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White Flight and Urban Decay in Suburban Chicago

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Abstract

White flight and urban decay are issues typically analyzed in the context of the inner-city. This study builds on previous literature to test whether these phenomena have affected the Chicago suburbs in the same way as other urban areas. In particular, this study focuses on the effects of changes in racial composition, household income, and the age of the housing stock on changes in home values, the vacancy rate, the homeownership rate, unemployment, the single parent household rate, and the college completion rate. Overall the study supports the theories of white flight and filtering in the suburban Chicago context. The study includes data from 175 Chicago suburbs for years 1980, 1990, and 2000. All data comes from the HUD SOCDS and the US Census. Methodologically, the study utilizes least-squares regression techniques.

I. Introduction

Chicago, like any major city, is extremely diverse racially as well as economically. However, these qualities do not stop at the city limit. The estimated population of the Chicago suburbs is over 5 million. Not only is this population larger than that of the city itself, but it also exhibits equal diversity. For example, the population of suburbs like Kenilworth are 97% white and others like Phoenix are 97% black. Other suburbs like Riverdale have demographically transformed with the minority composition increasing from 3% to 90% in only twenty years. Similarly, these suburbs are also extremely economically polarized. Places like Winnetka have a median income of $235,000 and places like Ford Heights have a median income of $19,000.

With these examples in mind, the Chicago suburbs have experienced an unusual pattern of change. The Chicago area is markedly different from just twenty and even ten years ago. Many metropolitan areas have experienced out-migration of whites away from the inner city to the suburbs, called "white flight," coupled with socioeconomic decline called "urban decay." However, Chicago is one of the few metropolitan areas to experience white flight and urban decay *within* the suburbs. Fanning-Madden (2002) finds that Chicago is one of only two major cities where the concentration of poverty grew at a faster rate in the suburbs than in the inner city from 1980 to 2000. This change is partially due to inner city gentrification: downtown living has become commonplace with the conversion of office buildings, warehouses and factories into condominiums. New single-family homes have replaced abandoned industrial areas and housing projects. Whole neighborhoods have changed completely, while others have become targets for speculation by investors trying to predict the next hot area. These changes are not without consequence. Driven by an influx of public investment and private capital, this gentrification has forced low-income (and often minority) households to relocate, often involuntarily to other

communities such as the south and west suburbs. Thus in the unique case of Chicago not only have some white residents migrated to the outer suburbs, but some have also moved back into the city's newly gentrified areas.

Although a great deal of research has addressed white flight and urban decay in inner cities, few studies have addressed these issues in suburban areas. Because suburban change is a relatively new phenomenon, discovering the parallels between the urban and suburban context is an important factor in addressing the socioeconomic outcomes associated with neighborhood change. This study will build on previous literature to look at how the changing minority composition of the Chicago suburbs has affected socio-economic conditions.

II. Literature Review

Over the course of the past several decades many studies have focused on urban decay and white flight. Studies have focused on many aspects including both the causes and effects. This paper will build on previous research and examine the implications of white flight and urban decay, especially focusing on the suburban context.

Neighborhood Change

The earliest model of neighborhood change is the Chicago School sociological theory of "invasion-succession." Developed by Park and Burgess (1925), this paradigm is based on patterns of movement found in plant ecology. Hyra (2008) explains, "just as a pine forest takes over a prairie, different populations compete over space within a city." Thus in the context of neighborhood change, as one population moves into or "invades" a neighborhood, the original population leaves or "secedes." Highly deterministic, the model sees neighborhood change as

inevitable. The theory was originally applied to movements of immigrant populations, but soon came to dominate patterns of racial change in city neighborhoods.

Within the general framework of the invasion-succession model many studies have attempted to identify the "tipping point," or the percentage point of new minority residents which causes the remaining white residents to leave. As Morton Grodzins (1958) predicted "once the proportion of non-whites exceeds the limits of the neighborhood's tolerance for interracial living, whites move out." The literature refers to this "limit of tolerance" as the racial tipping point. Findings on the existence of a tipping point are varied, leading to the conclusion that neighborhoods and communities are too heterogeneous to obey an iron-clad tipping point. For example, one of the first observations of a tipping point came from Chicago Housing Authority's research from the 1950s. This study shows that once the population of a housing project becomes more than one-third black, most white residents begin to leave (Meyerson and Banfield 1955). However, more recent studies looking at multiple cities found little evidence for a universal specific tipping-point (Pryor 1978, Goering 1978). Card et al (2008) finds evidence for a tipping point with a minority population of 5% to 20%, noting that tipping points are higher in cities where whites have more tolerant racial attitudes.

Although invasion-succession predicts this process of 'white flight,' the obvious question is what is so wrong with having minority neighbors? Why do white higher status residents move out when minorities move in? A possible explanation in the literature is pure discrimination: whites dislike minorities because they are not white (Bobo and Zubrinsky 1996). A second explanation stresses the proxy component of racial aversion: white people avoid minority neighborhoods not because of race, but because of the other neighborhood concerns correlated with racial composition like the poverty rate. In other words, because socio-economic status and

race are often correlated, higher-income whites may avoid integrated areas because of the economic status of its residents who happen to be minorities. Consequently, some studies find that white flight may be more of a flight from poverty and decay than a flight from minorities (Jego and Roehner 2006, Vidgor 2007, Harris 1999). These studies both note that as neighborhoods decline, middle-class minorities often leave alongside their white counterparts.

Similarly, the filtering theory depicts neighborhood change, not based on a changing minority population, but on a declining housing stock. This model, introduced by Hoyt (1933) and developed by Smith (1963), explains neighborhood change as a function of decisions made by property owners. Because maintenance costs rise with the age, homeowners and landlords will invest decreasing amounts of capital as buildings age according to this theory. Thus as the housing stock ages, owners invest less and less in their properties. Rather than making home repairs, more affluent residents move out of the neighborhood into areas with newer homes. Sternlieb (1966) relates the filtering theory to the used car market, explaining that when people upgrade to a new car, they sell their old car at a lower price as a used car. Similar is the bid rent model developed by Muth (1969). This model explains neighborhood change as a function of a trade-off between housing quality and proximity to the city. Studies by Fujita (1989) and Leven et al (1976) demonstrate empirical support for the idea that the more affluent will sacrifice commute time for housing quality. Based on this literature, one would expect the age of the housing stock and distance from the city center to affect the quality of an area. However, these theories make the questionable assumption that individuals cannot always freely choose where to live. For example, a minority family may wish to move further away from the city, but cannot because of discrimination in the real estate market they cannot rent or purchase a home (Hyra 2008).

The Consequences of Neighborhood Change

A great deal of literature has also addressed the effects of neighborhood change in different communities. Studies focus on economic variables like unemployment, property values, and investment levels. Other research focuses more on social issues like teen pregnancy, education, crime, and political participation.

Unemployment Many studies show that as a community declines and affluent consumers leave, so do retailers and industry (Lauria 1998, Gotham 1988, Friedrichs 1993, Hanlon and Vicino 2007). Thus the demand for labor shifts away from declining neighborhoods in favor of high-growth white areas. Adding to the problem, discrimination in the housing market and high housing prices make it difficult for minority workers to move into these high-growth areas. This idea was first expressed by John Kain (1968) and subsequently has been labeled the spatial mismatch hypothesis (SMH). According to this hypothesis, there will be fewer jobs per worker in minority dominated low-income areas than in white areas (Ihlanfeldt and Sjoquist, 1998). Consequently, minority workers may have difficulty finding jobs, accept lower pay, or have longer commutes. Furthermore, a later study by Kain (1985) found the presence of longer commute times to work for black workers in comparison to white workers in the Chicago MSA. Another study by McLafferty and Preston (1992, 1996), makes racial comparisons of commuting times to show that black and Hispanic women have longer journey-to-work times than white women. They conclude that minority women have relatively poor spatial access to jobs. Six different reviews of the SMH literature were published in the early 1990s (Holzer 1991; Ihlanfeldt 1992; Jencks and Mayer 1989; Kain 1992; Moss and Tilly 1991; Wheeler 1990). With the exception of Jencks and Mayer, these provided either strong or moderate support for the

hypothesis. Thus, the already low-income residents of decaying areas may lose jobs and have difficulty finding new employment.

