

Race and Property Value Appreciation: A St. Louis Case Study

Peter Metz

Washington University in St. Louis

March 2016

Abstract

Racial residential segregation in St Louis has profound economic consequences. In addition to a limited access to jobs and quality of schools, segregation may play an important role in property value. Changing racial composition of neighborhoods can increase or decrease property values depending on who is moving in. This analysis will tackle the question: do property values drop when black families move in? Moreover, I will attempt to distinguish between race and socioeconomic status as the primary driver of property value appreciation in racially transitioning neighborhoods. The results of this study support the Racial Proxy Hypothesis: a theory that states that property values may drop when blacks move in because of deteriorating neighborhood socioeconomic conditions rather than racial prejudice.

I would like to thank Professor David Cunningham for his thoughtful guidance and valuable insight throughout my research. I would also like to thank Professor Dorothy Petersen and Professor Bruce Petersen for their continuous feedback and support.

I. Introduction

Racial economic inequality has come to the forefront of political discourse as the racial wealth gap continues to expand. In 2009, the median black family's net worth was one tenth of the median white family's, resulting in a wealth gap of \$236,500 (Shapiro 2013). Wealth serves as a useful indicator of economic opportunity because the ability to improve one's social standing and to remain resilient in the face of economic challenges is more dependent on how much wealthy one is rather than how much income one makes. Wealth allows families to move to safer neighborhoods, pay for college, and withstand economic downturns like the Great Recession.

Homes constitute the largest portion of an American family's wealth portfolio, regardless of race. For black families, homes account for 53% of total wealth and for white families, homes comprise 39% of their wealth portfolio (Shapiro 2013). Therefore, when thinking about the drivers of the massive levels of wealth inequality we face in America today, one must first consider differences in home ownership and home value. Undoubtedly, differences in home ownership play a substantial role in the racial wealth gap. In recent years, the gap in home ownership rates between blacks and whites has grown to 30 percentage points (Callis 2016). However, more than just differential home ownership rates contributing to wealth inequality: the value of homes occupied by white families has risen faster than those occupied by black families (Shapiro 2013).

This paper sets out to quantify differences in property value appreciation between increasingly white neighborhoods and increasingly black neighborhoods in St. Louis using regression analysis. To disentangle race and socioeconomic status as primary determinants of property value appreciation, this paper regresses property value appreciation on both changing

racial composition and socioeconomic characteristics. If the coefficient of racial composition were significant even when socioeconomic characteristics are controlled for, I would conclude that racial composition is a driver of property values. On the other hand, if the coefficients of socioeconomic characteristics were significant while racial composition was not, I would conclude that socioeconomic factors drive property value appreciation.

My results support the Racial Proxy Hypothesis, which posits that racial residential segregation and its consequences arise from neighborhood socioeconomic characteristics rather than neighborhood racial composition. While the data indicate a clear relationship between increasing black population and slow property value appreciation, changing black population is no longer a significant determinant of property value appreciation when changing neighborhood socioeconomic characteristics are controlled for. In other words, neighborhood socioeconomic characteristics drive property value appreciation.

In the following section, this paper reviews literature on neighborhood preferences, home value appreciation, and other relevant topics. Then, I visit the history of segregation and racial migratory patterns in St. Louis to put today's demographics in a broader historical context. This section will include maps depicting present day St. Louis' demographics and changing racial composition. Finally, using regression analysis, I examine the determinants of neighborhood home price and gross rent appreciation on the census tract level in St. Louis City and St. Louis County to answer the question: what happens to property values when blacks move in?

II. Background and Literature Review

In the literature regarding racial and socioeconomic residential segregation, academics propose three hypotheses to link families' housing preferences to lower housing demand in black

neighborhoods. The first hypothesis states that people, regardless of race, prefer to live near other people of the same race. Ethnocentrism might result in lower housing demand in black neighborhoods because race is closely tied to socioeconomic status and predominantly black neighborhoods would, on average, be poorer than predominantly white neighborhoods.

In a study of residential preferences of white families and black families across a number of cities, Clarke (1991) argued that the difference in white versus black preferences for the racial composition of a neighborhood drives segregation. Although whites were generally amenable to a few black families living in their neighborhood, white families preferred neighborhoods that were at least 80% white while black families preferred neighborhood that were approximately 50/50. Clarke recognized that the differences in whites' and blacks' neighborhood preferences may have complex social and economic implications, but stated that these consequences were beyond the scope of his research. Clarke concluded that, because of ethnocentrism, policy efforts to integrate neighborhoods are for the most part fruitless.

The second hypothesis posits that racial residential segregation is a product of racial prejudice. In a face-to-face survey of Los Angeles County residents, Zubrinsky and Bobo (1996) found that whites perceive neighborhoods with high minority populations as less desirable and that black families, in particular, are the least desirable neighbors. Furthermore, the researchers found that blacks face discrimination in the housing market that prevents them from living in more desirable neighborhoods. While Zubrinsky and Bobo found some evidence of ethnocentrism, they conclude that racial prejudice is the primary driver of segregation by means of neighborhood preference and discrimination in the housing market.

