Urbanism movement. The Charter of the New Urbanism (2010) states in its opening lines:

The Congress for the New Urbanism views disinvestment in central cities, the spread of placeless sprawl, increasing separation by race and income, environmental deterioration, loss of agricultural lands and wilderness, and the erosion of society’s built heritage as one interrelated community-building challenge. We stand for the restoration of existing urban centers and towns within coherent metropolitan regions, the reconfiguration of sprawling suburbs
into communities of real neighborhoods and diverse districts, the conservation of
natural environments, and the preservation of our built legacy.

Based on the works of philosophers, writers, urban planners, architects, and
civic organizations, New Urbanism believes that cities should be more demographically
diverse and functionally heterogeneous (Who is CNU?, 2010). This perspective posits
that neighborhoods should include people of all ages and income levels who can easily
walk, bike, or use transit to reach schools, stores, and other socially necessary
locations. The New Urban community is a counterweight to suburban sprawl and the
zoning laws which separate land uses to the point that car ownership is a necessity.
This movement also desires distinct building and street design to accommodate more
pedestrians; the primary goal is to engender a better sense of community than the
isolationist culture of automobiles and parking lots.

It is true that many New Urbanism developments are built on untouched land
(Greenfields) in the suburbs, such as Corbett’s Village Homes in California and Duany’s
Seaside in Florida (Randolph, 2004). These can be seen as a cleverly masked form of
suburban sprawl; not urban and only different from sprawl in aesthetic form. However,
some New Urban developments do take place within the urban core like Stapleton (in
Denver, CO) or Mesa Del Sol (in Albuquerque, NM); increasing population density
through urban infill is in fact a stated goal of the movement. Whether or not new infill
developments are considered part of the gentrification process, there are social and
economic impacts on the neighborhoods in which they are placed.
Demographic Impacts

Changes in Family Structure

Past gentrification research focused primarily on the physical rehabilitation of existing structures into new residential spaces for the incoming gentrifiers. Glass (1964) describes how homes that were “…downgraded in an earlier or recent period… [are] upgraded again. Once this process of ‘gentrification’ starts in a district it goes on rapidly until all or most of the original working-class occupiers are displaced and the whole social character of the district is changed.”

Researchers have argued that gentrification is facilitated by the breakdown of the patriarchal household and the increasing role of women in the professional workforce (Markusen, 1980), as well as by the postponement of marriage and childbearing (Beauregard, 1986). Cohabitation patterns suggest that a large number of urban gentrifiers are living in “DINKs:” dual income households with no kids (Bondi, 1994). This group of urban gentrifiers are viewed as a “new middle class” with different characteristics than the traditional middle class (Poulantzas, 1975; Ley, 1996); or what some refer to as the “creative class” (Florida, 2002; Atkinson & Easthope, 2009). The fledgling group frequently has more disposable income than the old middle class because it lacks the financial responsibilities involved in raising children. It should be possible to compare changing demographics, such as household size and income level, to further analyze this connection with changing urban communities.

Displacement Effects

Many cases of inner city gentrification create a situation where the existing
residents can no longer afford to stay, having been priced out of the neighborhood by the arrival of the incoming gentry. This has especially been the case since the mid 1980s, when federal “dismantling of public services and privatization of public functions…” made affordable housing, especially in gentrifying areas, more difficult to find for low income groups (Smith, 1996: 116).

To some, gentrification is seen solely as a vehicle for the displacement of the working poor and a creator of urban playgrounds for the wealthy. Inner city revitalizations are normally intended to have shared benefits among the existing and new residents, but these results are rarely achieved (Kauko, 2009). Frequently the original residents are pushed away from the redeveloped zone because of property appreciation, and rarely is there resistance from local planners and politicians. Higher property values lead to a larger tax base, which brings more wealth to the city and further enhances the community as part of a positive feedback loop. While the property value increase is intentional, displacement of lower socioeconomic classes is a byproduct. It has been argued by civic groups such as the Joint Planning Council in New York City (Smith, 1996) that some inexpensive housing should be retained or built for lower income classes, but often this option, along with displacement in general, is ignored.

In a sense there are two sides to gentrification. Since it brings wealth to previously impoverished or underserved areas, gentrification is generally viewed through a positive lens, but the original meaning implied class and often racial inequality between neighborhoods (Slater, 2009). Preexisting lower and lower-middle income
residents become more impoverished and are often forced to move out due to rent and cost of living increases.

Analysis of Literature

Inner city revitalization is a multifaceted process. Within gentrifying neighborhoods property values will increase, resulting in cascading economic impacts on the surrounding areas. Business types frequently change in these neighborhoods because of changing demographics among the residents. The incoming gentrifiers desire (and are willing to pay for) more amenities, more accessibility, and a more pleasant aesthetic. Although a city can substantially increase its economic well-being with the rehabilitation of run-down neighborhoods, these sections of town often lose affordable housing for low income families, many of whom are displaced by higher rents.

Most gentrification research has taken place in major cities with high population densities, such as New York City, London, or Chicago. Perhaps some new insights can be obtained by examining a different type of case study: a young Sunbelt city with a low population density where similar neighborhood turnover processes are observed.
CASE STUDY

Oklahoma City is a growing Sunbelt city with a major focus on oil and natural gas production. It is the capital of Oklahoma and the county seat of Oklahoma County, of which the city occupies over 85% of the total area. From 1990 to 2010 the OKC metro population increased from 958,839 to 1,275,758, while the city itself grew from 438,922 to 579,999 (see Figure 1).

Figure 1 OKC Population and Population Change (1960-2010).
For two decades, the city has embarked upon a large downtown revitalization effort, the Metropolitan Area Projects (MAPS). MAPS is a tax payer funded urban renewal initiative that began in 1993 when a temporary one-cent sales tax was approved. From 1993 to 1999, this tax raised over $309 million dollars including roughly $54 million in additional interest earnings. MAPS continued into the 21st century as city voters approved a “Finish Maps Right” fund extension in 1998, plus a “MAPS for KIDS” program in 2001. MAPS for KIDS collected and spent over $153 million on improving school districts in OKC. The city further extended the MAPS project in late 2009 with the MAPS 3 initiative, which includes numerous projects that will enhance and expand the downtown area. The primary goal of MAPS was to transform the central business and “Bricktown” districts from a degraded commercial zone and industrial Brownfield to a vibrant mixed use area with new and upgraded sports, recreation, entertainment, cultural and convention facilities (City of Oklahoma City, 2010).

Bricktown, a former warehouse sector that was a highly valuable location for railroad infrastructure in the early 1900s, lies on the eastern edge of the OKC Downtown Central Business District. Bricktown was the city’s original economic hub, bounded on the south end by the North Canadian River and connected to four railway lines: the Santa Fe, Rock Island, Frisco, and Katy. Prior to the current revitalization campaign, Bricktown had become dilapidated due to decline in rail transport and the rise of the automobile. For many reasons, industries began locating on the urban periphery, which came at an economic, cultural, and social cost for downtown OKC.
The void left by this exodus had negative repercussions for other areas near downtown, including increased poverty, crime, and residential outmigration.