Housing In regard to the housing market, most of the literature finds that increases in the minority population negatively affect property values. David Harris (1999) looks at the effect of racial composition on property values finding that values do respond negatively to increases in minority population. He finds that housing loses at least 16% of its value when located in neighborhoods that are more than 10% black. Furthermore, Hanlon and Vicino's (2007) analysis of the Baltimore suburbs yielded similar conclusions. Even when controlling for housing characteristics like age and size, housing values in the more diverse inner suburbs declined relative to the outer suburbs from 1980 to 2000. On the other hand, Card et al (2008) finds that neither rents nor housing prices exhibit any sharp discontinuities at the tipping point. However, this study does find that tipping significantly affects the quantity of new housing built in an area.

Many studies also find that neighborhood change is closely tied to disinvestment. Smith et al (2001) defines disinvestment as the "withdrawal of, or refusal to invest capital in neighborhoods or facilities." Just as individuals do not want to live in more diverse low-income areas, corporations do not want to invest capital in these areas. Not only does this disinvestment mean a lack of development, but also a lack of loan opportunities. A lack of finance availability means residents have fewer resources to protect their homes from foreclosure. Lauria (1998) finds that foreclosures disproportionately affect low-income, lower-middle income, and elderly households and the neighborhoods in which they reside. This study also finds that in lower status neighborhoods these foreclosures more often result in vacancies. Not only are vacant properties an eyesore, but they are also hot spots for crime and gang activity. A study by Spelman (1993) found that "blocks with unsecured [vacant] buildings had 3.2 times as many

drug calls to police, 1.8 times as many theft calls, and twice the number of violent calls" as blocks without vacant buildings. Furthermore, the demolition of vacant properties is also a financial drain for local governments and a problem for residents. A Temple University (2005) study in Philadelphia finds that houses within 150 feet of a vacant or abandoned property experienced a net loss of $7,627 in value.

Some of the literature views this aforementioned decay and filtering processes as beneficial, saying as those with higher incomes continuously move into newer homes, the homes they leave behind become available to those with lower-incomes at more affordable prices [Hoyt (1993), Vidgor (2007)]. However, Ira S. Lowry (in Lauria 2001) says:

> The price of decline necessary to bring a dwelling unit within reach of an income group lower than that of the original group also results in a policy of under-maintenance. Rapid deterioration of the housing stock is the cost to the community of rapid depreciation in the price of existing housing. (397).

Although lower housing values may make housing more affordable to lower-income residents, the decline in housing values also decreases the tax base and creates many economic and social problems.

The literature also reveals that disinvestment and foreclosures decrease the homeownership rate in areas with a high proportion of minorities. According to Lauria (2001) in a study of New Orleans, tracts with more minority residents tend to have lower homeownership rates. Because residents of lower incomes have a harder time not only keeping up loan payments, but also securing loans in the first place, many cannot afford to be homeowners. Long and Caudill (1992) also find that African-Americans are less likely than whites to own their homes. The study attributes this fact to both differences in income and likelihood of being married. Interestingly, when controlling for these two variables the differences in

homeownership rates disappear between blacks and whites. The literature suggests many negative consequences from low rates of homeownership in a community such as to instability and a lack of investment in the community. Dietz and Haurin (2003) find that because homeowners move less frequently, high rates of homeownership have a stabilizing effect on home values. Homeownership also has a social benefit, as homeowners are more likely to "participate in community organizations, maintain their properties, and participate in politics." (Dietz and Haurin 2003).

Social Problems Although the declining housing stock may make housing more affordable for low-income minorities, studies across the fields of political science, sociology, and economics show that the negative social outcomes outweigh affordable housing prices. In the words of Massey et al (1993), "residential segregation, by relegating disadvantaged minorities to areas with fewer opportunities and amenities, exacerbates the existing social distance between them and the white majority."

One of the most researched areas is the connection between low-income high minority areas and crime. The literature shows an overwhelming connection between race and crime. For example, the leading cause of death among black males is homicide (Fingerhut and Kleinman 1990) and in the 1980s homicide rates increased by alarming rates in minority dominated areas of Chicago, New York, and Philadelphia (Sampson and Groves 1989). Several studies (Bursik and Grasmick 1993; Sampson and Groves 1989; Land et al 1991) find low social control to be the underlying cause of these connections between race and crime. Interestingly, the first studies to show the connection between crime and social disorganization focused on Chicago. Shaw and McKay (1931) show that the highest delinquency rates in Chicago were located in low-income, deteriorated zones next to the City's central business district and industrial areas. A further study

of Chicago by Sampson and Morenoff (1997) analyzing 1970 through 1990 shows that homicide rates are both a cause and effect of neighborhood change. Land et al (1991) also attribute some of the crime to a lack of funding for local police forces and high unemployment rates. Not only do high crime rates make a neighborhood dangerous but it also means an increase in drug traffic and a high incarceration rate.

Another widely researched area is the educational achievement gap between minorities and whites. This term refers to the troubling performance gaps between many African-American and Hispanic students, at the lower end of the performance scale, and their non-Hispanic white peers. It also refers to the academic disparity between students from low-income and well-off families. The achievement gap shows up in grades, standardized-test scores, course selection, dropout rates, and college-completion rates (NAEP 2005). For example, in 2003, while 39% of white students scored at the proficient level or higher on the 4th grade reading exam portion NAEP, only 12% of black students and 14% of Hispanic students did so. Furthermore, While 72 percent of white students enrolled in 9th grade graduated from high school on schedule in 2001, this was true for only just over half of the same group of black and Hispanic students. While 30% of white kindergartners go on to graduate from college, only 16% of black kindergartners later earn bachelor's degrees. The literature attributes this gap to both socio-economic and in-school factors (Greene 2003). Beginning with the "Coleman report (1966)," research has found that in-school factors such as classroom size, teacher quality, etc. contribute little to the improvement of test scores in comparison to the socio-economic status of students. Being raised in a low-income family, for example, often means having fewer educational resources at home (NAEP 2005, Viadero, 2004). However, some studies have found that in-school factors do matter. While it is difficult to isolate the variables that directly impact student achievement,

research has shown that teaching quality and school funding matter (Hanushek, Kain & Rivkin, 2001). Regardless of which theory prevails, students in low-income areas face both problems: they are of a low SES and attend poor quality schools.

Not only is the educational success of children lower in blighted areas, but as neighborhoods change and higher income residents leave so do the more highly educated. The literature shows that losing educated residents has a definite negative impact on neighborhoods. With college completion comes positive externalities, such as increased political participation, increased income, increased community involvement, etc. College graduates overall appear to be better neighbors (Jencks and Mayer 1989).

Another social effect of neighborhood decay is changing family structure. Many studies find that blighted areas have a higher incidence of single parent households (Jargowski 1997, Krivo and Peterson 1996, Massey and Denton 1989, Massey and Denton 1993, Wilson 1987). This maybe due to both a higher rate of teenage pregnancy and incarceration rates (Massey and Denton 1993). The literature finds that single parent households tend to have very negative effects on children, exponentially so for children in low-income areas. Many studies show that children of single parent families tend to perform worse in school and have more behavioral problems. These problems are attributed to the fact that single parents, under economic pressures, have less time to devote to their children (Krivo and Peterson 1996).

