

# Changes in the Distribution of the Hispanic Population in Grand Rapids, Michigan, 1990-2000: A Study of the Succession Process

Evelyn D. Ravuri

Department of History and Geography, Saginaw Valley State University  
University Center, Michigan 48710

Grand Rapids, Michigan has hosted a Hispanic community since the settling out of Mexican agricultural workers in the early 1900s. During the 1990s, the city's Hispanic population increased by 175 percent while non-Hispanic whites experienced a decline in population. This paper examines the movement of Hispanics into non-Hispanic white and non-Hispanic black tracts between 1990 and 2000. During the 1990s, Hispanics increased at the expense of non-Hispanic whites in suburban tracts contiguous to the Hispanic enclave. An attempt to determine what effect Hispanic population change has had on turnover of non-Hispanic white households by tract is investigated using multiple regression analysis. The results confirm that increased numbers of Hispanics led to higher turnover rates of non-Hispanic white households, and that the process closely adheres to the urban succession model advanced by Burgess in the 1920s. The expansion of the Hispanic enclave now provides a buffer zone between a non-Hispanic black inner city and non-Hispanic white dominated suburbs to the Southwest.

*Keywords: Hispanics, Michigan, Succession, Neighborhood Change*

## Introduction

The concentration of Hispanic immigrants and US born Hispanics in California, Texas, Illinois, Florida, and New York is well documented (Harrison and Bennett 1995; Suarez-Orozco and Paez 2002). However, since the 1980s, states in the Midwest and Southeast have experienced heightened levels of Hispanic immigration (Kent, Pollard, and Mather 2001), as well as growth of Hispanic populations through internal migration (McHugh 1989; Johnson, Jr., Johnson-Webb and Farrell 1999; Foulkes and Newbold 2000). Increased employment opportunities in service occupations and low-wage manufacturing jobs in the

Midwest that could not be filled by the resident population attracted Hispanics (Suro and Singer 2003; Aponte and Siles 1997). In addition, the Immigration Reform and Control Act (IRCA) of 1986 legalized 2.9 million illegal immigrants, most of whom were Mexican, and allowed a freedom of movement for individuals seeking a better livelihood outside the major gateway states (Baker 1997).

One Midwestern state that experienced a significant increase in its Hispanic population between 1990 and 2000 was Michigan with a 61.5 percent gain. Of the cities in Michigan with more than 50,000 residents, Grand Rapids experienced the greatest growth in its Hispanic population during the 1990s. During this time, its Hispanic population increased by 175.2 percent from a 1990 population of 9,288

to a 2000 population of 25,559 (US Bureau of the Census 2001). Hispanics now comprise 13.0 percent of Grand Rapid's population and rival that of the non-Hispanic black

Grand Rapids was acknowledged as one of the ten best cities for Hispanic residence in 1999 according to such factors as the cost of living, employment opportunities, crime rate, health care, and the comfort level of Hispanics living in this city. The other nine cities included San Jose, CA; San Antonio, TX; Anaheim, CA; Phoenix, AZ; Tampa, FL; Philadelphia, PA; Denver, CO; Albuquerque, NM; and Las Vegas, NV (Menard 1999). With the exception of Grand Rapids, each of these cities is either located in states with the largest number of Hispanics (CA, TX, and FL); in states in which Hispanics make up a high percentage of the state's population (AZ, CO, NM, and NV) or as in the case of Philadelphia, in close proximity to the New York/Newark metropolitan area.

The purpose of this paper is to 1) provide a descriptive analysis of the changing racial and ethnic composition of Grand Rapids with particular emphasis on the Hispanic population and 2) to determine if change in Hispanics contributed to the turnover of non-Hispanic white households between 1990 and 2000. Census tracts are the unit of analysis in this study and are characterized according to the changing composition of Hispanics, non-Hispanic white, and non-Hispanic black population between 1990 and 2000 to identify tracts that have undergone succession by Hispanics. Succession is a process whereby one ethnic or racial group replaces another in a city over a period of time (Burgess 1925). Most studies on racial/ethnic succession focus on the succession process as it applies to large cities. Grand Rapids is unusual in