With the MAPS revitalization, the visitor profile in downtown OKC has changed, and there is the expectation that the demographics of the residential population in surrounding neighborhoods are changing as well. The arrival of new businesses, especially in the retail and service sector, has attracted a different socio-demographic group. Much of the existing population was lower to lower-middle income and frequently under educated or under qualified for the opening management and middle management positions at the new hotels, restaurants, clubs, and sporting venues. This created need for an influx of young professionals to support the growing economy. Although some preexisting residents were able to participate in the success of the urban revitalization, many did not benefit from the economic transformation. While this urban rebirth undoubtedly brought jobs to a portion of these residents, some were displaced by the more expensive cost of living and higher rent. The arrival of young professionals also brought new commerce to the area, some of which competed with existing businesses, both spatially and economically. This paper will examine the nature of OKC’s downtown rebound by examining temporal and geographic shifts in property values, business types, and demographics.

The study area for this research consists of 47 census tracts in central OKC, surrounding the CBD. Although the OKC metro is 621.2 square miles, these 47 central city census tracts comprise about 50 square miles (see Figure 2).
The streets that bound the study area are May Ave in the west, North 36\textsuperscript{th} St in the north, Eastern Ave in the east, and South 29\textsuperscript{th} St in the south. The CBD is just south of the center of this study area, with Bricktown between its eastern edge and I-235. As located in within the study area (see Figure 3), other notable areas include Deep Deuce, Midtown, Automobile Alley, Uptown, the Paseo Arts District, the Asian District, Stockyards City, and the 10\textsuperscript{th} Street Medical District (or the OU Medical Center).
Figure 3 Central OKC Study Area.
DATA AND METHODOLOGY

Housing

In order to compare changes in property values within the study area, an ArcGIS shapefile of parcels was obtained from the Oklahoma County Tax Assessor's online geographic information system (GIS) (Oklahoma County Assessor Online Mapping, 2010). This shapefile contained only the boundary and parcel identification number for 35,298 properties within and around the study area. Property value data for 2000 through 2010 was accumulated in text file format for each parcel from OCTA's live property records database (Oklahoma County Property Search Leonard Sullivan Assessor, 2010). The parcels shapefile and property records text file were then joined, resulting in a shapefile that contained the following information for most of the parcels: address, owner, zoning type, year built, market values from 2000-2010, and property taxes from 2000-2010. This database could then be analyzed and symbolized in ArcGIS to compare changes in property values within the study area during the first decade of the 21st century.

Because the initial accumulation of parcel data was limited to a particular study area, it did not perfectly coincide with the geographic extent of each census tract it occupied. In other words, upon examining a GIS overlay, some census tracts were missing parcels that exist in reality. In order to correct for this sampling issue, census tracts with less than 30 parcels were removed from the study. Similarly, parcels that were tax exempt, government owned, or otherwise had no market value from 2000-2010 were also eliminated. Finally, because this section deals only with changing
residential property values, all other zoning types such as commercial, industrial, and agricultural were excluded from the study.

Another limitation with the property values database is that it does not have similar data pre-2000. Earlier property value information was unavailable from the same source, but local housing information can be loosely inferred from 1990 and 2000 census housing data. In order to make this inference, median owner-occupied home values in 1990 and 2000 were gathered and averaged per census tract within the study area. To adequately compare data at different scales, the ArcGIS spatial join function aggregated the 2000-2010 market values of more than 21,000 properties to their corresponding census tracts. This converted the 2000-2010 values into average property values per census tract, making them possible to compare with the 1990 and 2000 home value data. Although property value for a parcel is an imperfect correlation with median home value, they are significantly tied to each other and should both be connected with the underlying valuations of real estate\(^1\).

With this information it is possible to answer several important questions. Are there particular neighborhoods, represented by specific census tracts, which show larger increases in property values than others from 2000 to 2010? Do these same census tracts exhibit a similar increase in home values from 1990 to 2000? Can we surmise that a rent (or value) gap is being filled through gentrification? A timeseries map comparison will be examined to visualize particular neighborhoods that have

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\(^{1}\) In order to extend the time frame for the study, a correlation analysis was run that indicates a significant correlation between median home values per census tract in 2000 and average property values per census tract in 2000 (Pearson \(r(47) = .392, p = .006\)), Spearman \(\rho(47) = .844, p = .00\)). Although significant, the Pearson correlation is relatively weak because the median home values by census tract are almost universally higher than their corresponding property values. However, the Spearman rank order correlation shows a very strong correlation; census tracts with the highest home values also have the highest property values and those with the lowest home values have the lowest property values.
undergone changes in property values. Answers to these questions about the housing market within central OKC will help set the stage for further analysis of other gentrification factors.

Demographics

Property value increase is only a condition of gentrification; a response to changing social dynamics. To illustrate the underlying demographic shifts, U.S. census data from 1990 and 2000 was gathered at the census tract level for all of Oklahoma County (United States, 2010). Comparison with 2010 census data would be extremely helpful for this study, but the data will not be available for some time after this research is complete. However, because MAPS began in 1993, looking solely at 1990 and 2000 should give a good idea of any early demographic changes that took place. Major variables examined include educational attainment rate (defined as the percentage of individuals with a bachelor’s degree or higher), per capita income, ethnicity (defined as the percentage of African-Americans), household size, and mobility (percentage of residents who moved in within last five years). For each variable other than mobility, values from 1990 to 2000 will be compared by census tract to identify temporal changes. Because the mobility census variable is already a comparison between current residents and those from five years previous, only the 2000 mobility will be used.

Because gentrification involves the arrival of a higher socioeconomic class, research often notes that neighborhoods which undergo the process see increases in educational attainment rate and income (Meligrana & Skaburskis, 2005), as well
decreases in household size (Buzar et al, 2007). Although gentrifiers are frequently seen through Smith’s revanchist model (Smith, 1996) as middle class whites, some research has shown very little ethnic alteration to these changing neighborhoods (McKinnish et al, 2010; Lees, 2000). Finally, it is assumed that mobility will be much higher in gentrifying neighborhoods than in non-gentrifying neighborhoods. In what census tracts do we see changes in any of these variables from 1990 to 2000? A timeseries map comparison will again be examined to visualize particular neighborhoods that have undergone demographic changes.

Business Types and Densities

By examining the establishment dates and locations of certain business types it is possible to gain insight into evolving consumption preferences. With better knowledge of consumption preference of a given location, it is possible to draw inferences as to what demographic groups these preferences belong. Addresses of all study area businesses in particular categories were collected from historical OKC yellow pages at the Oklahoma History Center.

Business categories used to locate possible gentrification include restaurants and upscale venues such as coffee shops, gift shops, and art galleries. A comparison between full service and fast food restaurant locations may reveal changing consumer preference in different neighborhoods. Because downscale businesses (those associated with lower income areas such as pawn shops, check cashing services, and liquor stores) have presumably declined more in gentrifying neighborhoods than in other neighborhoods, location data for these businesses were also collected.
The Alteryx software package was used to geocode the addresses of each relevant business to its exact spatial coordinates, which were then added to a new ArcGIS point shapefile. These point locations were then converted into 1990 (1989 for restaurants\(^2\)) and 2010 density rasters using the point statistics function in ArcGIS\(^3\). These density values were aggregated to the census tract level, again using the spatial join function, to approximate business density per census tract. This serves to quantify the concentration and location of particular businesses in different years.