Supporting the theory that neighborhood preference is driven by ethnocentrism and racial prejudice, some academics have found that racially transitioning neighborhoods typically

experience slower property value appreciation because of neighborhood racial composition preference (Anacker 2010; Kim 2003; Moya 2011). Anacker (2010) gathered data on select suburban census tracts in 150 counties across the country to examine how the racial composition of neighborhoods affects socioeconomic characteristics and property value appreciation. Anacker first looked at how the racial composition of neighborhoods varied between different regions. Anacker found that predominantly black neighborhoods suffered from the lowest median property values. However, he found that mixed race neighborhoods had the lowest home appreciation rate (37.48%) while predominantly black neighborhoods had the second lowest appreciation rate (38.58%) and predominantly white neighborhoods had the highest appreciation rate (44.98%). Anacker also found that change in black population had a negative impact on property values in all neighborhoods beside predominantly black neighborhoods. However, Anacker does not sufficiently control for neighborhood socioeconomic status and therefore cannot determine whether differential home value appreciation rates are a product of racial prejudice or socioeconomic factors.

Moya (2011) categorized neighborhoods in Philadelphia into groups such as “Stable, integrated,” “racially transitioning,” “predominantly white,” and “predominantly black” to examine whether changing the racial composition of a neighborhood influenced home appreciation. Controlling for various variables related to the physical homes and socioeconomic indicators, Moya found that “racially transitioning” areas where blacks were the largest minority yielded a negative and significant impact on home appreciation. Moya concluded that differential home value appreciation rates are a product of racial prejudice and institutional factors.

A third approach, the Racial Proxy Hypothesis, argues that segregated neighborhoods arise from socioeconomic patterns rather than racial preference. Since, on average, blacks are

poorer than whites, the differences in the ability to afford housing in desirable neighborhoods results in racial segregation. Wealthy, often white, families move away from poverty to shield themselves and their children from the social consequences of poverty. Meanwhile, low-income, often black, families in segregated neighborhoods cannot, or think they cannot, afford to move to a more desirable neighborhood. These economic opportunities and barriers often result in white flight and both racially and socioeconomically segregated neighborhoods. David Harris (2001), the leading academic voice of the Racial Proxy Hypothesis, finds that both blacks and whites prefer not to live in black neighborhoods because they typically suffer from higher crime rates, poverty, and other social ills.

Harris (1999) investigated the relationship between racial composition and annual housing expenditure in metropolitan areas across the country, separating his analysis into the rental properties and owner-occupied properties. Just regressing housing expenditure on percent black yielded significant negative coefficients for percent black, indicating a negative correlation between increase in black population and property value appreciation. However, when he added socioeconomic variables such as percent poor and percent unemployed, percent black is no longer significant, indicating that changing socioeconomic status might be the driving force in property value appreciation. Separating his analysis into a model for renters and a separate model for homeowners, Harris observed similar results with the exception that percent black was negative and significant at the 5% level for homeowners in neighborhoods that are at least 60% black. Harris concluded that racial residential segregation is a product of differences in socioeconomic status rather than racial preference.

Evidently, academics disagree as to whether racial residential segregation and its economic consequences result from racial preferences or economic barriers. St. Louis serves as

an appropriate, and perhaps ideal, case study of this research question because of its racially diverse demographics and its ongoing outmigration. The population of St. Louis City has shrunk steadily with many families moving to surrounding suburbs. As such, many St. Louis County neighborhoods are experiencing large influxes of people and increasing levels of segregation. Since so many neighborhoods in St. Louis City and County are racially transitioning, the area provides an appropriate platform to investigate how changing racial demographics impact home values and thus affect the racial wealth gap.

In reality, racial preferences and economic opportunity are not the only contributing factors to racial residential segregation and racial migratory patterns. St. Louis, along with many other American cities, has an ugly history of city planners, realtors, and developers landscaping a racially segregated city. While these practices have long been obsolete, their effects have a profound impact on St. Louis today. Therefore, to understand why many areas of the city are highly segregated, we must revisit the long history of housing policy designed to segregate St. Louis.

III. A Brief History and Demography of Race in St Louis

History

The high degree of racial residential segregation in St Louis today has roots that can be traced back to the turn of the century. In the late 19th century, St. Louis emerged as a regional economic hub. With help from the Mississippi River, the manufacturing, transportation, and agricultural industries boomed. St. Louis continued to attract economic development into the 1920's and 1930's as electrical supply and manufacturing companies drew employment and investment to the City. As recently as 1950, St Louis was the 8th largest city in the country. As

the City experienced rapid economic growth, developers and lawmakers instituted policies to ensure the continuing economic success of the City. As Gordon (2008) shows, one of these strategies was to landscape a racially segregated city.

As early as 1915, city planners and policy makers drew up zoning restrictions that prohibited blacks from purchasing houses in neighborhoods that were at least 75% white. The main concern of the St. Louis Real Estate Exchange (SLREE), an organization of local realtors and the primary backer of the proposal, was that “negro invasion” would result in property depreciation. The ordinance also designated certain areas as “negro blocks,” where black families were permitted to live. While the ordinance itself was struck down by a Supreme Court decision in 1917, its objective continued to be accomplished through race restrictive deed covenants.

Restrictive covenants were contracts running 20-50 years that imposed rules and regulations on the use and resale of property. Each covenant applied to a couple of city blocks, usually between 40 and 80 housing units. In St. Louis, race was the most common focus of these restrictive covenants, restricting “sale to or occupancy by people not wholly of the Caucasian race.” Race restrictive agreements arose in response to the “great migration” after World War I and typically applied to a few consecutive city blocks. By 1945, 380 separate race restrictive covenants were in effect in St. Louis and 80% of new developments in the Western suburbs had such agreements. Most of the covenants were concentrated on the north side of the city. The logic behind the geographic distribution of the covenants was clear: to prevent the westward sprawl of black families, confining them to the inner-city.