The Suburbs

The majority of the aforementioned research deals with cities. Although little research has focused on suburban change, the few existing studies provide sufficient evidence to apply urban decay theory to the suburbs. As urban historian Kenneth Jackson comments, “The cycle of decline has recently caught up with the suburbs. The old crabgrass frontier is becoming a

crabgrass ghetto" (Smith et. al 2001). For example, new evidence shows that suburbs are facing increases in poverty rates, economic segregation, declining incomes, and declining homeownership rates [(Baldassare (1986), Lucy and Philips (2000), Smith et al (2001)]. For instance, with regard to white flight, Card (2008) finds that "there are no systematic differences in the magnitude of tipping discontinuity between central-city and suburban tracts" (202). Similarly, several studies (Madden 2003, Short et al 2007) find that suburbs can experience racial turnover similar to cities. Specifically, Hanlon and Vicino's 2007 case study of suburban Baltimore shows the decline of the inner suburbs as a function of the age of the housing stock and racial factors. A study of Camden County, New Jersey also shows how the theory behind city decline can be successfully applied to the suburbs (Smith et al 2001). Similarly, while the original concept of spatial mismatch focused on inner-city minorities and the migration of jobs from the city to the suburbs, this dichotomy between city and suburbs no longer holds. Orfield (1997) is one of the latest to point out that many inner suburbs now face problems similar to those of their central cities. Furthermore, Short et al (2007) examines the decline of suburbs by delineating four helpful categories of suburban development: suburban utopia (1890s-1930s), suburban conformity (1945-1960), suburban decline (1960-80), and suburban dichotomy, where some decline and others boom (1980-onward). Short el al (2007) hypothesizes the beginning of suburban decline, as well as the age of the housing stock at which urban decline should occur (housing built from 1945-1960). Furthermore, because Short et al (2007) focuses on changes starting in 1980, the filtering and white flight theories fit in the same time period as the suburban dichotomy. Although inner-city change is an important topic, now more than ever, suburban change needs to be examined.

The Chicago Context

Several qualitative studies show how the invasion-succession school of theories has played out in the Chicago Metropolitan area. Wilson (1990) explains that as the United States became less industrial, companies shifted production to developing countries with low labor costs. As a result, inner city communities lost important manufacturing jobs during the 1960s-1980s. With the loss of manufacturing jobs came the rise of white-collar jobs such as law, investment banking, insurance, marketing, and others needed to help new multinational firms operate. For example, manufacturing declined by 35% in Chicago during the 1970s and 1980s, while the financial and real estate sector grew by 37% (Hyra 2008). As the filtering theory suggests, many of these white-collar workers moved to the suburbs. However many younger professionals chose to stay in the city as well. This higher demand for high cost housing near the central business district lead to the gentrification of many inner city areas. For example in 1990, the once industrial near south side median income was $6,804. By 2000 the median income in this area jumped over 400% to $34,329. During this time, "as luxury homes are constructed, large high-rise public housing complexes scattered throughout the community are coming down, and their tenants are relocating to more distant South Side neighborhoods and the inner suburbs" (Hyra 2008).

These public housing complexes were managed by The Chicago Housing Authority which has a reputation of managing some of the worst housing projects in the country (Schill 1997, Hyra 2008, Sullivan 2003). Overall, the CHA projects have been and are in extreme disrepair. Rather than rehabilitating the public housing stock, the CHA has demolished many projects like Stateway Gardens and the Robert Taylor homes displacing thousands of people (Fischer 2003). Knocking down these housing projects has not alleviated crime, drug use, health

problems; it has only relocated the problems. Sullivan's (2003) consulting work for the CHA revealed, "the vertical ghettos are being replaced with horizontal ghettos." According to Fischer (2003), these new horizontal ghettos are forming in neighborhoods on the far south and west sides of Chicago and in the inner south suburbs.

Figures 1 and 2 show visually how the racial composition of the population in the Chicago region has changed from 1990 to 2000. Figure 1 shows changes in the concentration of the white population and Figure 2 shows changes the concentration of the black population. The green dots represent a loss of at least 200 residents, while the red dots represent a gain of at least 200 residents. Figure 1 shows a loss of white population from the inner ring of suburbs, with population gains in downtown Chicago and the outer suburbs. Figure 2 shows a loss in black population in the inner and southern part of the city with gains in the south and west suburbs. As a whole from 1980 to 1990 the suburbs experienced a minority population (African American, Hispanic, Asian, etc.) gain from 10% to 15.3% and then up to 26.1% in 2000. Clearly, the Chicago area has experienced dramatic changes in the composition of both city neighborhoods and the suburbs. The following sections address the socio-economic consequences of these rapid shifts.

Figure 1: Change in White Population 1990-2000

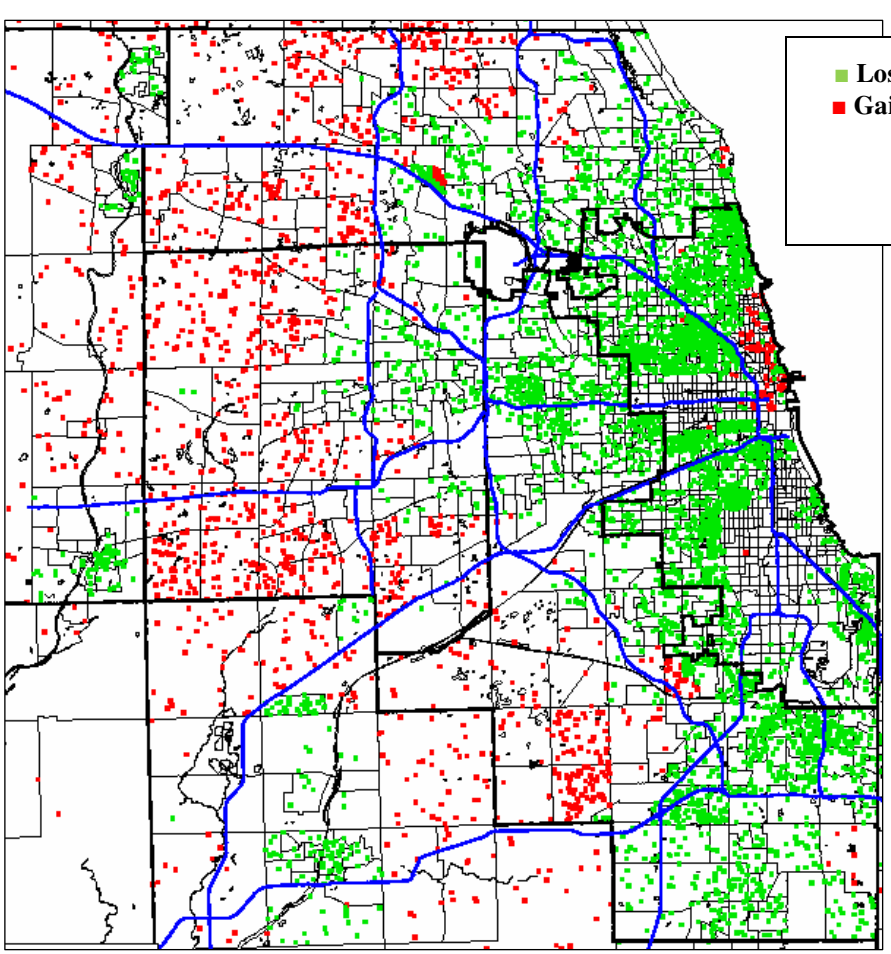
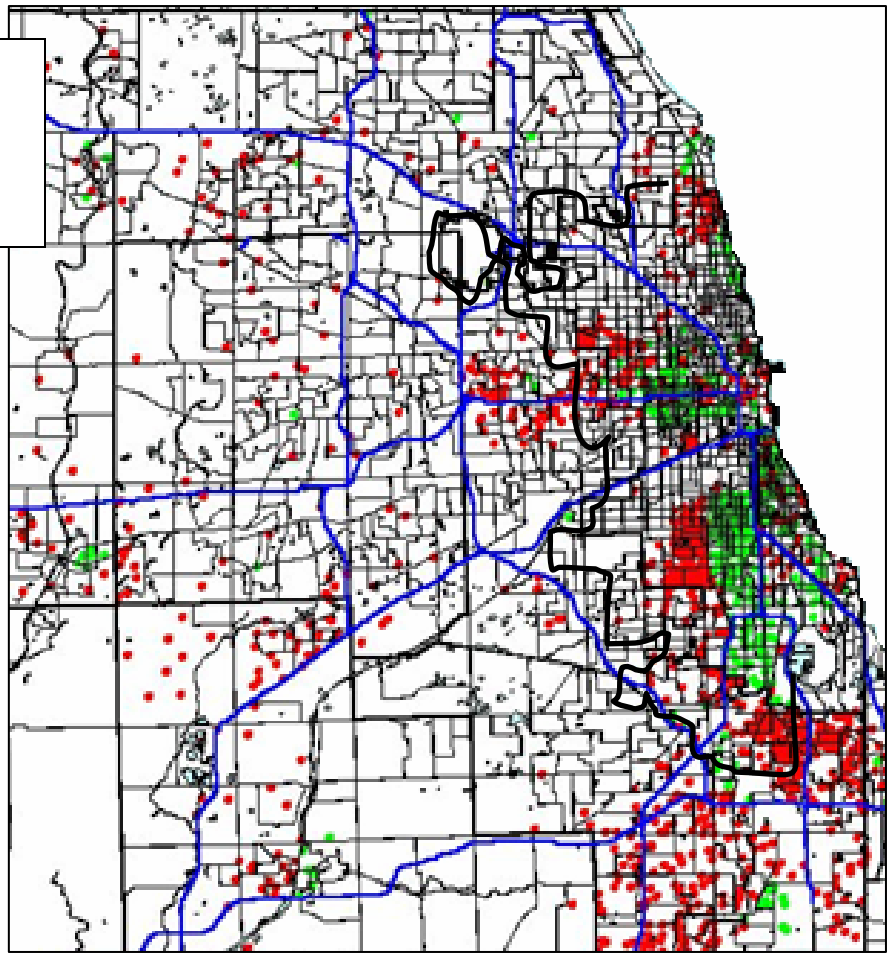