Because gentrification is frequently associated with changes in business types, it is important to examine this phenomenon during our temporal study period. Comparing 2010 with 1990 (or 1989), are there now more upscale retail and service businesses in certain neighborhoods of the central OKC area? Likewise, do these neighborhoods show a marked decrease in downscale businesses that reside in traditionally lower class neighborhoods?

**Inferential Statistics**

Relevant variables will be examined together in a factor analysis to determine if the OKC study area contains a strong gentrification factor, similar to that identified in previous research (Meligrana & Skaburskis, 2005). The results of the factor analysis

\(^2\) The 1990 yellow pages were unavailable at the Oklahoma History Center. The 1989 yellow pages were used instead.

\(^3\) For each business category and year, a point shapefile was created. These shapefiles were used as input point features in the point statistics function of ArcGIS. In the attribute table of each shapefile, a “count” field was added and each business given a count value of one. Default output cell size was used in the process, along with a circular search neighborhood of .01 map units (.69 mile radius). With count used in the field category, count values were summed together any time search neighborhoods overlapped. For example, three restaurants each within .69 miles of each other resulted in a density value of 3 where their search neighborhoods overlapped.
will be used to calculate factor scores for each census tract, based on demographic, economic, housing, mobility, and education data. The factor analysis will generate numerical values that can be used to compare overall gentrification in one census tract with another. Because this method is more comprehensive than using single variables, it is hypothesized that it will more accurately identify gentrifying areas in the study area.

Research Objectives

This research aims to identify neighborhoods in OKC that exhibit gentrifying characteristics, and if any exhibit multiple traits. Based on 1990 and 2000 census data, some evidence should emerge that will signal the beginning of gentrification in OKC. However, the 2010 census data should make a much stronger argument due to the fact that the MAPS projects began only in 1993. Examining more recent changes in real estate values and business densities will serve to bolster this research.

As recent studies on regional cities and rural areas have shown, gentrification is a truly global phenomenon and its study must include young, mid-sized, and low density cities as well as the more traditional cities with organic urban characteristics (Atkinson & Bridge, 2005; Smith & Phillips, 2001). The specific characteristics and processes examined in this analysis will benefit city planners, urban theorists, and property developers as social and economic factors propel urban evolution.
RESULTS

Descriptive Statistics

In order to examine gentrification in OKC, it is helpful to start with a broad look at the temporal socioeconomic trends for all of Oklahoma County, of which OKC comprises the vast majority of both land and people (see Table 1). Because the thrust of this research focuses on central OKC, the second table breaks out the data for this sub-section (see Table 2).

Table 1  *Oklahoma County Descriptive Statistics*

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Total Population</strong></td>
<td>595,012</td>
<td>658,234</td>
<td>+63,222</td>
<td>+10.6%</td>
</tr>
<tr>
<td><strong>Total African-American Population</strong></td>
<td>87,727</td>
<td>98,546</td>
<td>+10,819</td>
<td>+12.3%</td>
</tr>
<tr>
<td><strong>African-American % of Population</strong></td>
<td>16.5%</td>
<td>17.7%</td>
<td>+1.2%</td>
<td>+7.3%</td>
</tr>
<tr>
<td><strong>Mean Household Size</strong></td>
<td>2.54</td>
<td>2.39</td>
<td>-0.15</td>
<td>-5.9%</td>
</tr>
<tr>
<td><strong>Mean Occupancy Rate</strong></td>
<td>85%</td>
<td>89%</td>
<td>+4.0%</td>
<td>+4.7%</td>
</tr>
<tr>
<td><strong>Median Household Income</strong></td>
<td>$26,464</td>
<td>$34,655</td>
<td>+$8,191</td>
<td>+31.0%</td>
</tr>
<tr>
<td><strong>Per Capita Income</strong></td>
<td>$16,469</td>
<td>$18,552</td>
<td>+$2,083</td>
<td>+37.7%</td>
</tr>
<tr>
<td><strong>Owner Occupied Median Home Value</strong></td>
<td>$54,273</td>
<td>$72,394</td>
<td>+$18,121</td>
<td>+33.4%</td>
</tr>
<tr>
<td><strong>Median Contract Rent</strong></td>
<td>$291</td>
<td>$397</td>
<td>+$106</td>
<td>+36.6%</td>
</tr>
<tr>
<td><strong>Mean Mobility Rate</strong></td>
<td>50.4%</td>
<td>51.3%</td>
<td>+0.9%</td>
<td>+1.8%</td>
</tr>
<tr>
<td><strong>Educational Attainment Rate</strong></td>
<td>16.5%</td>
<td>17.7%</td>
<td>+1.2%</td>
<td>+7.3%</td>
</tr>
</tbody>
</table>
Table 2  Central Oklahoma City Study Area Descriptive Statistics

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Population</strong></td>
<td>133,827</td>
<td>143,816</td>
<td>+9,989</td>
<td>+7.5%</td>
</tr>
<tr>
<td><strong>Total African-American Population</strong></td>
<td>32,992</td>
<td>29,949</td>
<td>-3,043</td>
<td>-9.2%</td>
</tr>
<tr>
<td><strong>African-American % of Population</strong></td>
<td>25.8%</td>
<td>25.5%</td>
<td>-0.3%</td>
<td>-1.2%</td>
</tr>
<tr>
<td><strong>Mean Household Size</strong></td>
<td>2.49</td>
<td>2.39</td>
<td>-0.1</td>
<td>-4.0%</td>
</tr>
<tr>
<td><strong>Mean Occupancy Rate</strong></td>
<td>76.5%</td>
<td>83.7%</td>
<td>+7.2%</td>
<td>+9.4%</td>
</tr>
<tr>
<td><strong>Median Household Income</strong></td>
<td>$18,103</td>
<td>$24,421</td>
<td>+$6,318</td>
<td>+34.9%</td>
</tr>
<tr>
<td><strong>Per Capita Income</strong></td>
<td>$10,214</td>
<td>$13,996</td>
<td>+$3,782</td>
<td>+37.0%</td>
</tr>
<tr>
<td><strong>Owner Occupied Median Home Value</strong></td>
<td>$37,312</td>
<td>$54,783</td>
<td>+$17,471</td>
<td>+46.8%</td>
</tr>
<tr>
<td><strong>Median Contract Rent</strong></td>
<td>$239</td>
<td>$329</td>
<td>+$90</td>
<td>+37.7%</td>
</tr>
<tr>
<td><strong>Mean Mobility Rate</strong></td>
<td>52.7%</td>
<td>52.4%</td>
<td>-0.3%</td>
<td>-0.6%</td>
</tr>
<tr>
<td><strong>Educational Attainment Rate</strong></td>
<td>17.7%</td>
<td>19.7%</td>
<td>+2.0%</td>
<td>+11.3%</td>
</tr>
</tbody>
</table>

Several important differences stand out when comparing the study area with the entire county. First, population grew 10.6% in Oklahoma County from 1990 to 2000, while only growing 7.5% within the study area. This is somewhat expected, as suburbanization trends across the United States continue and more residential subdivisions are built further from the inner cities. A notable trend occurred in regard to the African-American population. Especially in the post WWII sprawling binge, the urban core of major American cities has traditionally been associated with large concentrations of African-Americans, while the suburban population is predominantly
white. In fact, African-Americans comprised 25.8% of the population in the study area in 1990 while only 16.5% in the entire county. From 1990 to 2000, African-American percentage of the population decreased slightly in the study area while increasing 7.3% (to 17.7%) in the county overall. This supports gentrification trends as the white middle class moves to the inner city and displaces the minorities.