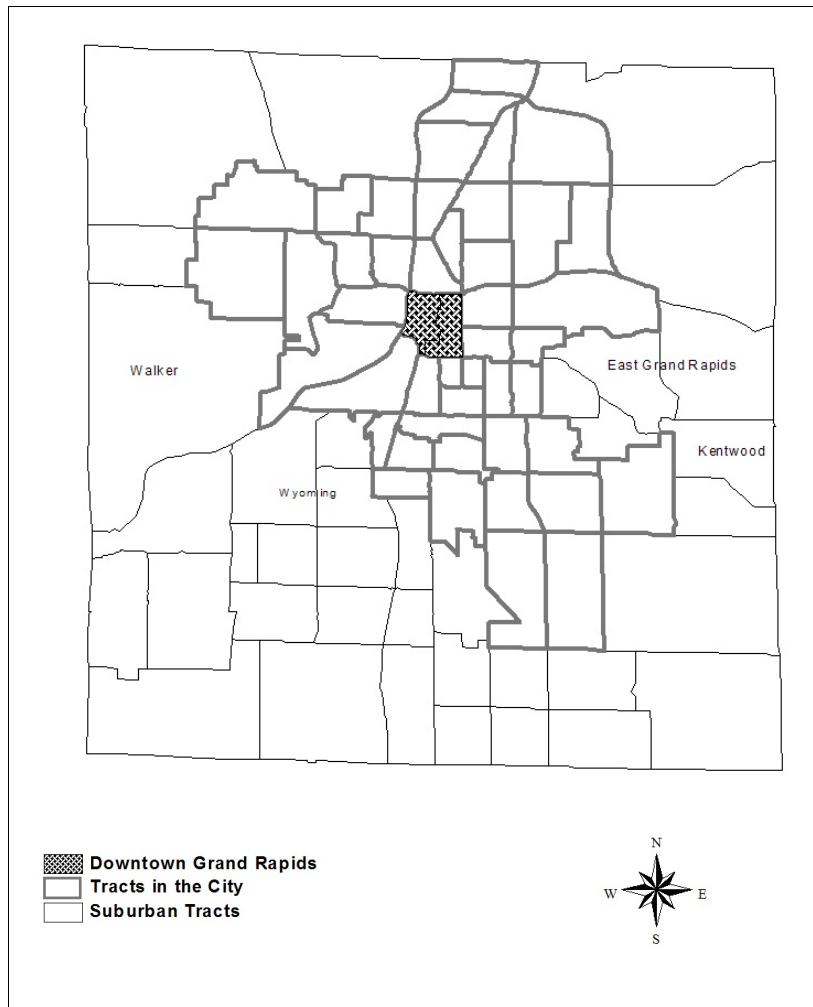


Figure 1: Base map of Grand Rapids, Michigan

population at 19.9 percent. Suro and Singer (2003) classified Grand Rapids, as well as fifty other metropolitan regions, as 'New Latino Destinations' which are metropolitan regions that experienced at least a 300.0 percent growth in Hispanic population between 1980 and 2000 but which had relatively small Hispanic populations in 1980.

that it is a medium-sized city located outside of the Southwest that hosts a relatively high percentage of Hispanics. This study aims to contribute to the body of knowledge being accumulated during the 1990s that focuses on the development of Hispanic communities outside of the traditional ports of entry for Latin Americans. All data are from the 1990 and 2000 Summary Tape Files 1 and 3 for

Michigan from the US Census Bureau. See Figure 1 for a map of the study region.

## Ethnic Enclaves and the Succession Process

America’s urban ethnic enclaves have provided a homebase for immigrants for well over one hundred years. These ethnic enclaves provided new arrivals with housing, employment, and social opportunities (Wilson, 1999; Logan, Alba, and Zhang 2002). The unfamiliarity with the new environment as well as the inability to speak English made the incorporation of new immigrants into defined ethnic enclaves a necessity for survival. After a period of adjustment, immigrants would leave the ethnic enclave and assimilate into mainstream America. For European immigrants, this usually happened by the second or third generation. However, it is questionable whether today’s immigrants will follow this pattern (Waldinger 1989). Min (1999) compared post 1965 immigrants with that of early 20<sup>th</sup> century immigrants to determine the level of assimilation of immigrants. One difference between the two groups was the higher level of concentration in certain states and cities among post 1965 immigrants. In 1910, 56.5 percent of all immigrants resided in six states versus 72.9 percent in 1990. Whereas 27.4 percent of 1910s immigrants resided in only six US cities, 56.7 percent did so in 1990. Secondly, early twentieth century ethnic enclaves were not reinforced after the 1930s as immigration from Europe declined, whereas post 1965 immigration retains a high influx and therefore perpetuates the ethnic enclave.

The lack of ethnic or racial integration in cities is usually attributed to the process of invasion and succession. Although this process was first demonstrated with European ethnic groups, it soon became synonymous with the movement of blacks within northern cities. As blacks moved into non-Hispanic white neighborhoods, some of the non-Hispanic white population would not accept the presence of these minorities and would move out of the neighborhood. The vacancies left by these individuals would most likely be filled by minorities, which would increase the minority representation in the neighborhood further. This in turn could stimulate another wave of outmigration by the majority. Duncan and Duncan (1957) in their classic study of the succession of census tracts in Chicago between 1940 and 1950 indicated that once a certain percentage of a tract was black, a process of racial turnover was virtually assured. Taeuber and Taeuber (1965) examined racial succession in ten cities and determined that cities undergoing high immigration rates of blacks (northern cities) tended to experience residential succession to a greater extent than cities with lower growth rates of blacks (southern cities). In contrast, Molotch (1972) found that the movement of blacks into a neighborhood did not result in increased non-Hispanic white turnover rates. The driving force behind racial transition was that as non-Hispanic whites moved out of the neighborhood in rates comparable to their previous migration behavior, they were not replaced with other non-Hispanic whites which would have been the predominant pattern before the movement of blacks into the neighborhood.

The theories supporting the idea of invasion and succession of urban populations developed by Burgess (1925) and empirically tested by researchers such as Duncan

	Change 1990-2000 (City Limits)	Percentage Composition 1990 (City Limits)	Percentage Composition 2000 (City Limits)
Non-Hispanic White	-15.2	75.2	62.4
Non-Hispanic Black	14.3	18.4	19.9
Hispanic	175.2	4.5	13.0

Source: 1990 and 2000 Summary Tape Files 1. Michigan. General Population Characteristics. US Bureau of the Census.