Figure 2: Change in Black Population 1990-2000

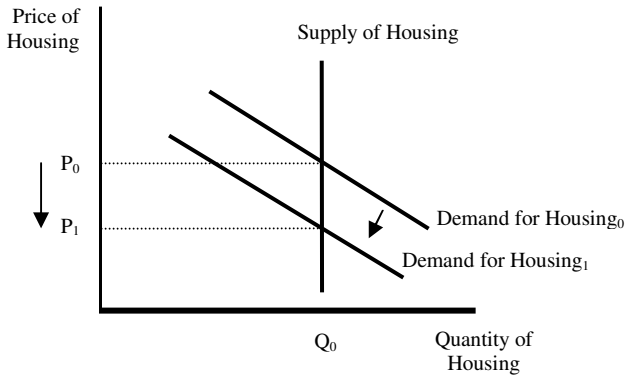


Source: University of Chicago Map Collection

III. Theory

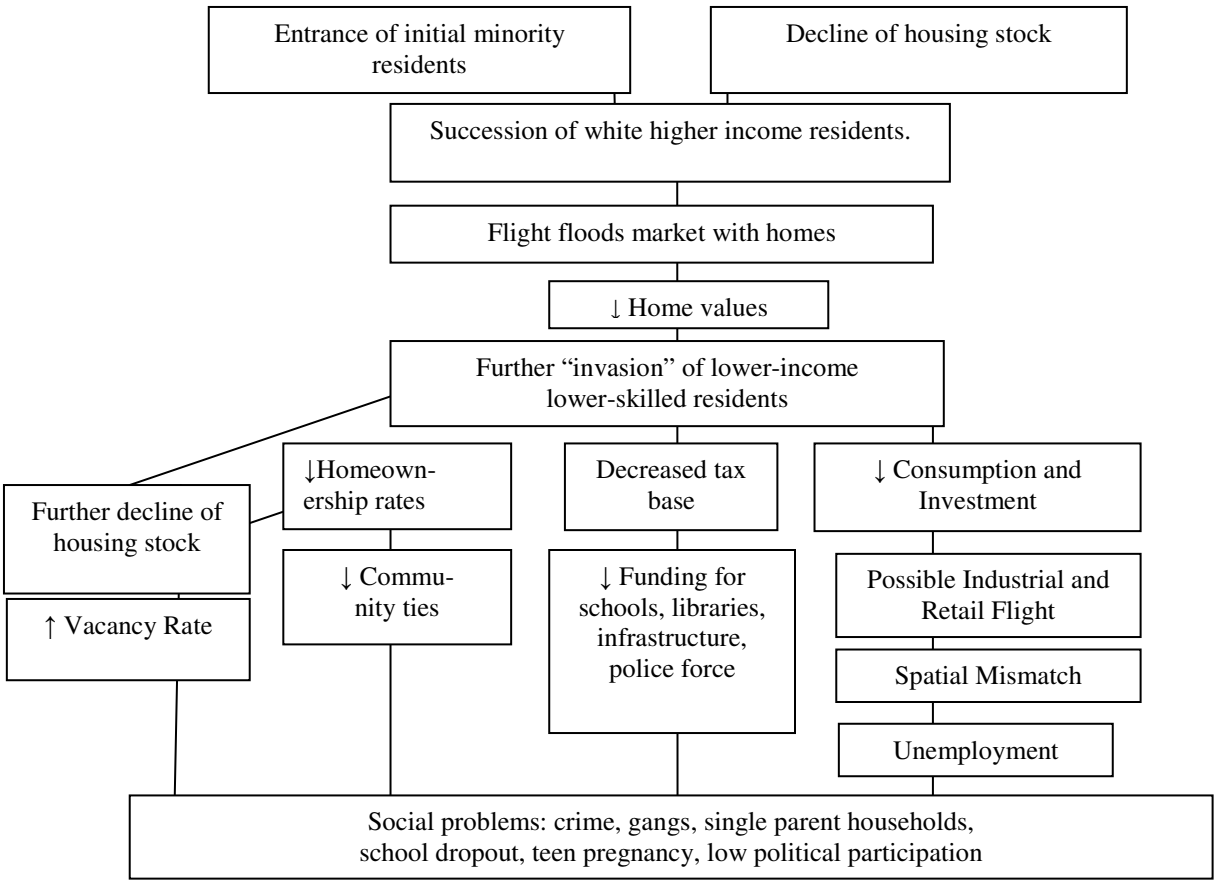
This study couples the logic of the filtering and white-flight theories. On one hand, according to the invasion-succession theory, minority residents begin to move into an area. Also, according to the filtering theory, more affluent residents (who are typically white) move out of a neighborhood to buy new housing rather than maintaining in their current housing. As illustrated by Figure 5, this out-migration decreases the demand for housing. Because the quantity of housing is very inelastic in the short-run, home values fall and quantity does not change. Now, more lower-income residents can afford to move into the area. Many times, these in-movers are more minorities. Theoretically, this creates a situation of white flight, wherein the remaining white residents will move out increasingly faster as more minority residents move in according to the tipping point theory. While this situation of urban decay may make housing more affordable, the fall in housing values and exit of higher income households decreases the tax base. These low income residents also lack the financing to maintain these already declining homes, leading to eventual vacancies do to both foreclosures and poor maintenance by landlords. These new residents are also less likely to be homeowners and thus tend to participate less in their community. Consequently, low-income communities are left devoid of resources such as good schools, libraries, infrastructure, and police forces and face social problems like teen pregnancies and high crime rates.

Figure 3: The Effect of Out-Migration on Housing Values



Also, as higher income and thus higher skilled workers leave an area, industry leaves. This relationship also works in the reverse. This decrease in the demand for labor creates a spatial mismatch between jobs and workers leading to unemployment in segregated areas. The decreased spending of lower income residents also leads to a decreased retail presence leading to further unemployment. Furthermore, these decayed areas with a low tax base and failing infrastructure have little ability to attract new sources of employment. As mentioned by a number of studies, the culmination of these economic declines creates serious social problems. Figure 4 displays the causality of this process in a flow chart.

Figure 4: The Casual Process of Urban Decay



While all of the theorized consequences of white flight and urban decay are important, this study poses an overarching hypothesis dealing with six different indicators to test for the presence of both social and economic problems in the Chicago suburbs.