Educational attainment is another telling variable. On the surface the rates do not seem drastically different: the percentage of individuals in the study area holding a college degree increased from 17.7% to 19.7% while increasing more modestly from 16.5% to 17.7% for the entire county. If you isolate the suburban population in Oklahoma County, educational attainment rate in that group increased only from 16.2% to 17.1%. In other words, the increase in educational attainment rates for inner city residents (+2.0 percentage points) was double the suburban residents of the county (+0.9). This could lead to a conclusion that inner city residents are completing college at a greater rate than suburban residents, relative to recent trends. It is also a signal that college educated people are increasingly attracted to the inner city, while those without college educations are being displaced toward the periphery.

In housing, residential occupancy rates increased from 76.5% to 83.7% in the study area, while only increasing from 85% to 89% for the county, from 1990 to 2000. This may indicate heightened housing demand nearer to downtown, a sign that the residential sector of the area is rebounding from decades of decline. Another possibility in this rise in occupancy rates is the reduction in available housing units, but there is no substantial record of housing demolition due to MAPS or any other renewal efforts. Additionally, owner-occupied median home values increased 46.8% in the study area,
while only increasing 33.4% for the county; a substantial increase in housing demand and home value that would be expected for inner city gentrification. Again, by extracting only the population outside the study area, home values in the suburbs only rose 30.1%, from $59,197.20 to $77,303.50. The fabric of the inner city is being altered. Suburbanization of wealth that accelerated after World War II typically caused inner city housing to progressively lose value in what Hoyt (1933) described as filtering. Although home values outside the study area also appreciate to a smaller degree, the theory of inner city filtering seems to be reversed from 1990 to 2000. Bid rent theory does dictate that land should be most valuable closest to the city center. Rising home values within the study area may therefore represent a filling of the rent (or in this case home value) gap.

Property value data from 2000 through 2010 is shown below (see Table 3. Mean property values for all residential parcels are shown in one column, while the second column displays only mean residential property values for houses built before 1993 or parcels not built on at all through 2010. This dichotomy isolates newly constructed houses from the research because new construction is often regarded as a non-gentrifying phenomenon and a different form of urban redevelopment. Newly constructed houses in gentrifying areas would indeed appreciate in value just as parcels with existing houses, but focusing solely on existing houses provides an adequate measure of property value change and does not diminish the housing sample sizes in each census tract. In both series, the increase in property value is quite evident across the study area, yet the real value for this study will come in comparing these value increases among different census tracts.
Table 3  Mean Property Values for Residential Parcels

<table>
<thead>
<tr>
<th>Year</th>
<th>All Residential Properties</th>
<th>Residential Properties Built Before 1993 Or Vacant Through 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>$32,826</td>
<td>$36,494</td>
</tr>
<tr>
<td>2001</td>
<td>$38,819</td>
<td>$43,029</td>
</tr>
<tr>
<td>2002</td>
<td>$40,890</td>
<td>$45,354</td>
</tr>
<tr>
<td>2003</td>
<td>$48,476</td>
<td>$53,777</td>
</tr>
<tr>
<td>2004</td>
<td>$60,241</td>
<td>$66,959</td>
</tr>
<tr>
<td>2005</td>
<td>$57,384</td>
<td>$63,601</td>
</tr>
<tr>
<td>2006</td>
<td>$61,942</td>
<td>$68,657</td>
</tr>
<tr>
<td>2007</td>
<td>$67,810</td>
<td>$75,250</td>
</tr>
<tr>
<td>2008</td>
<td>$69,830</td>
<td>$77,482</td>
</tr>
<tr>
<td>2009</td>
<td>$71,826</td>
<td>$79,644</td>
</tr>
<tr>
<td>2010</td>
<td>$71,186</td>
<td>$78,918</td>
</tr>
</tbody>
</table>

Alterations in business types and spatial densities illuminate more of the gentrification process. Across the entire time span of this study, from 1989 to 2010, the number of restaurants within one third of a mile of any study area census tract grew substantially, from 247 to 439 (see Figure 4).

Figure 4  Number of Restaurants in Study Area.
Figure 5 *Fast Food versus Non-Fast Food Restaurants in Study Area.*

Most of this growth was in full service restaurants as opposed to fast food establishments, which are defined in this study as national and large regional chains with value menus and drive-throughs\(^4\). A comparison between types of restaurants (see Figure 5) implies a greater increase of non-fast food restaurants within OKC, growing 90% (from 185 to 352) during the time frame while fast food establishments only increased 40% (from 62 to 87). A major factor in this increase is the heavy development of restaurant/bar combinations and full service restaurants in the Bricktown entertainment district. However, as our spatial analysis will show for

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\(^4\) A full list of fast food restaurants in the OKC study area includes Arby’s, Braum’s, Burger King, Dairy Queen, Carl’s Jr., Hardee’s, Kentucky Fried Chicken, Long John Silver’s, McDonald’s, Sonic, Subway, Taco Bell, Taco Mayo, Taco Bueno, Wendy’s, and Whataburger.
business locations, other areas displayed similar growth and this phenomenon is deeply connected with gentrification.

In addition to restaurants, businesses commonly identified with gentrifying areas, such as art galleries, gift shops, and coffee shops (upscale businesses) were compared across time with businesses associated with lower class neighborhoods, such as pawn shops, liquor stores, and check cashers (downscale businesses). Although the overall count in both categories increased from 1990 to 2010, the rate of increase is much higher for the upscale businesses. In the study area, upscale businesses increased 102%, from 41 to 83, while downscale businesses only increased 18%, from 57 to 67 (see Figure 6).

![Figure 6 Upscale vs. Downscale Businesses](image)

Once again, although this information helps describe the study area, the most important aspect of businesses for this research is their locational and spatial density.
changes over time. Summarizing the multitude of variables used in this study helps frame a picture of socioeconomic changes within central OKC, but maps and inferential statistics will more clearly illustrate these processes.