Table 1. Percentage Change for Non-Hispanic White, Non-Hispanic Black, and Hispanic Population in Grand Rapids, Michigan, 1990-2000

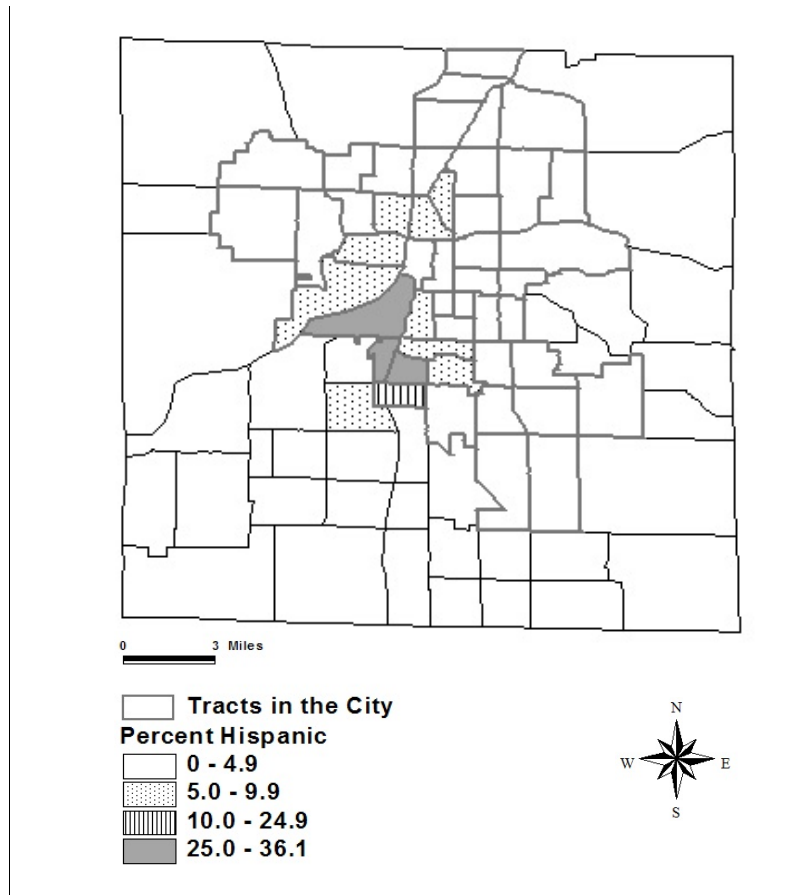


Figure 2a: Percentage of Population Claiming Hispanic Ancestry in Grand Rapids, Michigan 1990

Source: 1990 and 2000 Summary Tape Files 1. Michigan. General Population Characteristics. US Bureau of the Census.

and Duncan (1957) and Taeuber and Taeuber (1965) may no longer be appropriate for explaining racial/ethnic turnover. The structure and function of the North American city has changed drastically since the 1960s when the majority of employment opportunities were located in the CBD. By the 1970s, employment opportunities in the suburbs exceeded those within the city limits of most metropolitan areas in North America which led to the establishment of ethnic enclaves in the suburbs (Bourne 1989; Dear 2000). Furthermore, in many North American cities, newly arrived immigrants have settled directly in ethnic enclaves in the

suburbs and have bypassed the central cities altogether. (Frey 2003; Smith and Furuseth 2004). Regardless of where immigrants or minorities settle in North American cities, the premise of this paper is that the process of racial/ethnic turnover is still an important determinant of the racial composition of a census tract.

## Hispanics in Michigan and Grand Rapids

The Hispanic presence in Michigan dates back to the early twentieth century when Mexicans were recruited from Texas and Mexico to work in the sugar beet, onion, and berry crops. Southern and European immigrants had been performing these tasks before they began to secure manufacturing jobs in industrial cities (Valdes 1992). By WWI, quotas on immigration caused a dearth of workers in agriculture in Michigan. Mexicans flooded into the US in the early 1900s to escape poverty and the Mexican Revolution, while Mexican-Americans left Texas to earn better wages in the North (Gonzalez 2000). Once Mexicans became acclimated to Michigan, they quickly discovered that greater employment opportunities awaited them in Michigan's industrial cities. Agricultural migrant workers established Mexican enclaves in Detroit, Saginaw, Pontiac, and Grand Rapids (Vargas 1993). The attraction of Mexicans to employment opportunities in cities led to a dearth of Mexican migrant workers after the 1940s. In the 1950s, recruitment of Puerto Ricans began to replace Mexicans in an effort to keep agricultural wages low. As US citizens, it did not take Puerto Ricans long to seek out better opportunities in the cities of Michigan (Valdes 1992).

The settlement patterns of Hispanics in Grand Rapids follow the historical patterns of immigrant settlement in Grand Rapids in general. Grandville Avenue in the Western part of Grand Rapids has been the entrance zone for