Hypothesis: The presence of white flight/urban decay in a community will negatively impact socio-economic variables like the change in home values, homeownership rates, residential vacancy rates, unemployment rates, and the presence of single parent households, and the proportion of college-educated residents.

IV. Empirical Model and Data

Following the empirical model of Liska and Bellair (1995), this study uses a multiple regression framework examining changes over ten-year periods. The dependent variables, as shown in Table 1, are the ten-year changes in the median housing value, the homeownership rate, the residential vacancy rate, the unemployment rate, the single-parent household rate, and the college completion rate.

Table 1: Definitions of Dependent Variables

Dependent Variable	Definition	Source
ΔVAL	The ten year change in the median housing value in the municipality per $1000 in 2005 dollars	SOCDS
ΔHO	The ten year change in the homeownership rate in the municipality.	SOCDS
ΔVAC	The ten year change in the residential vacancy rate in the municipality	SOCDS
ΔU	The ten year change in the unemployment rate in the municipality	SOCDS
ΔSP	The ten year change in the percentage of single parent households in the municipality	SOCDS
ΔCOLL	The ten year change in the percentage of residents with a college degree in the municipality	SOCDS

Median housing values should reflect the initial surplus of homes on the market and the consequential lack of maintenance. The homeownership rate should reflect increases in foreclosures and the problems low income minorities face when financing a home purchase. The vacancy rate also reflects the deterioration and disinvestment in the housing stock. The unemployment rate is included to capture the spatial mismatch theory while the single parent household rate is included to capture effects on the social atmosphere of a community. Although variables like the high school drop-out rate, school test scores or the homicide rate would fit into the theoretical model, data are not available for the time period. Each variable shows the change from 1980-1990, and 1990-2000. The study adopts this framework to show change over time because annual data are not available for the suburbs.

Although this study tests six different dependent variables, the independent variables remain the same for each equation. Each equation will follow this format:

$$\Delta Outcome = \beta_0 + \beta_1 M_0 + \beta_2 \Delta HHI + \beta_3 TIP + \beta_4 AGE + e$$

M_0 is the minority composition in the base year. This term is included in the model to control for the minority "starting point." This way, a change in minority population from 10% to 20% is different from a change from 50% to 60%. ΔHHI is the change in the median household income. *TIP* is a dummy variable indicating whether a suburb experienced more than a ten percentage point increase in the minority population over the ten year period. After trying several different cut-off points between the 5% to 20% range suggested by Card et al (2008), 10% yielded the most consistent results. By including variables for both household income and racial composition, the model can pick up on poverty versus pure race effects. *AGE* is the median age of the housing stock in the base year and is included to proxy for the filtering theory. Alternative estimates used a set of dummy variables to account for the age of the housing stock,

but the straight median age of the housing stock produced the most consistent results. *e* is the error term. Furthermore, because neighborhood change is a cyclical process, further research should consider the use of more advanced modeling techniques to avoid the problem of endogenous variables. For example, home values or vacancy rates may drive changes in household income and minority composition in the next time period. Also considered were a set of dummy variables for the geographic location (north, central, south) of each municipality. However, geography is so highly correlated with the other independent variables that it was removed. The independent variables are shown in Table 2 along with their predicted signs with respect to each dependent variable.

Table 2: Definitions of Independent Variables

Independent Variable	Definition	Predicted Sign						Source
		ΔVAL	ΔHO	ΔVAC	ΔU	ΔSP	ΔCOLL	
M_0	Percentage of minority residents in base year	-	-	+	+	+	-	SOCDS
ΔHHI	Ten year change in median household income per $1000	+	+	-	-	-	+	SOCDS
TIP	1 if more than 10 percentage-point increase in minority population. 0 if not.	-	-	+	+	+	-	SOCDS
AGE	Median age of the housing stock in the base year	-	-	+	+	+	-	US Census

The study includes data from 175 Chicago suburbs located in within a 25 mile radius of the Chicago city center for years 1980, 1990, and 2000. All data comes from the HUD State of the Cities Data System (SOCDS), with the exception of the age of housing stock data, which is from the US Census.

V. Results

As evidenced by Table 3, on average, the minority composition of the suburbs increased over the 20 year period. The changes in median household income, median home value, and

college completion rate on average are of a larger magnitude than the changes in the homeownership, vacancy rate, unemployment, and single parent household rates. Table 3 divides the sample into two categories- suburbs which experienced more than a 10% change in minority composition and suburbs which experienced less than a 10% in minority composition from 1980 to 1990. As a whole the TIP suburbs have experienced different outcomes than the No TIP suburbs.

Table 3: Descriptive Statistics (TIP vs. No TIP)

Variable	TIP (>10% 80-90)		No TIP (< 10% 80-90)	
	Mean	SD	Mean	SD
Minority 80	12.31%	9.78	9.71%	19.29
Minority 90	23.90%	17.31	13.49%	23.00
Minority 00	44.12%	21.53	18.12%	22.92
Δ HHI 80-90	$17,374	10,155	$23,792	14,891
Δ HHI 90-00	$13,785	5,992	$20,828	12,277
AGE 80	14.00	10.62	13.00	12.85
AGE 90	24.00	10.62	23.00	12.85
Δ VAL 80-90	$38,296	35,955	$83,647	74,685
Δ VAL 90-00	$49,338	22,404	$82,648	63,936
Δ HO 80-90	1.48%	5.44	2.34%	5.44
Δ HO 90-00	1.44%	5.73	1.29%	4.86
Δ VAC 80-90	-0.35%	2.78	-0.57%	2.07
Δ VAC 90-00	-0.36%	2.01	-0.58%	1.71
Δ U 80-90	0.05%	1.86	-0.80%	1.64
Δ U 90-00	0.32%	1.41	-0.14%	1.83
Δ SP 80-00	2.15%	6.04	0.01%	1.83
Δ SP 90-00	7.62%	5.88	4.35%	3.89
Δ COLL 80-90	2.81%	3.83	7.03%	7.75
Δ COLL 90-00	4.41%	5.58	5.43%	5.89
N=175	N=72		N=103	

In 1980, 1990, and 2000 the TIP suburbs had much higher minority populations. Although household income increased across the board, it increased by much less for the TIP

suburbs. For example, the median household income increased by $23,792 from 1980 to 1990 in suburbs that experienced less than a 10% change in minority composition, while median household income only increased by $17,374 in suburbs that experienced more than a 10% change. Home values also increased by more in the No TIP suburbs. Looking at homeownership rates, the increases were very small in general, but the No TIP suburbs did experience bigger increases in 1980 to 1990 but not from 1990 to 2000. The vacancy rate decreased for both groups and by slighter more in the No TIP suburbs. Moreover, unemployment rates increased in the TIP suburbs, but decreased in the No TIP suburbs. Single parent household ratios increased overall from 1980-1990 and by more in the TIP suburbs. However, from 1990-2000 this change was very small and actually decreased in the No TIP suburbs. The college completion rate increased, but by more for No TIP suburbs. Surprisingly, the average age of the housing stock is very close for both groups.

Furthermore, the cross-tabular analysis shown in Table 4, shows that 39 of the 43 suburbs experiencing large demographic changes from 1980-1990 also experienced large demographic changes from 1990-2000.

Table 4: Cross Tabular Analysis of Changes Comparing Time Periods

		1990-2000	
		Small Change	Big Change
1980-1990	Small Change	93 (53.5%)	39 (22%)
	Big Change	4 (2.5%)	39 (22%)

This result shows support the tipping point theory, indicating that once a municipality begins to change, the change continues.

As evidenced by Table 5, the model yields interesting results. First of all, each of the twelve regression models is significant, though the R^2 values vary. The model explains a great deal of the variance for VAL. It does fairly well for HO from 1980 to 1990, SP and COLL. But it does poorly for VAC and U. The most important finding is that the HHI, TIP, and AGE variables are significant several times, and often at the same time. This finding indicates that the theories of white-flight and filtering are playing out at the same time.