Housing

As noted above, study area housing values increased from 1990 to 2010, but this study deals with the specific locations where value increases are greatest and where they are marginal. The map below (see Figure 7) shows the dollar increases in mean property values by census tract within the study area from 2000 to 2010. Tracts left white do not have residential value information or were removed from the study due to the small sample size of houses. This map illustrates the location specific nature of property value increases within the study area. The greatest increases to residential property values occurred north of the CBD in the neighborhoods of Heritage Hills, Mesta Park, and Gatewood, which occupy the census tracts directly between the Asian District and Midtown. The three census tracts representing this neighborhood sub-area had an average property value increase of $114,264, from $104,749 in 2000 to $219,013 in 2010. Parts of the Asian District, the Paseo, Midtown, and the area between the OU Medical Center and the State Capitol show large increases in property value as well. Much of the Cottage District, also known as SoSA (“South of Saint Anthony” Hospital), was transformed from a borderline ghetto before 2000 to an eclectic neighborhood filling with new contemporary architecture in 2010. Census data shows that home values in the Cottage District decreased from $43,300 to $42,000 from 1990 to 2000, yet property values in the same location jumped 348% during the next ten years, from $17,842 to
$79,849. As noted earlier, this figure does not include parcels with newly constructed
houses; if included the mean value increase would be much larger. This enormous
increase in property values demonstrates the rising cultural and financial appraisal of
the District, a theme much in line with gentrification.

![Central Oklahoma City Study Area](image)

**Figure 7** Residential Property Value Increases per Census Tract (2000-2010).

In comparison, a large swath of census tracts that did not increase much in
property values lies on the southern side of the Oklahoma River, so that the River
serves as a potential barrier to residential gentrification. These census tracts do exhibit
large percentage increases in property value, but unlike the meaningful percentage
increase of the Cottage District, their 2000 property values are so low that nearly any
increase seems substantial. For instance, the census tract containing Stockyards City
jumped 259% from 2000 to 2010, but the actual dollar increase was only $22,467 (from $8,688 to $31,155), near the bottom of mean census tract value increases. Median owner-occupied home values also showed only a marginal increase in the previous decade, from $15,000 in 1990 to $18,800 in 2000. Although dramatic property value increases are expected in the Bricktown census tract, there were only 31 residential properties existing in the tract before 1993, all of which are located to the east of I-235 or the south of I-40. Like the Oklahoma River barrier noted above, the highways bisect Bricktown and cut off gentrification. These residential properties on the other side of the highway only increased $23,043 (from $9,907 to $32,950). A very large percentage of current Bricktown properties are commercially zoned, and these 223 properties increased an average of $1,922,116 (from $143,613 to $2,065,729) from 2000 to 2010. These properties only paid an average of $14,423 in net property taxes in 2000 but yielded the city over $220,000 per property in 2010. This indicates that while residential parcels show little change in the Bricktown tract, large value increases were observed in the commercial properties that make up Bricktown proper. Additionally, Bricktown contains 19 commercially zoned buildings taller than two stories that were originally built for “loft-industrial” purposes, according to the tax database. It is likely that some provide loft residences, which would imply that properties which are partially used for housing did substantially appreciate.

To further illustrate how these housing value changes were calculated, the mean residential property values per census tract within the study area are displayed in 2000 and 2010, respectively (see Figures 8 and 9). Although the dollar intervals are different in these two maps, there are equal numbers of census tracts per category (terciles),
giving a good spatial comparison of expensive, moderate, and cheap property areas during different years.

**Figure 8** Mean Residential Property Values by Census Tract (2000).

**Figure 9** Mean Residential Property Values by Census Tract (2010).
Demographics

To further support the gentrification hypothesis within specific sections of central OKC, particular demographic characteristics from the 1990 and 2000 census were analyzed and mapped. Just as using property value percentage increase was somewhat misleading due to some census tracts having extremely low starting values, percentage increase in educational attainment rate is less helpful than absolute rate increase. The following map shows this change in educational attainment rate, defined as the percentage of persons with a college degree per census tract (see Figure 10).

Figure 10 *Educational Attainment Rate Change per Census Tract (1990-2000).*

The Bricktown census tract increased substantially from 1% in 1990 to 18% in 2000. This extreme increase can best be accounted for by the residential in-migration of educated gentrifiers. Alternatively, the Cottage District actually decreased 6% in
educational attainment rates in the prior decade. Geography may play a role here as the Cottage District is a short distance from Bricktown, suggesting a small lag time in the arrival of the gentrifying class. Based on the enormous increases in property values from 2000 to 2010, it is expected that the 2010 census will show an increase in educational attainment for the Cottage District. Finally, similar to the map showing where property values increased the most, there is a clear corridor from Midtown to just north of the Paseo where educational attainment increased dramatically.

The gentrifying class is typically associated with smaller household size due to a variety of societal factors. Changes in household size have been calculated and mapped within the OKC study area (see Figure 11).

![Figure 11](image)

**Figure 11**  *Household Size Percent Change by Census Tract (1990-2000).* Once again, the Cottage District, Bricktown, the Asian District, the Paseo, and parts of Midtown display distinct gentrifying characteristics: decreases in household size.
Household size decreased the most in the Cottage District, from 2.31 to 1.42, a 39% difference. The Bricktown census tract decreased 12%, from 2.4 to 2.12. As more residences are constructed in and around Bricktown, household size will likely fall further. The seven census tracts east of I-235 and north of I-40, which are not suspected of gentrification, show an average household size decrease of almost 16%. These census tracts were 88.6% African-American in 2000, compared to only 25.5% for the entire study area, so this drop in household size is likely due to other social and ethnic forces and not gentrification.

In an attempt to identify possible displacement, mobility (percentage of residents who moved in within last five years) was examined in conjunction with these other demographic characteristics. The mobility rate in 2000 is shown below (see Figure 12).

**Figure 12** Residential Mobility for Census Tracts (2000.)
Large percentages mean there are many newcomers while lower percentages mean there has been little population turnover. Several census tracts that showed education increases and smaller household sizes also display greater mobility. For instance, recent newcomers represent 67% of the population in the census tract on the eastern edge of the Asian District.

Using this mobility measure may not identify where the displaced relocate, but it does indicate certain areas of possible gentrification related displacement. The strength of mobility as an indicator of gentrification is questionable, since there are numerous other factors influencing people to move in or out of neighborhoods. To illustrate, this large turnover just mentioned along the eastern edge of the Asian District could be influenced by proximity to Oklahoma City University just to the west of the District (mobility rate was 61%, also above average, in 1990).

Business Types and Densities

Restaurants

Upon creating and examining density rasters for 1989 and 2010 restaurant locations, an image of how business types and locations have changed begins to form. Below, restaurant densities are calculated for the central OKC area in 1989 and 2010 (see Figures 13 and 14, respectively).
Figure 13  Restaurant Density in Study Area (1989).

Figure 14  Restaurant Density in Study Area (2010).
While there are visible differences between restaurant density at different locations, using the raster calculator function in ArcGIS serves to better visualize these changes. The density values per location (per pixel) in 1990 are subtracted from the density values at the same location in 2010, yielding temporal change in restaurant density at any point within the study area (see Figure 15).

Figure 15 Restaurant Density Change in Study Area (1989-2010).