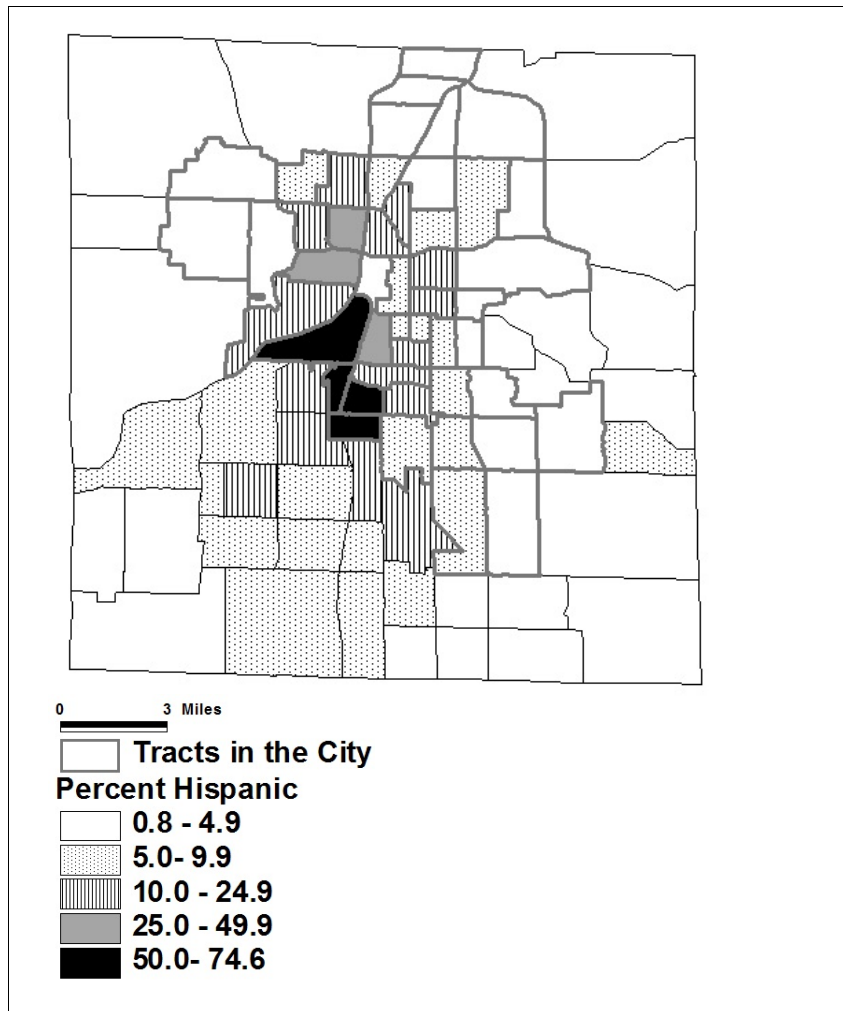


Figure 2b: Percentage of Population Claiming Hispanic Ancestry in Grand Rapids, Michigan 2000

immigrants and minorities since the 1830s, and by the mid 1800s, Irish and Dutch neighborhoods had been established. These same neighborhoods gradually underwent the succession process to German, Polish, and Italian neighborhoods during the latter 1800s and early 1900s. Shortly after 1900, African Americans arrived in Grand Rapids and settled along Grandville Avenue which kept them segregated from the white population. By the 1980s, this region had become one of the main concentration areas for Hispanics, Grand Rapids newest arrivals in substantial numbers (Samuelson and Schrier 2003).

Hispanic ancestry in the city of Grand Rapids as well as the surrounding suburbs for 1990 and 2000. In 1990, the highest percentage of Hispanics in a tract was 36.1 percent. Only four census tracts exceeded 10.0 percent Hispanic composition in 1990, all of which were located within the city limits while only one suburban tract had a Hispanic concentration between 5.0 and 9.9 percent. Between 1990 and 2000, 15,231 Hispanics were added to Grand Rapids population through immigration, internal migration, and natural increase. Approximately 40 percent of this growth accrued to the four previously mentioned census tracts. By

Table 1 displays the percentage of population that is non-Hispanic white, non-Hispanic black, and Hispanic for 1990 and 2000 for the 47 tracts within the city limits of Grand Rapids, and the suburban portion of Kent County, as well as the percentage change for the three ethnic/racial groups between 1990 and 2000. The non-Hispanic white population comprised 75.2 percent of Grand Rapids' 1990 population while the non-Hispanic black population comprised 18.4 percent, and the Hispanic population 4.5 percent. In 2000, 62.4 percent of the city's population was non-Hispanic white, 19.9 percent non-Hispanic black, and 13.0 percent Hispanic. Overall, Grand Rapids grew by 4.6 percent between 1990 and 2000, but this growth was accounted for mostly by the 175.2 percent growth of the Hispanic population. The non-Hispanic white population declined 15.2 percent, while the non-Hispanic black population grew by only 14.3 percent. Grand Rapids may have become more non-Hispanic black and more Hispanic during the 1990s, but the suburbs also became more heterogeneous. Whereas 95.2 percent of Kent County suburban population in 1990 was non-Hispanic white, this had declined to 89.7 percent by 2000.