Private realtors and public policy further exacerbated racial residential segregation. In 1941, the local real estate board (Real Estate Exchange) effectively prohibited realtors from

selling property to black families outside the “unrestricted zone”: an area almost exclusively in the central city. The Exchange continued to enforce this policy well after World War II. At the same time, federal mortgage insurance and urban renewal programs subsidized white flight and created concentrated black public housing. Between 1934 and 1960, the Federal Housing Administration issued insurance for 5 mortgages in St Louis County for every mortgage in St. Louis city. Between 1962 and 1967, only 3% of mortgages insured by FHA went to black families. Meanwhile, urban renewal programs, namely the destruction of low-income housing units, displaced many poor black families. Local officials relocated the displaced families to public housing and typically placed families by race.

As realtors and policy landscaped a divided city, the St. Louis economy suffered after World War II with a steep decline in manufacturing. In 1950, manufacturing accounted for 200,000 jobs in St. Louis, but by 1980 that number had shrunk to 100,000. In the 1970’s St. Louis was faced with deindustrialization and continued to lose jobs to neighboring counties. Once boasting a population of over 800,000, St. Louis City now houses fewer than 400,000 residents.

The economic decline of St. Louis City led to rapid suburbanization and white flight to neighboring counties in the latter half of the 20th century. Between 1950-1970, almost 60% of St. Louis City’s white population moved out to the suburbs, especially west of St. Louis City. Meanwhile, the City saw an increase of about 12% in black population and numerous black neighborhoods emerged in the inner-ring suburbs to the north of the city. In the 1970’s and 1980’s, whites began to leave the inner-ring suburbs for the Western reaches of St. Louis County and even into St. Charles County. Meanwhile, black families spread from the northern inner-ring

suburbs further north and west to encompass municipalities such as Wellston, Normandy, and Ferguson. Since 1990, both white and black populations have continued to migrate outwards, with white growth patterns maintaining a degree of removal from locations with significant increases in black population. The population of St. Louis City has steadily declined since 1960 while its surrounding suburbs, especially St. Louis County and St. Charles County, have thrived.

Structural racism throughout the first half of the 20th century plays a large role in today's economic inequality. Even though the Civil Rights Movement nominally broke down racial barriers, the sustained era of racial discrimination left the black underclass unable to compete with people who had social and economic advantages for decades. While some trained blacks were able to take advantage of equal rights, many were left disadvantaged because of their lack of resources (Wilson 1990). This phenomenon is important in understanding the racial and economic composition of present day St. Louis.

Demography

Today, North St. Louis County neighborhoods continue to experience increasing black populations and concentrations of poverty. In 2000, ten census tracts in St. Louis County were identified as "high poverty," in which 20-40% of residents were under the poverty line. In 2010, 24 census tracts were designated as "high poverty," all located in North County (Meeting 2013). The jump in high poverty neighborhoods is largely a product of the migration of poor, black families from St. Louis City as well as the Great Recession beginning in 2007.

Table 1. St. Louis Metro Area Population

County	2010 Population	Growth Since 2000	Percent White
St. Louis City	319,365	-8.3%	46.6%
St. Louis County	998,883	-1.7%	69.9%
Franklin	101,491	8.2%	96.9%
Jefferson	218,728	10.4%	96.4%
Lincoln	52,565	35.0%	95.3%
St. Charles	360,485	27.0%	90.7%
Warren	32,513	32.6%	94.6%

Source: Census Bureau

As shown in Table 1, the populations of St. Louis City and St. Louis County contracted by 8.3% and 1.7% respectively between 2000-2010. The decline in population in both St. Louis City and St. Louis County can largely be attributed to white flight to St Charles County and other neighboring counties. Between 2000-2010, St. Charles County received an influx of 76,000 people, a 27% increase in population. With a population constituted by 91% whites, the vast majority of newcomers to St. Charles County were white.

Figure 1 depicts census tracts that experienced increases in black population (purple) and census tracts that experienced increases in white population (green) in St. Louis City and St. Louis County between 2000-2010. The map shows a significant increase in black population in many North St. Louis County census tracts between 2000-2010 and an increase in white population in the Western reaches of the County. While the overall black population in St. Louis City increased between 2000-2010, some City census tracts had large increases in black population while others had large increases in white population. In general, City census tracts directly east of Forest Park and southeast along the Mississippi River experienced increases in

white population while census tracts northeast of Forest Park, especially along the Mississippi River, experienced increases in black population.