Major changes in city structure are apparent. Predictably, the Bricktown entertainment district, which was largely created (or revived) when the MAPS projects began in 1993, added an enormous amount of restaurants and has by far the largest increase in restaurant density. The number of restaurants in Bricktown alone grew from 4 in 1989 to 39 in 2010. Perhaps more interesting is that most other increases in
restaurant density are located to the north of Bricktown and to the west of I-235 in the Midtown and Uptown areas. These areas largely correspond to the neighborhoods thought to be gentrifying according to the property value increases. Two census tracts, one containing the Asian District and one directly to its west, increased from 13 to 30 restaurants over the same time period. Areas that are not thought to be undergoing much gentrification, on the periphery of the study area, predictably show very little increase and occasional decrease in restaurant density.

As was noted earlier, non-fast food restaurants increased much more than fast food restaurants within the study area, but examining where this non-fast food increase was greatest further illuminates the difference. Educational attainment rate change (see figure 10) was used as a proxy for gentrification to divide census tracts into three sections: non-gentrifying, borderline, and gentrifying (see Table 4).

### Table 4  Restaurants Added by Census Tract Type (1989 to 2010)

<table>
<thead>
<tr>
<th></th>
<th>Fast Food</th>
<th>Non-Fast Food</th>
<th>Total Restaurants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Gentrifying</td>
<td>0</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td>Borderline</td>
<td>7</td>
<td>32</td>
<td>39</td>
</tr>
<tr>
<td>Gentrifying</td>
<td>5</td>
<td>74</td>
<td>79</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>147</td>
<td>159</td>
</tr>
</tbody>
</table>

Fifty percent of all non-fast food increases were found in gentrifying census tracts, with only 22% in borderline tracts and 28% in non-gentrifying tracts. On the other hand, non-fast food restaurants increased much more than fast food restaurants within the study area, but examining where this non-fast food increase was greatest further illuminates the difference. Educational attainment rate change (see figure 10) was used as a proxy for gentrification to divide census tracts into three sections: non-gentrifying, borderline, and gentrifying (see Table 4).

5 Only restaurants located within census tracts used to compare educational attainment rate change are included in this sample. The total number of restaurants located within one-third of a mile of any study area census tract was 247 in 1989 and 439 in 2010. Some of these restaurants are not located within eligible census tracts, lowering the total restaurants in this comparison slightly.
hand, only 42% of all fast food increases were found in gentrifying tracts, while 58% were in borderline tracts. However, Bricktown alone accounts for three of the new fast food restaurants and 32 of the non-fast food additions. By excluding the changes in Bricktown, gentrifying tracts added two fast food and 42 non-fast food restaurants, which is similar to the non-gentrifying tracts. Beyond Bricktown itself, there does not seem to be compelling evidence that full service, non-fast food restaurants increased more in gentrifying areas than in other parts of the study area.

**Upscale versus Downsacle Businesses**

Spatial density examination of upscale businesses (art galleries, gift shops, and coffee shops) shows a similar trend to restaurants (see Figure 16). Most upscale businesses existed more than a mile west of the Asian District in 1990, but in 2010 they are dispersed in a north-south corridor from the CBD to north of the Paseo District. The area surrounding the Paseo District jumped from two to 13 upscale businesses during the time period, and a somewhat broader area from Bricktown to Midtown grew from five to 25. Conversely, the area of greatest density among upscale businesses in 1990, west of the Asian District, actually dropped from six businesses to only one. The north-south upscale business corridor from the CBD to the Paseo conforms with the large increases in property values from 2000 to 2010. The population that can afford the more expensive housing also prefers particular types of business; this supply and demand can be spatially identified through the underlying data of these maps.
Figure 16  *Upscale Business Density Change in Study Area (1990-2010).*

Businesses representing the opposite of upscale commerce (pawn shops, liquor stores, and check cashers) show a remarkably opposite spatial pattern from the businesses catering to upper-income households. For these downscale businesses, spatial density change from 1990 to 2000 is shown below (see Figure 17).

**Inferential Statistics**

*Factor Analysis*

Of primary importance to this research is the way in which the variables that were previously discussed interact with each other. To accomplish this, a factor analysis was performed to examine connections between property value changes from 2000 to 2010,
restaurant density changes from 1989 to 2010, the distance of each census tract from the CBD and Bricktown, and trends in relevant census data from 1990 to 2000.

![Central Oklahoma City Study Area](image)

**Figure 17** *Downscale Business Density Change in Study Area (1990-2010)*.

Restaurant density change was deemed more appropriate for the factor analysis than other business density changes due to the large sample size for restaurants. To determine the distance to the CBD and Bricktown from a particular census tract, a point location was selected on the border between the two districts, and a multiple ring buffer around this point was created with ArcGIS. By using multiple concentric rings a distance value was calculated for each ring which increased in distance from the central point location. In order to best compare with the demographic and property value data, both the restaurant density change raster and the CBD/Bricktown distance rings were
spatially joined with the underlying census tracts. Each census tract was then assigned mean aggregated values for both variables. Tract level census data utilized for the analysis included changes in educational attainment rates (defined as the percentage of the population with a college degree), household income, household size, and ethnicity (defined as the African-American percentage of the population).

After completing the factor analysis, some interesting trends were found to support the gentrification hypothesis. Factor loadings for both factors are displayed below; variables are sorted by strength of loading onto factor 1 (see Table 5). Eigenvalues and percentage of variance accounted for by the two factors are also shown (see Table 6). A correlation matrix helps display the one-on-one relationship between these trending variables (see table 7).

### Table 5  Factor Loadings of Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Attainment Rate Change (1990-2000)</td>
<td>.822</td>
<td>.344</td>
</tr>
<tr>
<td>Restaurant Density Change (1989-2010)</td>
<td>.658</td>
<td>-.303</td>
</tr>
<tr>
<td>Distance to CBD/Bricktown</td>
<td>-.607</td>
<td>.444</td>
</tr>
<tr>
<td>Household Size Change (1990-2000)</td>
<td>-.540</td>
<td>.523</td>
</tr>
<tr>
<td>Property Value Change (2000-2010)</td>
<td>.478</td>
<td>.509</td>
</tr>
<tr>
<td>Ethnicity Change (1990-2000)</td>
<td>-.353</td>
<td>-.589</td>
</tr>
<tr>
<td>Household Income Change (1990-2000)</td>
<td>.021</td>
<td>.866</td>
</tr>
</tbody>
</table>

### Table 6  Eigenvalues and Factor Variance for Factor Analysis

<table>
<thead>
<tr>
<th>Factor</th>
<th>Eigenvalue</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.122</td>
<td>30.312</td>
<td>30.312</td>
</tr>
<tr>
<td>2</td>
<td>2.036</td>
<td>29.092</td>
<td>59.403</td>
</tr>
</tbody>
</table>
Table 7  Correlation Matrix of Factor Analysis Variables (* .05 significance)