Figures 2a and 2b show the percentage of population claiming

Hispanic Population Change	Refers to the change in the number of Hispanics by tract between 1990 and 2000
Homeowners	Refers to the percentage of non-Hispanic white head of householders by tract who were homeowners as of 1990. A higher percentage of non-Hispanic white homeowners should indicate a more stable neighborhood and result in less turnover rates.
Age 18-24	Refers to the percentage of the total white population per tract that was between the ages of 18 and 24 in 1990. These individuals are pursuing educational opportunities, are entering the labor force, as well as getting married and starting families. Individuals within this age group tend to be highly mobile, and thus tracts with high percentages of this age group should exhibit high turnover rates.
Age 25-34	Refers to the percentage of total white population per tract who were between the age of 25 and 34 in 1990. It is predicted that tracts with high percentages of individuals in this age group will have high turnover rates. At this stage in the life-cycle, individuals will have gained important labor force experience which should lead to increased salaries which can be used to upgrade housing consumption.
Elderly	Refers to the percentage of total white population per tract over age 65. It is predicted that high percentages of elderly in a tract will lead to high turnover rates due to attrition through death, migration upon retirement, and movement to assisted care.
Inner	This is a variable to measure the effect of a tract's proximity to the central city. It is predicted that higher turnover rates will be associated with tracts closer to the city. This variable acts as a proxy for quality of life in terms of crime rate, housing, schooling, and other municipal facilities. In general, lower crime rates and better quality housing, schools, and municipal facilities are found in the suburbs of US metropolitan areas than in the inner cities. Tracts were ranked on a 0 to 3 scale. City tracts surrounded by another city tract were rated 0, city tracts bordering the suburbs were rated as 1, suburban tracts bordering the city rated 2, and suburban tracts noncontiguous to city tracts were rated 3.
Pre 1970	Refers to the percentage of the total population per tract that are non-Hispanic white household heads as of 1990 who were still living in the same household as they were before 1970. Mobility studies have demonstrated that the longer an individual resides in a locale, the less likely that individual is to move (Rossi 1980).
Minority	Refers to the percentage of the total population by tract that did not claim themselves as non-Hispanic whites. It is predicted that high percentages of minority in 1990 will be positively associated with turnover rates of non-Hispanic white households due to the discomfort that non-Hispanic whites have towards minorities as well as the perceived negative features that are often linked to neighborhoods with high percentages of minorities.
Non-Hispanic black population	Refers to the total change in number of blacks per census tract between 1990 and 2000. It is predicted that non-Hispanic whites would be sensitive to an increase of non-Hispanic blacks in their neighborhood and this would initiate turnover.
White households with Children	Refers to the percentage of white head of householders in 1990 with children under age 18 by census tract. No a priori predictions are made on this variable because data are not disaggregated by age of children or age of parents.
Median value of housing	Refers to the median value of housing per tract in 1990. It is predicted that low median values will be associated with high turnover rates.

Table 2. Independent Variables used in the Regression Analysis to Test Turnover Rates of Non-Hispanic White Population by Tract.

2000, each of these four tracts had at least 50.0 percent of their populations claiming Hispanic ancestry. A further 3 tracts had between 25.0 and 49.9 percent Hispanic populations while 15 tracts had between 10.0 and 24.9 percent Hispanic. Given the limitations of the data, it was not possible to determine the exact contribution of natural increase, immigration, and internal migration for the Hispanic population and how this has contributed to the geographical expansion of Hispanics into the suburban part of Kent County. However, it is likely that some longer term Hispanic residents of the enclave moved to surrounding suburbs between 1990 and 2000 to escape the congestion in the enclave.

### The Succession Process

Figure 3 displays Grand Rapids population composition by tract for Hispanics, non-Hispanic Blacks, and non-Hispanic whites in 2000. Hispanic populations of at least 50.0 percent are found in four tracts in the southwestern part of the city. Black population dominance (at least 50.0 percent) is found in eight tracts contiguous to the Hispanic concentration. The majority of the tracts, 39, had a white population of at least 80.0 percent. Mixed tracts are defined as having at least 10.0 percent of a particular group. Tracts with white and Hispanic mixture are found to the southwest and northwest of the Hispanic Enclave. The mixture of white-black population occurs in the eastern part of the city. The wedge shaped movement is obvious in both the northeast and southeast. These wedges are broken by East Grand Rapids, an exclusive part of the city inhabited mostly by non-Hispanic whites. In the case of the suburbs in the western part of the city, Hispanics have had more success in entering this area than non-Hispanic blacks suggesting that the Hispanic enclave acts as a buffer between the white and black populations.

Lee and Wood (1991) considered succession to have occurred when one race increased its proportion of the total population in the tract by at least 5.0 percent while the other group experienced at least a 5.0 percent decline in its proportion of the total tract population. This is the definition of succession adopted in this paper with a slight modification to include three ethnic/racial groups instead of the two that Lee and Wood used. It is important

to note that if Hispanics are gaining in total proportion of the tract's population then clearly either the non-Hispanic white or non-Hispanic black populations or both are declining in their proportion within the tract. These tracts were further divided into three categories based on the changing racial/ethnic composition of the tracts between 1990 and 2000; 1) the non-Hispanic white population decreased by at least 5.0 percent representation in the tract and Hispanics increased by at least 5.0 percent; 2) the Hispanic population experienced a 5.0 percent increase in its tract representation while the non-Hispanic black population experienced a 5.0 percent decline; or 3) the Hispanic population increased by at least 10.0 percent and whites and blacks each declined by 5.0 percent.

The study area consisted of 78 tracts in 1990 and 84 in 2000. Data were altered accordingly to conform to these changes in boundaries. There were 47 tract boundaries within Grand Rapids's city limits, all of which remained unaltered between 1990 and 2000.

It was important to determine whether the greater representation of Hispanics was a result of growth on the part of the Hispanic population or a decline in the non-Hispanic white or non-Hispanic black population or some combination of the two. Ethnic enclaves attract many newcomers, resulting in crowding, and so a gain in Hispanics may not necessarily affect the other populations residing in those tracts. In both cases where Hispanics increased their representation at the expense of blacks and whites between 1990 and 2000 it was a combination of

	Non-Hispanic Turnover
Hispanic Change	0.654**
Age 18 to 24	0.611**
Households with Children	0.594**
Homeowners (Non-Hispanic White)	-0.591**
Pre 1970 Residence	-0.573**
Elderly	-0.534**
Minority	0.461**
Median House Value	-0.460**
Non-Hispanic Black Change	0.430*
Age 25 to 34	0.371*
Inner	-0.344*