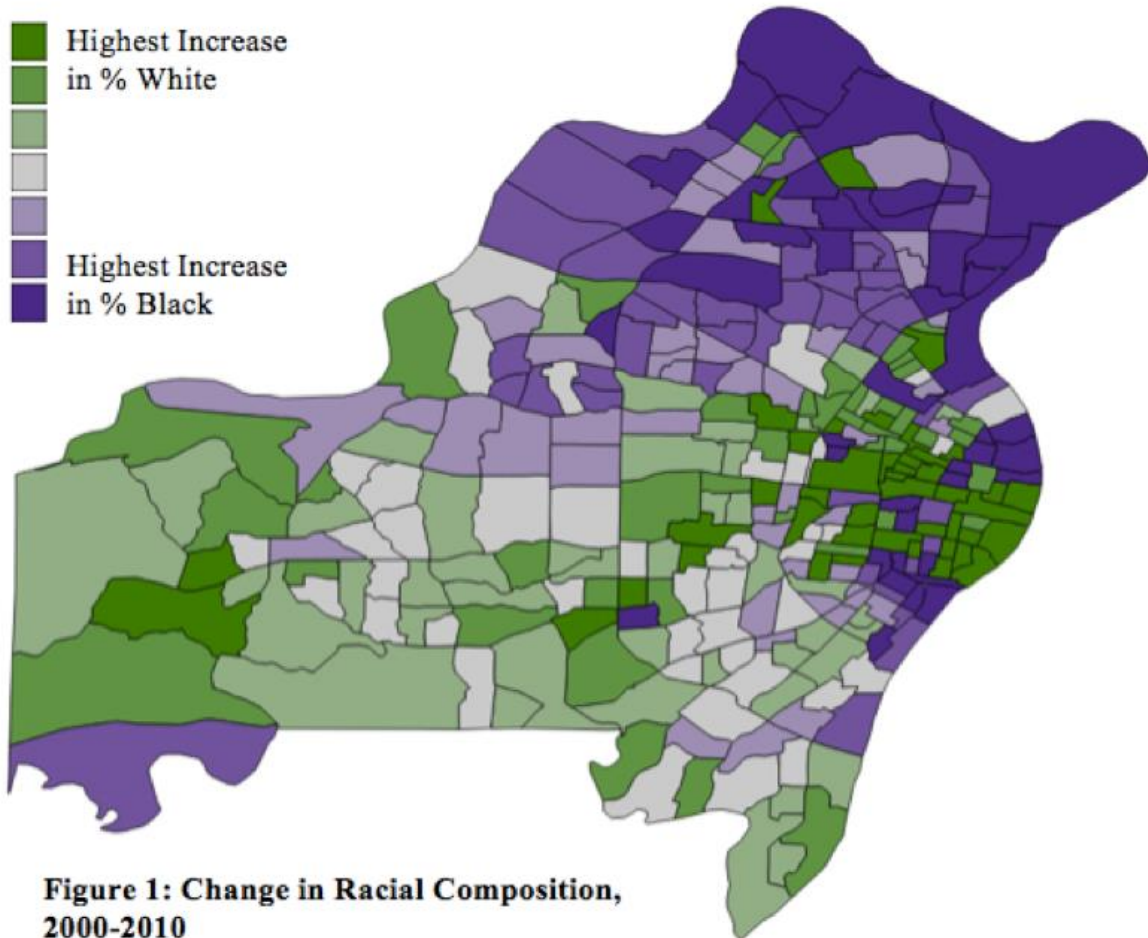


Figure 2 depicts relative income growth between 2000-2010 in St. Louis City and St. Louis County. Purple represents below average income growth and green represents above average income growth. The general trends are similar to those of Figure 1. Most census tracts in North St. Louis County experienced slow income growth while the fastest income growth occurred in the Western parts of the county. In the City, the slowest income growth occurred

northeast of Forest Park while the fastest income growth occurred directly south and south east of Forest Park.