Table 5: Regression Results

Variable	ΔVAL		ΔHO		ΔVAC		ΔU		ΔSP		ΔCOLL	
Time Period	80-90	90-00	80-90	90-00	80-90	90-00	80-90	90-00	80-90	90-00	80-90	90-00
M_0	0.03	-0.18	**0.02***	-0.01	-0.01	-0.03	**0.03****	0.00	**0.08*****	0.03	-0.01	**-0.04***
ΔHHI	**4.58****	**4.24*****	**-0.04****	-0.02	0.03	0.04	0.01	-0.01	**-0.07***	**-0.15*****	**0.24*****	**0.23*****
TIP	**-9.59***	-3.36	**1.035****	0.16	-2.04	-0.27	**1.46*****	0.38	**4.37*****	**1.80****	-0.93	1.03
AGE	**0.68***	**1.24*****	**0.07*****	**0.03***	-0.02	**-0.09****	0.02	**0.02***	**-0.06***	**0.06***	0.04	-0.01
Adj. R^2	0.87	0.79	0.28	0.03	0.01	0.05	0.19	0.02	0.28	0.25	0.23	0.21

*Significant at the 0.05 level **Significant at the 0.01 level *** Significant at the 0.001 level

Change in Median Housing Values Comparatively, the model explains this dependent variable the best with an R^2 of 0.87 and 0.79. For both time periods, as predicted, the change in median household income has a significant positive effect on the change in median housing values. The values of these coefficients indicate that if median household income increases/decreases by $1000, the change in housing values will increase/decrease by $4580 and $4240 respectively for 1980-1990 and 1990-2000. This finding indicates that household income and housing values move in the same direction. For 1980-1990, the TIP dummy variable is also significant in the expected, negative direction. Therefore, for this ten year period, municipalities experiencing

large increases in minority population also experience significant negative effects on housing values. Interpreting the coefficient, experiencing a large change reduces median housing values by $9,590 compared to communities that did not experience a large change. This finding is extremely important, showing that a large change in racial composition decrease home values even when controlling for changes in household income. However, this finding does not hold for housing values from 1990-2000. Furthermore, AGE is also significant for both time periods, however, in the opposite direction as expected. Coefficients of 0.68 and 1.24, mean a one year increase in the median age of the housing stock increases the median housing value in a municipality by $676 and $1,240 from 1980 to 1990 and 1990 to 2000 respectively. However, because the model includes the HHI and TIP variables, this result means that older houses are more valuable in areas with higher status residents, a finding that may refute the filtering theory.

Change in the Homeownership Rate The model poorly explains the change in the homeownership rate with R^2 values of 0.01 and 0.05. These low values indicate the need to incorporate other variables into this equation. However, as previously mentioned, the homeownership rate changed very little over either time period. For 1980-1990 none of the variables are significant at the 0.05 level. However, the TIP variable is significant the negative direction at the 0.1 level. This result indicates the presence of multicollinearity between the HHI and TIP variables, as the model is significant as a whole. For 1990-2000 only AGE has a significant effect with a coefficient of -0.09. This coefficient indicates that a one percent increase in the median age of the housing stock decreases the homeownership rate by 0.09%. This finding lends some support for the filtering theory.

Change in the Residential Vacancy Rate The model explains this variable with varying success in the two time periods, with an R^2 value of 0.28 for 1980 to 1990 and 0.03 for 1990 to

2000. For 1980 to 1990 all of the variables are significant. HHI and TIP are again simultaneously significant in the predicted directions, implying that both changes in income and racial composition are contributing to higher vacancy rates. Specifically for 1980 to 1990 a decrease in median household income of $1000 increases the vacancy rate by 0.04%. If a community experiences more than a 10 percentage point increase in minority composition it increases their vacancy rate by 1.04% on average. Furthermore, the AGE variable is significant in the proper direction, implying that communities with an older housing stock, ceteris paribus, have a higher vacancy rate. However, in the 1990 to 2000 the model explains the vacancy rate very poorly and only AGE is significant in the predicted positive direction.

Change in the Unemployment Rate The model explains change in the unemployment rate with varying success with R^2 values of 0.19 and 0.02. For 1980-1990, initial minority composition has a significant positive (undesirable) effect on the unemployment rate, as predicted. The coefficient for initial minority indicates that 1% increase in the initial minority composition increases the unemployment rate by 0.03%. For 1980 to 1990, the TIP variable is significant. Interpreting the coefficients, a large change in minority population increases the unemployment rate by 1.46%. For 1990 to 2000 only the AGE variable is significant with a coefficient of 0.02, which indicates that a increase in the median age of the housing stock by one year increases the unemployment rate by 0.02%. This finding provides some support for the filtering theory. However, the model is obviously missing some important independent variables.

Change in the Single Parent Household Rate The model explains this variable somewhat well with R^2 values of 0.28 and 0.25. The HHI, TIP, and AGE variables are significant for both time periods. For HHI, the coefficients indicate that a $1000 decrease in the median household income of a municipality increases the single parent household rate by 0.07% and by 0.15%

respectively. For the TIP variable, experiencing a large minority increase increases the single parent household rate by 4.37% and 1.80%, respectively. Here, the effect of large change is stronger from 1980 to 1990. AGE has a desirable (negative) effect on the single parent household rate in the first time period and an undesirable (positive) impact in the second time period. For 1980 to 1990 a one year increase in the median age of the housing stock increases the single parent household rate by 0.06% and for 1990 to 2000 a one year increase in the median age of the housing stock decreases the single parent household rate by 0.06%.

Change in the College Completion Rate The model explains the change in college completion rate somewhat with R^2 values of 0.23 and 0.21 respectively for each time period. For both 1980 to 1990 and 1990 to 2000 the HHI variable is significant and positive. Interpreting this coefficient, a $1000 decrease (increase) in the median household income of a municipality decreases (increases) the college completion rate of its residents by 0.24% and 0.23% respectively. The initial minority composition is also significant in the negative direction for 1990 to 2000, meaning a 1% increase in the initial minority composition leads to a 0.04% decrease in the college completion rate. Neither the TIP nor AGE variable is significant for this dependent variable.

VI. Conclusions

This paper presents a rare look at urban decline in the suburban context. Furthermore, it seems to be the first to specifically address suburban Chicago. By tracking the relationship between demographic, economic, and social factors overtime, the study lends support to both the white flight theory and filtering theory.

Studies like Jego and Roehner (2006) have attempted to disprove the white flight theory, claiming that white residents leave an area in response to poverty rather than minorities.

Looking at the study as a whole, for suburban Chicago, this study yields a different conclusion. In the context of the Chicago suburbs, a large demographic change is a significant predictor of decline despite controlling for changes in household income. The change in household income is indeed significant for some of the dependent variables, but the TIP variable which proxies for white flight is also significant. This evidence shows that not only are income changes driving changes in the socioeconomic atmosphere of the suburbs, but racial composition is also playing its own separate role. The cross tabular analysis in Figure 4 also reveals that among communities facing racial composition changes in previous time periods almost all experience more change in the next time period, lending further support the presence of a tipping point in suburban Chicago. However, the model does not explain why white flight has occurred in the Chicago suburbs. Contextually, inner-city gentrification has pushed many low-income minorities into suburban areas, but this idea is not empirically represented in the study. Empirical tests explaining flight would be an important goal for further research. Additionally, this study may have lost some information by lumping minority groups together. Future research may yield better results by looking at the effects of different minority sub-groups, especially with the growing Latino population.

As far as the filtering theory goes, the model yields mixed conclusions. The age of the housing stock significantly affects changes in the vacancy rate, homeownership rate, and single parent household rate in the undesirable direction as predicted. However, the age of the housing stock actually had a positive effect on home values which contradicts the idea that the presence of old homes causes people to sell their homes in exchange for new homes. Because the model controls for changes in household income and the racial composition, perhaps this result is saying that in higher status communities old homes are well maintained and are therefore more

valuable due to their historic merits. Future research should investigate a different way to measure the age structure of a community to yield more consistent results.