Table 3. Bivariate Correlations for Non-Hispanic Head of Householder Turnover Rates

increase in the number of Hispanics and a decline in the number of whites or blacks. See Figure 4 to aid in the discussion of succession. Tracts that remained stable over the 1990s were not contiguous to a tract that had already undergone the succession process. This includes most suburban tracts and would be expected given that the process of succession generally works from the central part of the city outward. Tracts in which Hispanics replaced non-Hispanic whites were located in two general areas. Several tracts in the northern part of the city had experienced increased Hispanic composition and a decline in the white composition. These tracts are within the city but border on the suburbs in the northwest. The second area is made up of five tracts in the suburbs of the southwest that are contiguous to the core Hispanic area and that most likely result from a spilling over of Hispanics. In the central part of the city, four tracts have been found where Hispanics are increasing at the expense of the non-Hispanic Black population. These tracts are in close proximity to the Hispanic core and probably also represent spilling over. Blacks may be vacating these tracts for better housing opportunities elsewhere, leaving vacancies for Hispanics. Alternatively, an increase in the Hispanic population may be driving up housing prices and forcing the most disadvantaged blacks to seek housing elsewhere. In two tracts Hispanics are increasing at the expense of both Blacks and Whites. These tracts had reached majority Hispanic population by 2000, and are categorized as the core of the Hispanic Enclave. They most likely provide a buffer zone between a Black inner city population and a non-Hispanic white suburban population.

This buffer zone phenomenon provided by Hispanics is not unique to Grand Rapids for Denton and Massey (1991) in an examination of neighborhood transition in large cities between 1980 and 1990 found Hispanics to have performed this same role. Further confirmation comes from Lobo, Flores, and Salvo (2002) for New York City and Betancur (1996) for Chicago.

## Regression Model

The descriptive overview of the change in the Hispanic and non-Hispanic white population in Grand Rapids during the 1990s suggests that the process of succession is underway. However, the change in non-Hispanic white population by tract is not sufficient to detect this change. Non-Hispanic whites still move into tracts undergoing succession by the Hispanic population. Their motives for moving into these tracts, as well as the demographic and social characteristics of these non-Hispanic white immigrants, are likely different from non-Hispanic white outmigrants from the tract. We are not interested in whether non-Hispanic whites are willing to move into neighborhoods undergoing rapid Hispanic growth, but to what extent already established non-Hispanic whites have left their place of residence during the 1990s. To test this relationship the dependent variable was constructed as follows: 1) using 2000 census data, the number of non-Hispanic white households per tract who were still residing in the same household in 1990 as in 2000 was determined; 2) using 1990 census data, the surviving households per tract determined in step 1 was divided by

	Unstandardized coefficients		Standardized coefficient	t	Significance
	B	Std. Error	Beta		
Constant	51.741	8.528		6.067	0.000
Hispanic Change	5.920	2.561	0.314	2.312	0.029
Pre 1970	-0.669	0.197	-0.411	-3.392	0.002
Age 18 to 24	1.021	0.544	0.241	1.876	0.071
Inner	-2.533	1.141	-0.269	-2.220	0.035
R <sup>2</sup>	0.653				
Adjusted R <sup>2</sup>	0.602				

\*\*Significant at 0.01 level  
\*Significant at 0.05 level

Table 4. Results of Step-Wise Regression with Dependent Variable Non-Hispanic White Household Turnover.



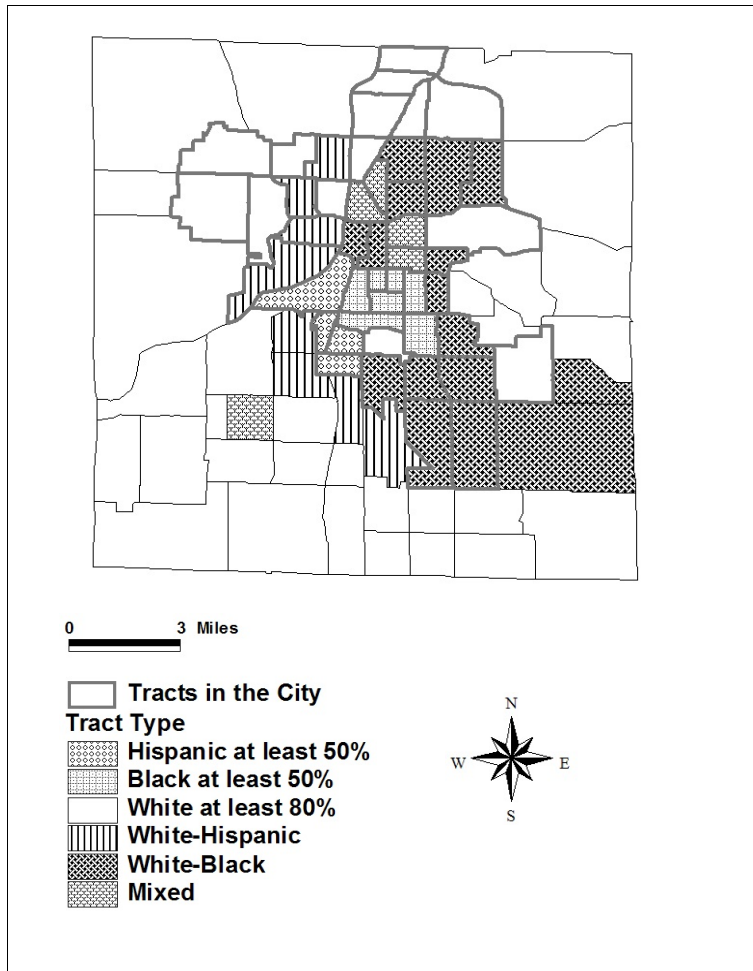


Figure 3: Tract Categorization by Whites, Blacks and Hispanics in Grand Rapids, Michigan 2000

the total number of non-Hispanic white households in that tract in 1990, and 3) the retention rate determined in step 2 was subtracted from one to represent the turnover rate of non-Hispanic white households during the 1990s. Galster (1990) used this approach in a study of succession of the black population in Cleveland between 1970 and 1980.