<table>
<thead>
<tr>
<th></th>
<th>RD</th>
<th>DTC</th>
<th>EC</th>
<th>HHI</th>
<th>HHS</th>
<th>ETH</th>
<th>PV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Restaurant Density</strong></td>
<td>------</td>
<td>-.422*</td>
<td>.339*</td>
<td>-.231</td>
<td>-.256*</td>
<td>-.083</td>
<td>.084</td>
</tr>
<tr>
<td><strong>Change (RD)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Distance to CBD</strong></td>
<td>-.422*</td>
<td>------</td>
<td>-.251*</td>
<td>.212</td>
<td>.396*</td>
<td>-.070</td>
<td>-.025</td>
</tr>
<tr>
<td><strong>(DTC)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Education Change</strong></td>
<td>.339*</td>
<td>-.251*</td>
<td>------</td>
<td>.218</td>
<td>-.268*</td>
<td>-.465*</td>
<td>.488*</td>
</tr>
<tr>
<td><strong>(ED)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Household Income</strong></td>
<td>-.231</td>
<td>.212</td>
<td>.218</td>
<td>------</td>
<td>.399*</td>
<td>-.400*</td>
<td>.420*</td>
</tr>
<tr>
<td><strong>Change (HHI)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Household Size</strong></td>
<td>-.256*</td>
<td>.396*</td>
<td>-.268*</td>
<td>.399*</td>
<td>------</td>
<td>-.096</td>
<td>-.041</td>
</tr>
<tr>
<td><strong>Change (HHS)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ethnicity Change</strong></td>
<td>-.083</td>
<td>-.070</td>
<td>-.465*</td>
<td>-.400*</td>
<td>-.096</td>
<td>------</td>
<td>-.093</td>
</tr>
<tr>
<td><strong>(ETH)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Property Value</strong></td>
<td>.084</td>
<td>-.025</td>
<td>.488*</td>
<td>.420*</td>
<td>-.041</td>
<td>-.093</td>
<td>------</td>
</tr>
<tr>
<td><strong>Change (PV)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results of the factor analysis show strong quantifiable gentrification characteristics in factor one. Most predictably, factor one shows that restaurant density increased highly (.658) while distance to CBD/Bricktown decreased highly (-.607), meaning that restaurant density increased nearest to the CBD/Bricktown area. Obviously this would be the case, since very few restaurants were in Bricktown prior to the beginning of the MAPS projects in 1993. Although this singular change is logical due to the capital investment involved with transforming Bricktown into the nightlife and
entertainment center of OKC, large rises in restaurant density are not localized solely to Bricktown. Areas near the Asian District, Midtown, and the Paseo (figure 15) also showed this large increase in restaurant density. Factor one also shows that loadings for restaurant density increase (.658) are strongly tied to educational attainment rate increases (.822), property value increases (.478), and household size decreases (-.540). These results are in agreement with most gentrification literature: the arrival of a highly educated gentrifying middle class with small family sizes. These gentrifiers prefer close proximity to restaurants and entertainment and are capable of spending more on housing, which fills the inner city rent (or property value) gap and drives up these values at a greater rate than non-gentrifying areas. It is expected that household income should rise, but its extremely weak loading may be misleading. Because gentrifying areas are commonly filled with young single adults, household incomes in these areas are lower due to a large number of single person households. In other words, it is assumed that many household incomes would be much greater except that there are many fewer dual-income households than in non-gentrifying areas.

By using the factor loadings from factor one to weight the values in each census tract, we can derive factor scores for each tract that attempts to quantify gentrification. This is accomplished by applying a simple regression formula (see Equation 1). The distance to CBD/Bricktown was omitted in the factor score formula because it overwhelmingly biased the higher scores toward the geographic center of the study area. The scale for each variable was normalized to a 0-100 format to avoid skewing the results toward variables with larger scales. After calculating factor scores for each census tract, measures of location specific gentrification are mapped (see Figure 18).
Equation 1 *Factor Score Regression Formula.*

\[
GFS = (.658 \times RD) + (.822 \times ED) + (-.540 \times HHS) + (.021 \times HHI) + (-.353 \times ETH) + (.478 \times PV)
\]

Where:
- GFS is the gentrification factor score (factor one)
- RD is the change in restaurant density (1989-2010)
- ED is the change in educational attainment rate (1990-2000)
- HHS is the change in household size (1990-2000)
- HHI is the change in household income (1990-2000)
- ETH is the change in African American percentage (1990-2000)
- PV is the change in property values (2000-2010)

Figure 18 *Factor One Factor Score per Census Tract.*

Once again the spatial distribution of gentrifying areas within the OKC study area, identified by these factor scores, fits the hypothesis that Bricktown is the focal point of this revitalization, with gentrification spreading to the north through Midtown, the Asian District, the Paseo, and on both sides of the OU Medical Center. There are
physical barriers to this spread of neighborhood transformation, as the census tracts south of I-40 (other than portions of the Bricktown tract) show no discernable change. Based on already observable information with respect to property value increases inside the Cottage District, it is expected that many of the gentrification processes are already in motion with the tract and in the census tract to its north.

Examination of factor two of the factor analysis reveals different results, particular in other locations within the study area. Household income increases (.866) as household size (.523) and property values (.509) increase. In this same factor, the percentage of African-Americans decreases (-.589) as well. The spatial distribution of factor two is also examined after applying a similar regression equation to the factor two loading values (see Figure 19). The trends in factor two are more difficult to explain. Midtown, the Asian District, and Paseo, were identified as gentrifying census tracts in factor one. They also show up in factor two because of their large property value and household income increases, plus decreases in African-American population rates. The large factor two scores of the non-gentrifying tracts south of I-40 are primarily due to increases in household size, as well as localized decreases in African-American population rates and increases in household income. As an example, the census tract directly east of Capitol Hill increased in average household size from 3.08 to 3.2, decreased in African-American population rate from 12% to 9%, and increased in household income from $9,349 to $19,940. Because of the somewhat conflicting reasons behind the roots of factor two, conclusions are difficult to draw, although more research into future trends could uncover a more clear explanation.
Figure 19  *Factor Two Factor Score per Census Tract.*
CONCLUSIONS

This study supports many findings of existing research, but also validates these trends in a particular urban environment often overlooked in gentrification literature. As a mid-sized city with a very low population density and ample open land in the suburbs, Oklahoma City growth is thought of as (and largely is) suburban in nature. As Joel Kotkin argues (2011), recent data depicts continued decentralization in urban form, yet despite continued suburbanization this and other studies clearly show the arrival of a new middle class into the inner city. This gentrifying class is largely comprised of college educated individuals, few with children, who demand greater access to the large number of amenities a downtown can offer compared to the suburbs. Preliminary 2010 census data reveals that from 1990 to 2010, Oklahoma City’s population grew 19.8% (from 599,611 to 718,633), while outlying areas of Oklahoma County shrank 13.7% (from 160,689 to 138,634). Kotkin agrees that “the urban option will continue to appeal to a small but growing segment of the population.” While large suburban population growth is occurring in surrounding Canadian and Cleveland counties, urban areas within Oklahoma County are greatly outpacing their suburban counterparts, due in large part to inner city gentrification.

The analysis in this study of business types and their density change over time is a powerful tool for identifying gentrifying areas. Areas with great increases in restaurants, art galleries, coffee shops, and gift shops are spatially linked with indicators such as educational attainment increase and household size decrease. To illuminate this further, more socially undesirable businesses such as pawn shops, check cashers, and liquor stores are not patronized and relocate away from gentrifying neighborhoods.
These changes in business type and density not only reveal local preferences, but also a shift in affluence. Highly educated DINKs have more disposable income than an average family. Disposable income is vital to supporting upscale businesses, while undesirable downscale businesses serve day to day needs of the working class and poor who have little discretionary income. This study displays how it is possible to map both consumer preference change and its link to gentrification.