Furthermore, the model supports the idea that the suburbs are experiencing urban decline similar to inner-cities in that white flight produces negative economic and social outcomes. First of all, white flight and urban decay significantly impact housing values. Although declining housing values may make housing more affordable, the social problems that accompany urban decay often outweigh this positive. As suggested by previous research, declining housing values reduce the tax-base, in turn reducing available community funds. Further research should analyze these possible effects such as poor infrastructure and under-achieving schools. Although the literature suggests that urban decay should decrease the homeownership rate, in this case, homeownership rates remained fairly stable. Perhaps this stability can be attributed to the sub-prime mortgages and predatory lending in low-income areas. With the recent housing crisis and massive number of foreclosures, further research should use 2010 census data to track the change in homeownership rate. The unemployment rate was also fairly stable, but white flight did significantly affect the small changes that did occur. Future research should include other variables in the model to increase the explanatory power for variables like the change in the homeownership rate and the unemployment rate. On the other hand, the model explained the increase in the single parent household rate very well, yielding many implications cited in the literature review. Much of the literature on single parent households has revealed negative consequences for children. For example, "according to a growing body of research, children in single parent homes do worse than children in intact families" (Jencks and Mayer 1989).

Because of the evidence supporting the white flight and filtering theories, the study yields many policy implications. Importantly, inner city revitalization efforts should benefit current

residents rather than displace them from their homes. Many revitalization efforts, like in the Bronzeville area of Chicago, have resulted in gentrification displacing residents and their problems rather than solving them (Hyra 2008). The City of Chicago and suburban governments need to make an effort to maintain their public housing stocks, rather than just demolishing them. Furthermore, as Hyra (2008) suggests, changes should be made to the Section 8 housing program "to give greater housing opportunities to low-income residents to find apartments in more advantageous neighborhoods." Some cities like Boston, San Francisco, and Denver have implemented an affordable housing set-aside rule, requiring new developments to include affordable housing units as 10 percent of their stock (Blanchflower et al 2003). The relatively fast changes that the Chicago suburbs have experienced have also left many residents without an appropriate social service infrastructure. Legislation needs to allocate money to suburban areas that have experienced an influx of low-income residents (Allard 2004). Another huge structural problem is the huge reliance on property taxes for school funding. Under the current system, schools in areas with the highest property values receive the most funding. This study shows that the poorest and highest minority areas have the lowest property values, yet are in a desperate need for better schools (Kenyon 2007). Local governments should also try to prevent further segregation and white flight by cracking down on practices like blockbusting and racial steering, wherein real estate agents use the threat of urban decline as a scare tactic to convince white residents to sell their homes or steer white buyers into white areas.

A simplistic interpretation of urban decay might say that minorities, despite their income levels, are just bad neighbors. However, when putting the results of this study in the context of the literature and the history of the Chicago area, discrimination, structural racism in the housing market, employment sector, and educational system are clearly to blame, not a group of people's

culture or genetic make-up. Suburban governments need to take steps to insure that they do not become the “horizontal ghettos” of the future.

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Appendix 1: Regression Results

Regression

```
[DataSet4] D:\ECON\LH.s
```

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.933[a]	.871	.867	23.69695

a. Predictors: (Constant), AGE80, CHHI8090, TIP8090, M80

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-37.193	4.721		-7.878	.000
	M80	.033	.123	.008	.270	.787
	CHHI8090	4.574	.152	.916	30.147	.000
	TIP8090	-9.593	4.661	-.061	-2.058	.041
	AGE80	.676	.158	.124	4.281	.000

a. Dependent Variable: CVAL8090

Regression

```
[DataSet4] D:\ECON\LH.sav
```

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.549[a]	.301	.284	2.03088

a. Predictors: (Constant), AGE80, CHHI8090, TIP8090, M80

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.170	.405		-2.892	.004
	M80	.021	.011	.139	1.977	.050
	CHHI8090	-.037	.013	-.199	-2.822	.005
	TIP8090	1.035	.399	.179	2.590	.010
	AGE80	.073	.014	.366	5.431	.000

a. Dependent Variable: CVAC8090

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.192[a]	.037	.013	5.80730

a. Predictors: (Constant), AGE80, CHHI8090, TIP8090, M80

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.688	1.157		1.459	.146
	M80	-.012	.030	-.034	-.407	.685
	CHHI8090	.030	.037	.067	.809	.420
	TIP8090	-2.035	1.142	-.145	-1.782	.077
	AGE80	-.016	.039	-.033	-.417	.677

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.688	1.157		1.459	.146
	M80	-.012	.030	-.034	-.407	.685
	CHHI8090	.030	.037	.067	.809	.420
	TIP8090	-2.035	1.142	-.145	-1.782	.077
	AGE80	-.016	.039	-.033	-.417	.677

a. Dependent Variable: CHO8090

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.457[a]	.209	.189	1.60479

a. Predictors: (Constant), AGE80, CHHI8090, TIP8090, M80

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.382	.320		-4.323	.000
	M80	.025	.008	.222	2.969	.003
	CHHI8090	.006	.010	.044	.589	.557
	TIP8090	1.460	.316	.340	4.626	.000
	AGE80	.017	.011	.113	1.581	.116

a. Dependent Variable: CU8090

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.547[a]	.299	.281	4.39292

a. Predictors: (Constant), AGE80, CHHI8090, TIP8090, M80

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.314	.875		1.502	.135
	M80	.082	.023	.252	3.572	.000
	CHHI8090	-.068	.028	-.170	-2.402	.017
	TIP8090	4.371	.864	.350	5.058	.000
	AGE80	-.063	.029	-.145	-2.145	.033

a. Dependent Variable: CSP8090

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.503[a]	.253	.234	5.86194

a. Predictors: (Constant), AGE80, CHHI8090, TIP8090, M80

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.025	1.168		-.022	.983
	M80	-.014	.031	-.032	-.446	.656
	CHHI8090	.243	.038	.473	6.480	.000
	TIP8090	-.930	1.153	-.058	-.806	.421
	AGE80	.044	.039	.079	1.139	.256

a. Dependent Variable: CCOLL8090

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.889[a]	.790	.785	24.62624

a. Predictors: (Constant), AGE90, TIP9000, M90, CHHI9000

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-31.578	6.621		-4.769	.000
	M90	-.176	.096	-.071	-1.825	.070
	CHHI9000	4.242	.198	.851	21.379	.000
	TIP9000	-3.355	4.098	-.031	-.819	.414

	AGE90	1.242	.162	.279	7.674	.000

a. Dependent Variable: CVAL9000

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.230[a]	.053	.030	1.81496

a. Predictors: (Constant), AGE90, TIP9000, M90, CHHI9000

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.580	.488		-1.188	.237
	M90	-.012	.007	-.144	-1.746	.083
	CHHI9000	-.020	.015	-.116	-1.370	.173
	TIP9000	.167	.302	.045	.553	.581
	AGE90	.026	.012	.168	2.176	.031

a. Dependent Variable: CVAC9000

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	.270[a]	.073	.050	5.11911

a. Predictors: (Constant), AGE90, TIP9000, M90, CHHI9000

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.918	1.376		2.847	.005
	M90	-.025	.020	-.101	-1.246	.215
	CHHI9000	.035	.041	.072	.855	.394
	TIP9000	-.273	.852	-.026	-.320	.749
	AGE90	-.087	.034	-.197	-2.579	.011

a. Dependent Variable: CHO9000

Regression

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[DataSet4] D:\ECON\LH.sav
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Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.215[a]	.046	.023	1.65706

a. Predictors: (Constant), AGE90, TIP9000, M90, CHHI9000

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.422	.446		-.948	.345
	M90	.000	.006	-.012	-.148	.882