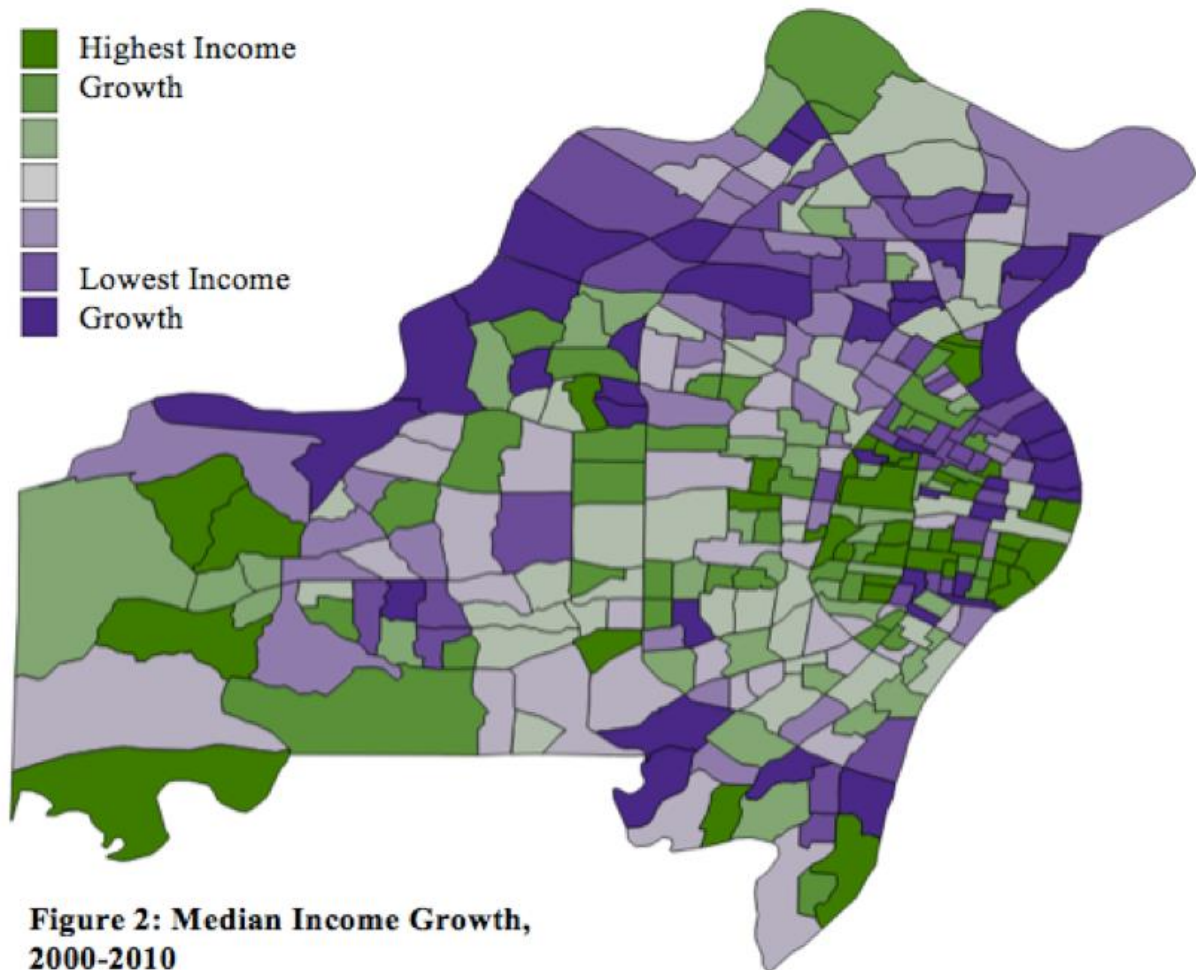
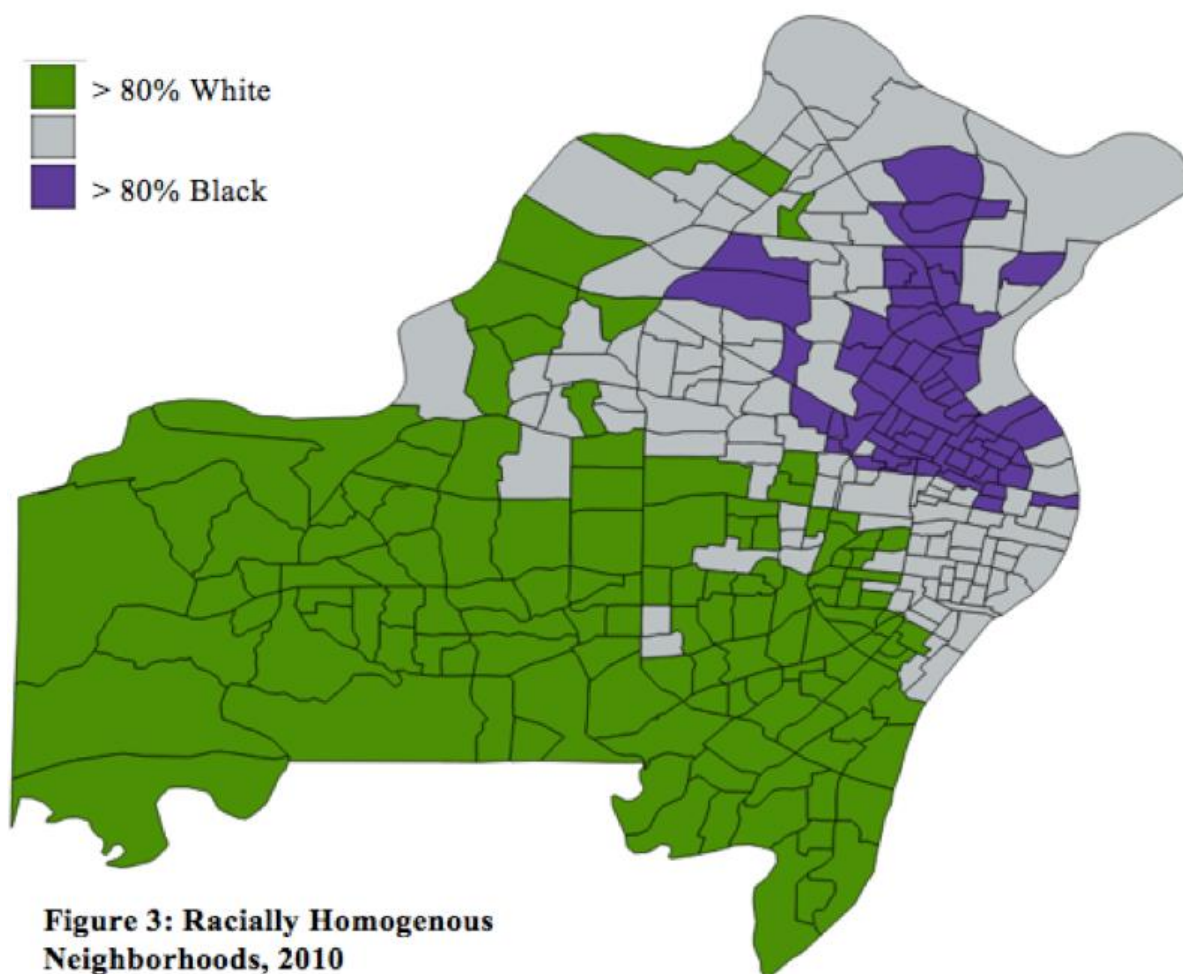


Figure 3 depicts census tracts that are at least 80% black (purple), 80% white (green), and mixed race (gray) in 2010. This map provides a dramatic illustration of segregation in St. Louis. All of the predominantly black census tracts are located north of Forest Park and into North St. Louis County. Nearly all of the predominantly white census tracts are situated in Western and Southern St. Louis County. These patterns distinctly mimic the racial patterns created by the “Unrestricted Zone” of the 1940’s: a reminder of the importance of considering historical context

to understand present day demography. Figures 1 and 3 together show that segregated neighborhoods throughout St. Louis have only become more segregated between 2000-2010.