Educational attainment and household size are perhaps the greatest single indicators of gentrification, since both are intimately connected to income, property value, and consumer preference. Well educated populations have smaller household sizes on average, which is an important influence in residential location decisions. All groups of people without children, whether they are recent college graduates, career oriented women, homosexuals, or empty nest retirees comprise a large portion of this new urban middle class. The reason for suburbanization was in large part based on the safety of childrearing in the suburbs whether for safety reasons, better schools, or the additional space requirements. Without children, other issues drive housing choices.

Research Limitations and Future Opportunities

The best opportunity to improve this study is to incorporate the 2010 census data when it becomes available. Although the use of property value changes within the study area provides a proxy indicator of gentrification, it does not tell the entire story. It is possible that trends in educational attainment, household size, income, and other variables studied continued for each census tract from 2000 to 2010, but this is highly doubtful. The Cottage District, for instance, likely has a much higher rate of educational
attainment in 2010, since gentrification of the existing housing stock began around 2000. Estimate data from the U.S. Census’ American Community Survey depicted the educational attainment rate in the Cottage District census tract at 26% from 2005 to 2009. This is a substantial increase from the 16% reported in the 2000 census data. Educational attainment in the census tract containing Bricktown jumped to an estimated 56% in the same time frame, up an enormous 38 percentage points from 2000 and 55 from 1990. These estimates have higher margins of error than full census data, but the results are congruent with the gentrification hypothesis.

The unique structure of OKC’s pre-MAPS downtown and Bricktown areas also creates a research dilemma. Bricktown, the epicenter of downtown revitalization, was not residentially-zoned prior to 1993 and the entire census tract containing Bricktown only had 31. This was evident in the results, as educational attainment rates and average household sizes both followed the gentrification pattern, yet residential property values of these 31 residences barely increased. This is largely explained by gentrifiers now living in Bricktown locations that were converted from non-residential uses; these properties were not included in the residential property values from 2000 to 2010. In fact, only residentially zoned parcels were included in this study, so a gap may exist where mixed use residences are not accounted for. Bricktown itself is primarily zoned for commercial use, and these commercial property values have surged in value. This indicates that residential property values of pre-1993 housing stock may not be a suitable indicator of gentrification, at least in this census tract. Additionally, due to OKC’s low population density, some green space within Bricktown was developed after
MAPS began. Solely examining residential properties constructed before 1993 may leave out high value properties which currently exist.

Although empirical data indicates greater demand among certain groups for residences in some urban OKC locations, it does not explicitly state why this demand exists. It is believed that these groups desire closer proximity to work, more numerous dining and entertainment choices, or greater authenticity compared to the perceived sterility of suburban America. A survey of residents in the study area could shed more light on the causes of why people choose to gentrify. Survey and empirical data on crime, mobility, and community may lead to additional understanding of this increased demand.

An examination of age would add another descriptive layer of the gentrifying class by illuminating its composition in different OKC neighborhoods. For example, it is hypothesized that gentrification identified near the Asian District is linked to an increase in college students at nearby Oklahoma City University. While supporting this hypothesis, increased educational attainment, decreased household size, and increased mobility rates do not explain the increase in property values or the transition from downscale to upscale businesses. It would not be expected that college students and very recent college graduates would possess ample disposable income to support more expensive homes or consumption habits. On the other hand, gentrification centered around new luxury apartments nearer the CBD would likely not be due to college students, but to higher income service sector employees with few children. Individuals comprising this group are much more likely to be labeled as the classic gentrifiers of research literature.
Sexual preference may also provide more detailed information on gentrifying
groups if data were available for examination. Due in part to smaller household sizes
and more discretionary income, homosexual districts in many urban settings fit the
profile of gentrification (Bondi, 1999). The 39th Street Enclave, which is not adequately
sampled in this research study area, is a homosexual district on the northwest edge of
the study area that warrants examination in any future study of OKC gentrification.

The displacement aspect of gentrification can be difficult to empirically measure.
Can declining African-American population even be used as a proxy for measuring
displacement? Although the gentrifying class is thought of as predominantly childless,
educated, and white, African-Americans can still take part in this new middle class
movement. In other words, the assumption that most gentrifiers are white does not
preclude the possibility that a segment of the gentrifiers are from a minority ethnic
group. Income may be a better indicator, although household income would likely
decrease in some gentrifying areas even if per capita income was rising, due to many
single households. Even if agreed upon measures could be used to examine
gentrification within the present population, how plausible is it to track the locations of
the displaced? These former residents have been uprooted and their social networks
altered, making it extremely difficult to pinpoint where the displaced currently reside.
Perhaps future research could find a connection between increased mobility and
increase downscale business density which may give some empirical evidence toward
the destination of the displaced.

Other factors may play a role in driving a sector of the middle class back toward
the inner city after decades of expansion toward the suburbs. Gasoline prices have
fluctuated since World War II, and Smith (1996) notes that gentrification activity tends to increase during times of more expensive fuel. Examining this connection between gasoline price and gentrification may provide more illumination on the causes of the process.

Negative aspects of the American commuter culture lead us to another factor enticing some of the middle class back to the inner city. Many major cities have invested in public transit options for the first time in decades, including buses, subways, light rail, and trolleys. Recent examples of this transit push include the founding of Dallas Area Rapid Transit (DART) in 1983 (DART, 2010), the Metropolitan Atlanta Rapid Transit Authority (MARTA) in 1979 (MARTA, 2010), and the large-scale expansion of Metro Transit of Seattle in 1972 (Oldham, 2002). It is not surprising that these cities, which grew rapidly near the end of the 20th century, increased their emphasis on public transportation during the same period that saw the rise of inner city gentrification. One disadvantage of suburban life is the lack of public transportation options and the geographic inefficiency that any public transit entails. Because suburban geographic areas are so large, suburban transit cannot service a large population due to low population density. In other words, if an individual requires or desires the use of public transportation, it is much easier to find within urban cores. It should be noted that as gentrification is revitalizing urban OKC, the MAPS 3 tax initiative of 2010 includes the construction of a five to six mile rail-based streetcar that will link businesses and residents in the downtown area (City of Oklahoma City Streetcar, 2011).
Ultimately, gentrification is a complex issue with many characteristics, some of which trend together in certain areas while some do not. The process itself can take on different forms because the gentrifiers can have different backgrounds, consumption preferences, and ages. Because of this, it is not suitable to use only economic or social changes to declare gentrification’s existence. Demographic data ignores the financial boon to urban governments, while economic data ignores the plight of displaced residents. The messiness of measuring gentrification does obviate sweeping generalizations, but the need to understand and describe the processes remains crucial. This study demonstrates how gentrification processes, once thought of as phenomena exclusive to large cosmopolitan settings, are also taking hold in the American heartland.
REFERENCES