The present analysis differs in two ways from Galster's. First, Galster dealt with a 1970 black population that was concentrated within the city limits of Cleveland, whereas Hispanics in this study were not only found in the city limits of Grand Rapids but also in the outskirts of Kent

County due to job opportunities in agriculture. To measure non-Hispanic white turnover as a result of Hispanic population growth accurately, it was necessary to eliminate tracts on the outskirts of Kent County from the analysis so that agricultural migrants of Hispanic origin would not be included with the city's Hispanic population. Secondly, Galster only had one minority population to control for in Cuyahoga County whereas Kent County has both a substantial Hispanic and non-Hispanic black minority population. The model was only applied to 37 contiguous tracts in the Western part of Kent County, because these were the tracts where the majority of the Hispanic population resided in 2000. This resulted in a total of 14 tracts in the city and 23 tracts in the suburbs. To use all census tracts in Kent County would capture the effect of the non-Hispanic black population on turnover of non-Hispanic white households and obscure the effect that change in Hispanic population had on white turnover between 1990 and 2000.

The independent variable Hispanic change is designed to measure the comfort level that non-Hispanic whites have towards sharing their neighborhoods with a different ethnic group. Studies have indicated that non-Hispanic whites are more accepting of Hispanics than non-Hispanic blacks as neighbors (Denton and Massey 1991). One of the most difficult methodological challenges was to find an independent variable that would measure the effect that the growth of the Hispanic population in a tract would have

on the non-Hispanic white population. Percentage change in Hispanic population between 1990 and 2000 would not be effective because small increases in total number of Hispanics in some tracts would lead to large percentage gains while substantial gains in the already heavily populated tracts would display low percentage gains. It is hypothesized that non-Hispanic whites would be more sensitive to actual gains in the number of Hispanics. Thus, the independent variable, Hispanic change, represents the difference between each tract's 1990 and 2000 number of Hispanics. It is important to note that the unit of analysis for the dependent variable is turnover rates of non-Hispanic white

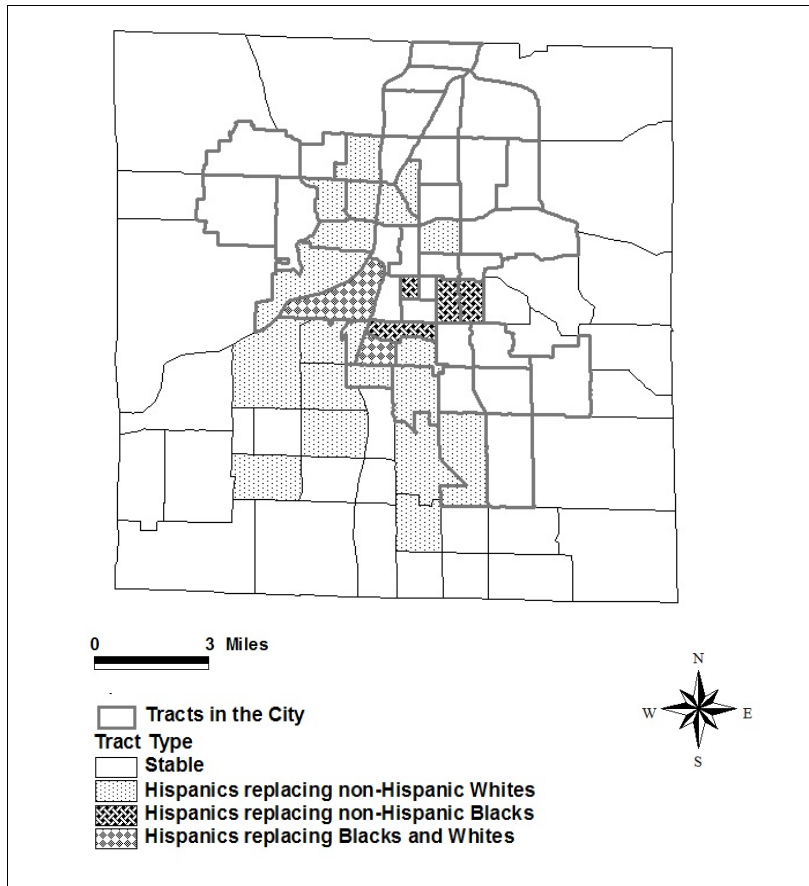


Figure 4: Succession of Hispanic Population in Grand Rapids, Michigan 1990-2000

householders by tract and not individual movement of Hispanics into a dwelling previously occupied by a non-Hispanic white householder, the latter of which can not be determined by using census data.

Although the major point of this paper is to determine the effect that the growth of Hispanic population has had on non-Hispanic white household turnover, this is not likely to account for all the variability in the dependent variable. Ten additional independent variables were included in the model (See Table 2). There are three independent variables related to age. Mobility studies have indicated that age of an individual is often the most important personal predictor of migration (Rossi 1980; Dieleman, Clark, and Deurloo 2000). Several variables did not adhere to a normal distribution and were

converted to log or square root to allow them to assume a normal distribution.