Considered together, Figures 1 and 2 demonstrate that racial and socioeconomic movements are tightly correlated. For the most part, census tracts that experienced increases in black population also experienced slow income growth. This pattern may lend credence to the Racial Proxy Hypothesis. Simply establishing a relationship between racial composition and home price appreciation does not tell a causal story. It may well be the case that home

appreciation rates fall in increasingly black neighborhoods because of deteriorating socioeconomic conditions. The analysis that follows seeks to disentangle racial and socioeconomic forces that impact home value appreciation rates.

IV. Methodology

Unlike the large body of literature focused on how race affects home prices, this study explores how change in racial composition of the neighborhood affects housing prices. The following model can be used when thinking about the determinants of property value:

$$Q_{it} = \beta_0 + \beta_1 R_{it} + \beta_2 S'_{it} + \beta_3 L'_{it} + \beta_4 P'_{it} + \varepsilon_{it}$$

Where Q represents property value, R denotes neighborhood racial composition, S is a set of socioeconomic indicators, L is a set of variables relating to location, and P is a set of physical characteristics of the property. The explanatory variable in question, change in black population, captures the percentage change between 2000 and 2010, so the other independent variables are also expressed as change over the same time period. For the purposes of this study, we will assume that location and physical characteristics of the properties are time invariant. That is, over the ten year period, $\Delta L'_{it} = \Delta P'_{it} = 0$. As such, data relating to location and structural characteristics, much of which is unobservable, was not collected or used in the model. Since this study is interested in how and why property values change over time, and considering the time invariance of location and physical structure, this study uses the following model in its regression analysis:

$$\Delta Q_{it} = \beta_0 + \beta_1 \Delta R_{it} + \beta_2 \Delta V_{it} + \beta_3 \Delta S'_{it} + \Delta \varepsilon_{it}$$

where V denotes housing unit vacancy rate. Since the period between 2000 and 2010 encompasses the Housing Crisis and home vacancy rates were highly variable during the

Recession, it is important to consider change in vacancy rate as a determinant of property value appreciation. In general, high vacancy rates are associated with poorer, less desirable neighborhoods and could result in lower appreciation for other houses in the neighborhood.

The analysis will be conducted for both housing markets (using median home value as the dependent variable) and rental markets (using median gross rent as the dependent variable). Each analysis will be divided into two models. The first will be a regression of property value on change in black population to establish a relationship between the two variables in question. The second model will include a series of socioeconomic indicators in addition to change in black population in order to differentiate the effects of race and socioeconomic status in property value appreciation.

V. Data

To answer the research questions posed above, this study uses data collected from the U.S. Census Bureau for every census tract in St. Louis City and St. Louis County, using the census tract delineations from the 2010 census. To capture the change of the variables in question over time, this study uses data from the 2000 Summary File 3 Sample Data and from the 2010 Census Summary File 1 100% Data as well as the 2010 American Communities Survey.

Since census tract delineation change slightly between censuses—some tracts are split while other are consolidated—this study uses US2010, a project supported by the Russell Sage Foundation and Brown University, to relate census tracts over time. US2010 assigned population weights to past census tracts to demonstrate how tracts were split or consolidated. This study converts all data from 2000, using the census tract weights, into 2010 census tract delineations. For variables that are not related to population, such as median income, this study assumes that the observation from a census tract that was split remains the same for each of the new tracts.

Table 2a. Summary Statistics: Predominantly White Census Tracts

Variables	2000	2010	% Change
Home Value	\$149,318 (85,950)	\$247,168 (126,668)	65.5%
Gross Rent	\$672 (241)	\$909 (291)	35.3%
Income	\$57,891 (22,829)	\$75,707 (29,848)	30.8%
College Graduates	38.0% (18.9)	46.25% (18.59)	21.7%
Unemployment	2.40% (1.54)	4.96% (2.11)	106.7%
Vacancy Rate	4.52% (3.05)	5.88% (2.37)	30.1%

*Mean (Standard Dev)

Table 2b. Summary Statistics: Predominantly Black Census Tracts

Variables	2000	2010	% Change
Home Value	\$60,538 (46,542)	\$82,188 (25,390)	35.8%
Gross Rent	\$468 (76.2)	\$695 (149)	48.5%
Income	\$28,720 (16,606)	\$28,027 (9,318)	-2.4%
College Graduates	13.01% (12.61)	11.04% (5.96)	-15.1%
Unemployment	7.58% (3.78)	20.72% (6.63)	173.4%
Vacancy Rate	15.0% (8.48)	21.8% (9.21)	45.3%

*Mean (Standard Dev)

Table 2a and Table 2b show summary statistics of dependent and independent variables separately for predominantly white census tracts (greater than 80% white in 2010) and predominantly black census tracts (greater than 80% black in 2010). Comparing white census tracts and black census tracts side-by-side demonstrates astonishing differences in the values of the variables as well as the percentage change between 2000 and 2010. In both 2000 and 2010, home value, rent, household income and educational attainment are all significantly lower for predominantly black census tracts while unemployment and vacancy rate are higher. In 2010, home values, household income, and educational attainment were at least three times lower for black census tracts.