	CHHI9000	-.009	.013	-.058	-.685	.494
	TIP9000	.379	.276	.112	1.376	.171
	AGE90	.021	.011	.151	1.946	.053

a. Dependent Variable: CU9000

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.516[a]	.266	.248	4.40903

a. Predictors: (Constant), AGE90, TIP9000, M90, CHHI9000

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.740	1.185		4.842	.000
	M90	.030	.017	.126	1.742	.083
	CHHI9000	-.153	.036	-.320	-4.297	.000
	TIP9000	1.796	.734	.175	2.448	.015
	AGE90	.061	.029	.143	2.102	.037

a. Dependent Variable: CSP9000

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.478[a]	.229	.210	5.12736

a. Predictors: (Constant), AGE90, TIP9000, M90, CHHI9000

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.281	1.379		.929	.354
	M90	-.039	.020	-.145	-1.957	.052
	CHHI9000	.233	.041	.430	5.640	.000
	TIP9000	1.033	.853	.089	1.211	.228
	AGE90	-.007	.034	-.015	-.222	.824

a. Dependent Variable: CCOLL9000

Appendix 2: Results with GEO variable

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.938[a]	.880	.875	22.98620

a. Predictors: (Constant), South, AGE80, TIP8090, M80, CHHI8090, Central

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		

1	(Constant)	-23.572	6.121		-3.851	.000
	M80	.071	.121	.017	.591	.556
	CHHI8090	4.349	.162	.870	26.893	.000
	TIP8090	-8.256	4.572	-.053	-1.806	.073
	AGE80	.656	.160	.120	4.109	.000
	Central	-10.600	4.810	-.077	-2.204	.029
	South	-17.181	4.989	-.126	-3.444	.001

a. Dependent Variable: CVAL8090

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.564[a]	.318	.292	2.01874

a. Predictors: (Constant), South, AGE80, TIP8090, M80, CHHI8090, Central

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.792	.538		-3.333	.001
	M80	.019	.011	.124	1.759	.080
	CHHI8090	-.026	.014	-.143	-1.856	.065
	TIP8090	.946	.402	.164	2.356	.020
	AGE80	.076	.014	.380	5.439	.000
	Central	.361	.422	.071	.856	.393
	South	.859	.438	.170	1.960	.052

a. Dependent Variable: CVAC8090

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.224[a]	.050	.014	5.80370

a. Predictors: (Constant), South, AGE80, TIP8090, M80, CHHI8090, Central

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.195	1.545		.126	.900
	M80	-.014	.030	-.039	-.474	.637
	CHHI8090	.055	.041	.122	1.338	.183
	TIP8090	-2.077	1.154	-.148	-1.800	.074
	AGE80	-.021	.040	-.044	-.531	.596
	Central	1.627	1.215	.132	1.339	.182
	South	1.601	1.260	.130	1.271	.206

a. Dependent Variable: CHO8090

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	.482[a]	.232	.203	1.59105

a. Predictors: (Constant), South, AGE80, TIP8090, M80, CHHI8090, Central

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.962	.424		-2.270	.025
	M80	.027	.008	.242	3.236	.001
	CHHI8090	-.001	.011	-.007	-.091	.928
	TIP8090	1.555	.316	.362	4.912	.000
	AGE80	.013	.011	.084	1.133	.259
	Central	-.091	.333	-.024	-.273	.785
	South	-.674	.345	-.180	-1.953	.053

a. Dependent Variable: CU8090

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.613[a]	.376	.352	4.17128

a. Predictors: (Constant), South, AGE80, TIP8090, M80, CHHI8090, Central

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		

1	(Constant)	-.072	1.111		-.065	.949
	M80	.070	.022	.215	3.196	.002
	CHHI8090	-.044	.029	-.110	-1.494	.137
	TIP8090	3.830	.830	.307	4.616	.000
	AGE80	-.032	.029	-.074	-1.109	.269
	Central	-.721	.873	-.066	-.826	.410
	South	2.842	.905	.261	3.139	.002

a. Dependent Variable: CSP8090

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.504[a]	.254	.225	5.89536

a. Predictors: (Constant), South, AGE80, TIP8090, M80, CHHI8090, Central

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.002	1.570		.000	.999
	M80	-.012	.031	-.029	-.392	.695
	CHHI8090	.243	.041	.472	5.852	.000
	TIP8090	-.855	1.173	-.053	-.729	.467
	AGE80	.039	.041	.070	.960	.339
	Central	.304	1.234	.022	.247	.806
	South	-.226	1.280	-.016	-.177	.860

a. Dependent Variable: CCOLL8090

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.893[a]	.797	.789	24.39159

a. Predictors: (Constant), South, TIP9000, AGE90, M90, CHHI9000, Central

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-22.551	7.764		-2.905	.004
	M90	-.148	.099	-.059	-1.502	.135
	CHHI9000	4.095	.208	.821	19.709	.000
	TIP9000	-3.833	4.077	-.036	-.940	.349
	AGE90	1.249	.167	.281	7.482	.000
	Central	-9.791	4.924	-.087	-1.988	.048
	South	-10.153	5.090	-.092	-1.995	.048

a. Dependent Variable: CVAL9000

Regression

[DataSet4] D:\ECON\LH.sav

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.349[a]	.122	.089	1.75828

a. Predictors: (Constant), South, TIP9000, AGE90, M90, CHHI9000, Central

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.621	.560		-2.896	.004
	M90	-.018	.007	-.207	-2.519	.013
	CHHI9000	-.003	.015	-.019	-.221	.825
	TIP9000	.255	.294	.069	.869	.386
	AGE90	.031	.012	.203	2.603	.010
	Central	.645	.355	.165	1.818	.071
	South	1.309	.367	.341	3.569	.000

a. Dependent Variable: CVAC9000

Regression

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[DataSet4] D:\ECON\LH.sav
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Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.283[a]	.080	.046	5.13011

a. Predictors: (Constant), South, TIP9000, AGE90, M90, CHHI9000, Central

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.103	1.633		1.900	.059
	M90	-.031	.021	-.125	-1.486	.139
	CHHI9000	.048	.044	.098	1.102	.272
	TIP9000	-.181	.858	-.017	-.211	.833
	AGE90	-.078	.035	-.178	-2.234	.027
	Central	.179	1.036	.016	.173	.863
	South	1.118	1.071	.102	1.044	.298

a. Dependent Variable: CHO9000

Regression

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[DataSet4] D:\ECON\LH.sav
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Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.235[a]	.055	.020	1.65933

a. Predictors: (Constant), South, TIP9000, AGE90, M90, CHHI9000, Central

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.126	.528		-.238	.812
	M90	.000	.007	-.006	-.067	.947
	CHHI9000	-.014	.014	-.089	-.994	.322
	TIP9000	.370	.277	.109	1.332	.185

	AGE90	.022	.011	.160	1.980	.049
	Central	-.406	.335	-.114	-1.211	.228
	South	-.310	.346	-.089	-.894	.373

a. Dependent Variable: CU9000

Regression

```
[DataSet4] D:\ECON\LH.sav
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Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.566[a]	.320	.295	4.27038

a. Predictors: (Constant), South, TIP9000, AGE90, M90, CHHI9000, Central

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.411	1.359		2.510	.013
	M90	.015	.017	.064	.881	.380
	CHHI9000	-.116	.036	-.242	-3.178	.002
	TIP9000	2.031	.714	.198	2.846	.005
	AGE90	.080	.029	.187	2.727	.007
	Central	.910	.862	.084	1.055	.293
	South	3.081	.891	.291	3.457	.001

a. Dependent Variable: CSP9000

Regression

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[DataSet4] D:\ECON\LH.sav
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Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.489[a]	.239	.211	5.12511

a. Predictors: (Constant), South, TIP9000, AGE90, M90, CHHI9000, Central

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.328	1.631		.814	.417
	M90	-.034	.021	-.125	-1.635	.104
	CHHI9000	.233	.044	.430	5.337	.000
	TIP9000	.954	.857	.082	1.114	.267
	AGE90	-.022	.035	-.045	-.614	.540
	Central	1.055	1.035	.086	1.020	.309
	South	-.368	1.070	-.031	-.344	.731

a. Dependent Variable: CCOLL9000