## Results

Table 3 displays the correlation of the dependent variable non-Hispanic white household turnover with the selected independent variables. Hispanic population change, black population change, percentage minority, age 18-24, and age 25 to 34 are highly significant at the 0.01 level and positively correlated with non-Hispanic white household turnover. Elderly, median housing value, pre 1970, and homeowners were each highly significant at the 0.01 level and negatively correlated with turnover rates, while inner was significant at the 0.05 level.

The method chosen for testing non-Hispanic white turnover rates was a step-wise linear regression which selects the independent variable which explains the greatest variance in the dependent variable and then continues to select variables until the addition of further variables would result in no further predictive power. Percentage minority and median value of housing, were highly correlated with Hispanic change and thus were eliminated from the regression analysis. Several other independent variables were also highly correlated among themselves. Age 18-24 and homeowners were highly correlated and could not be used in the same regression. Thus, the independent variables used in this regression equation included Hispanic Change, age 18-24, age 25-34, inner, pre 1970, black population change, and white households with children.

The step-wise regression revealed that Hispanic population change, pre 1970, inner, and age 18-24 accounted for 60.2 percent of the variance in the independent variable non-Hispanic white household turnover rates (See Table 4). Hispanic population change was the most important variable in this regression and accounted for 36.2 percent of the variance, indicating that increased numbers of Hispanics in a tract stimulated higher turnover rates of non-Hispanic

white households. Caution should be used when interpreting these results. Ellen (2000) in her study of ethnic transition in US cities by census tract between 1970 and 1990 found that non-Hispanic white succession was more closely associated with high levels of Hispanics who were recent immigrants than Hispanics who were US born. It may be that non-Hispanic whites in Grand Rapids are more sensitive to large numbers of recent Hispanic immigrants who are less likely to be proficient in the English language or to be acclimated to life in the US in general. Unfortunately, the census data provides only sample data on immigrant status and small sample sizes in many of the tracts could lead to erroneous results if these data were used in the regression.

Pre1970 was the next most significant variable and explains a further 17.1 percent of the variance in turnover rates. Non-Hispanic white householders in 1990 who had resided in their households prior to 1970 were less likely to experience high turnover rates with increased Hispanic population. These households may have firm roots in the community and less willing to relocate. These households undoubtedly consist of higher percentages of adults over age 35 who would tend to be less mobile than their younger counterparts. It is also likely that those who have resided in their households prior to 1970 own their homes. If housing prices decline as the neighborhood undergoes ethnic transition, then homeowners would take a substantial loss which may lead some to remain in the neighborhood.

Inner accounted for four percent of the variance in turnover rates, indicating that tracts contiguous to a city tract were more likely to experience higher turnover rates than tracts further from the city. This is no surprise given that non-Hispanic white households have been moving away from the city center for over half a century. The last variable to enter the regression was age 18-24 which accounted for 3 percent of the variance in turnover rates. High percentages of the white population in this age group stimulated higher turnover rates presumably as these individuals relocated in response to educational and employment opportunities, as well as changes in family status. Facilitating these moves is the likelihood that a high percentage of individuals in the 18 to 24 age range are apartment dwellers as opposed to homeowners, and thus face fewer constraints on moving.

## Conclusion

The process of Hispanic succession in Grand Rapids appears to be well underway. Hispanic population growth in many

tracts has been accompanied by a loss of non-Hispanic white and non-Hispanic black population during the 1990s. It is likely that high population growth of Hispanics in some city tracts in Grand Rapids during the 1990s resulted in a deficit of available housing and that some of this growth overflowed into surrounding suburban tracts. Given the location of the Hispanic core at the city limits, it is also quite possible that Hispanic immigrants have moved directly to the suburbs which may explain the rapid turnover that has occurred in the western suburbs bordering the city.

It is too soon to determine if the four tracts with a majority Hispanic population in 2000 will become totally Hispanic in the future. The rapid growth of the Hispanic population has probably led to the exodus of long-term Hispanic residents to the suburbs while immigrants and migrants from other regions of the country settle in the city to be close to the Hispanic ethnic community. Although studies of succession that have focused on the black population have overwhelmingly demonstrated complete turnover to all black residency, non-Hispanic white attitudes, although prejudicial, are generally more tolerant of Hispanics.

Although my premise that increased Hispanic population in a tract stimulated outmigration of non-Hispanic whites was supported through the regression analysis, I would like to discuss the changing age structure of the non-Hispanic white population as a complicating factor in interpreting the succession process in Grand Rapids. During the 1990s, baby boomers (aged 25 to 34 in 1990) would have aged into the late 30s and 40s. This group likely moved out of rental units and upgraded housing. All else being equal, the baby bust generation, those in the 18 to 24 age range, would not be able to replenish the rental and housing units left by their older counterparts and housing opportunities would then be available for Hispanic occupation. Furthermore, unlike previous generations of elderly who tended to age in place in the city, baby-boomers in most metropolitan areas have already relocated to the suburbs and are unlikely to return to the city as they age into retirement years (Frey 2000). I would suggest that future studies of succession in North American cities focus on the changing age structure of non-Hispanic whites and the relationship that this has on the availability of housing for immigrant and ethnic groups.

Although this paper has shown that the process of succession is probably occurring in Grand Rapids, census tracts are still relatively large units of analysis. Unfortunately, change by block level can not be adequately analyzed due to

the lack of the availability of data at this level. The succession process could and should be further investigated by examining the movement or lack of movement of individual non-Hispanic white households. Unfortunately, The Annual Housing Survey, a method for identifying changes by households according to race or Hispanic origin, is not available for cities in the medium-sized range such as Grand Rapids and precludes identifying movements of individual households.

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