Moreover, these tables provide clear evidence that both home value appreciation and socioeconomic status grow faster in predominantly white neighborhoods. Home value appreciation in predominantly white census tracts (65.5%) was nearly double that in black census tracts (35.8%). While gross rent appreciation was slightly higher in black census tracts, this could be explained by rental properties as inferior goods. Demand for rental units goes up as disposable income goes down. Meanwhile, socioeconomic indicators like income grew much faster in white census tracts (30.8%) than black census tracts (-2.4%). Not only do black neighborhoods suffer from lower socioeconomic status, they also suffer from lower socioeconomic status growth. This dynamic is important when considering the Racial Proxy Hypothesis because home value appreciation rates are closely tied to changing socioeconomic conditions.

Table 3. Results

	Home Owners		Renters	
	A	B	A	B
Constant	97.726*** (7.086)	-53.367*** (18.700)	42.846*** (2.448)	18.682** (7.837)
Change in Black Population	-2.970*** (0.331)	-0.371 (0.347)	-0.294*** (0.113)	0.070 (0.146)
Change in Vacancy Rate	-2.381** (1.161)	-1.952* (1.011)	0.189 (0.387)	0.061 (0.401)
Income Growth		0.904*** (0.142)		0.133** (0.059)
Change in College Graduates		3.766*** (0.523)		0.634*** (0.216)
Change in Unemployment		2.104** (0.847)		0.798** (0.349)
R-Squared	0.230	0.511	0.023	0.102
Adjusted R-Squared	0.224	0.503	0.016	0.087
Observations	300	300	296	296

VI. Results and Discussion

The analysis of how changing racial composition of a neighborhood affects property value appreciation for both homes and rental units proceeds in two parts. First, for both homes and rental properties, I will assess the effect of changing racial composition and changing vacancy rate without controlling for socioeconomic variables. To do so, I will run a linear model by regressing property value appreciation (home price or gross rent) on change in percentage black and change in vacancy rate. As explained above, since both dependent variables capture change over time, time invariant variables that affect home prices may be left out of the model. In the second model, I will include changes in various socioeconomic indicators to test the Racial

Proxy Hypothesis. In other words, does race or socioeconomic status drive property value appreciation?

Table 3 presents the results of both models for homes and rental units. The number of asterisks next to the models' coefficients indicate the coefficients' level of significance. One asterisk (*) corresponds to 10% significance, two (**) indicate 5% significance, and three (***) relate to 1% significance. Both the housing market and rental markets yield similar results. In Model A, the coefficient of change in black population is negative and significant at the 1% level when controlling for change in vacancy rate. This result indicates that an increase in black population results in lower property value appreciation for both the housing and rental markets.

When socioeconomic indicators are added in Model B, the magnitude of the point estimate for change in black population drops precipitously and is no longer significant in both the rental and housing markets. Even though the quantitative size of the point estimate of change in black population drops, the standard error remains approximately the same. In other words, while the estimates of the coefficients are quite different, the precision of the estimates are similar. The change in point estimates coupled with the lack of change of standard errors indicate a strong omitted variable bias in Model A that is corrected for in Model B. By leaving out socioeconomic variables that are correlated to both the dependent variable, property value appreciation, and the independent variable, change in black population, the coefficient for change in black population was greatly overestimated in Model A.

In Model B, in both the homeowners and renters regressions alike, nonracial neighborhood traits are quantitatively large and significant. For the housing market, income growth and change in college graduates are positive and significant at the 1% level, change in vacancy rate is negative and significant at the 10% level, and change in unemployment is

positive and significant at the 5% level. All signs are as expected except for unemployment. One would expect that neighborhoods suffering from high levels of unemployment also experience low property value appreciation, and thus a negative coefficient. While the magnitude of the coefficient is fairly large, so is its standard error. As such, the point estimate for the coefficient of change in unemployment may not be a very accurate estimate of its true effect on home value appreciation.

For renters, income growth is positive and significant at the 5% level, change in college graduates is positive and significant at the 1% level, and change in unemployment is positive and significant at the 5% level. Once again, all signs are as expected except for unemployment. One possible explanation for the positive correlation between unemployment and gross rent appreciation is that apartments are inferior goods. As people lost their jobs and incomes during the Great Recession, they could no longer afford homes and turned to rental properties. An increase in demand for rental properties could slightly raise prices.

Once socioeconomic indicators are controlled for in Model B, changing racial composition does not significantly impact property value appreciation. Without the socioeconomic indicators, change in percent black is large and significant because it represents all of the indirect effects of changing demographics. For example, we see in Figures 1 and 2 that changing racial composition and income growth are closely tied. As more black residents moved to North County between 2000-2010, income growth slowed in those areas. The maps, summary statistics, and regression results of this study support the Racial Proxy Hypothesis. The maps and summary statistics show that race and socioeconomic are so closely tied that linking race and property value appreciation without controlling for socioeconomic characteristics leads to incorrect conclusion about the impact of racial composition on property values. The regression

results indicate that neighborhood socioeconomic factors such as income and educational attainment are the main drivers of property value appreciation.

VII. Conclusion

This paper sets out to find the determinants of differential property value appreciation rates in St. Louis and answer the question: does race or neighborhood socioeconomic status drive property value appreciation? To answer this question, I use regression analysis with data from every census tract in St. Louis City and St. Louis County in 2000 and 2010. While the data show a clear relationship between increasing black populations and slower property value appreciation, when socioeconomic conditions are controlled for, changing racial composition is no longer a determinant of property value appreciation.

This result supports the Racial Proxy Hypothesis, which states that whites may avoid neighborhoods with high proportions of black residents because of the frequent association with low incomes, high crime, and poor services. Regardless of the underlying drivers of neighborhood preference, resulting white flight creates racial segregation, concentrates poverty, and exacerbates the racial wealth gap. Increases in the concentration in poverty are so damaging to the underclass, particularly the black underclass, because the deleterious effects of poverty create a feedback loop. When property values drop because of worsening socioeconomic conditions, property tax revenues decrease, resulting in lower school funding and lower educational standards. With this decrease in socioeconomic status, the cycle resets.

An important caveat to the Racial Proxy Hypothesis is that, while both blacks and whites are averse to black neighborhoods (Harris 2001), blacks, regardless of economic status, are much more likely to grow up in areas of concentrated poverty. Two thirds of black children born

between 1985 and 2000 grew up in neighborhoods with at least 20% poverty while only 6% of white children during the same time period were raised in neighborhoods with comparable poverty rates (Sharkey 2013). Not even the massive racial wealth gap can fully explain the disparity in neighborhood disadvantage. Policy makers must address socioeconomic disparities between whites and blacks and perhaps rethink the way schools are funded to break the feedback loop.

This paper contributes to the body of literature by implementing a first differences model and controlling for the impact of socioeconomic characteristics on property value. Studies that do not account for change over time and socioeconomic characteristics may produce biased estimates of the impact of race on property value appreciation. Some of the studies that conclude that racial composition in and of itself is a determinant of property value either do not considering changes over time (Moye 2011) or do not sufficiently control for the effects of neighborhood socioeconomic status on property value (Kim 2000; Anacker 2010). As such, these studies offer a misguided explanation of why property values drop when blacks move in.

One clear limitation of this study is its limited geographical scope. The history of segregation and ongoing outmigration in St. Louis is unique. Therefore, it is highly possible that demographic and property value appreciation patterns are different for other cities. As such, an appropriate next step in this vein of research is to apply a similar methodology to other cities across the country.

References

- Anacker, K. B. (2010). Still Paying The Race Tax? Analyzing Property Values In Homogeneous And Mixed-Race Suburbs. *Journal of Urban Affairs*, 32(1), 55-77.
- Callis, R., & Kresin, M. (2016). *Residential Vacancies and Homeownership in the Fourth Quarter 2015* (U.S. Department of Commerce, U.S. Census Bureau).
- Chambers, D. N. (1992). The racial housing price differential and racially transitional neighborhoods. *Journal of Urban Economics*, 32(2), 214-232.
- Clark, W. A. (1991). Residential Preferences and Neighborhood Racial Segregation: A Test of the Schelling Segregation Model. *Demography*, 28(1), 1.
- Farley, R., Fielding, E. L., & Krysan, M. (1997). The residential preferences of blacks and whites: A four-metropolis analysis. *Housing Policy Debate*, 8(4), 763-800.
- Gabriel, S. A. (1987). Economic Effects of Racial Integration: An Analysis of Hedonic Housing Prices and the Willingness to Pay. *Real Estate Economics*, 15(3), 268-279.
- Gordon, C. (2008). *Mapping decline: St. Louis and the fate of the American city*. Philadelphia: University of Pennsylvania Press.
- Harris, D. R. (1999). "Property Values Drop When Blacks Move in, Because...": Racial and Socioeconomic Determinants of Neighborhood Desirability. *American Sociological Review*, 64(3), 461.
- Harris, D. R. (2001). Why Are Whites and Blacks Averse to Black Neighbors? *Social Science Research*, 30(1), 100-116.
- Kim, S. (2000). Race and home price appreciation in urban neighborhoods: Evidence from Milwaukee, Wisconsin. *The Review of Black Political Economy*, 28(2), 9-28.

Massey, D. S. (1990). American Apartheid: Segregation and the Making of the Underclass.

American Journal of Sociology, 96(2), 329-357.

Meeting the Challenges of Concentrated Poverty in St. Louis County, Missouri (2012 Strategic Plan, Issue brief). (2013). St. Louis County, MO: St. Louis County Department of Planning.

Moye, R. G., Wray, M., Shlay, A. B., & Flippen, C. A. (2011). The impact of Shifting Neighborhood Racial Composition on Home Value Appreciation (Unpublished doctoral dissertation).

Rusk, D. (2001). *The "Segregation Tax": The Cost of Racial Segregation to Black Homeowners* (Center on Urban & Metropolitan Policy, Issue brief). Washington, DC: The Brookings Institution.

Shapiro, T., Meschede, T., & Osoro, S. (2013). The Widening Racial Wealth Gap. *The Assets Perspective*.

Sharkey, P. (2013). *Stuck in place: Urban Neighborhoods and the End of Progress Toward Racial Equality*. Chicago: The University of Chicago Press.

Wilson, W. J. (1990). *The Truly Disadvantaged: The Inner City, The Underclass, and Public Policy*. Chicago: University of Chicago Press.

Zubrinisky, C. L., & Bobo, L. (1996). Prismatic Metropolis: Race and Residential Segregation in the City of the Angels. *Social Science Research*, 25(4), 335-374.