UNIVERSITY OF CALIFORNIA, IRVINE

Contemporary Urban Neighborhood Upgrading: Diverse Pathways and Controversial Outcomes

DISSERTATION

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DOCTOR OF PHILOSOPHY

in Urban and Environmental Planning and Policy

by

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Vita

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Abstract

Contemporary Urban Neighborhood Upgrading: Diverse Pathways and Controversial Outcomes

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Doctor of Philosophy in Urban and Environmental Planning and Policy

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While neighborhood upgrading has transformed into a widespread and globalized process, debates about it have long been heated, especially on its definitions and its consequences. Often times, the dialogue about neighborhood upgrading is either gentrified or not gentrified, either displaced or not displaced, and either beneficial or harmful. However, this sort of dichotomic understanding of neighborhood upgrading has neglected the complexity of the process and assumed a universal understanding of the term "gentrification", while no consensus has been reached so far on a precise definition of it. The main aim of this dissertation is therefore to understand the nuances among different types of neighborhood upgrading and the multi-dimensional impacts of such processes on different stakeholders.

This dissertation research discusses neighborhood changes primarily in three different aspects: the various forms of neighborhood upgrading, impacts of neighborhood upgrading on local residents, and the association between neighborhood upgrading and business dynamics. Each of the three aspect is investigated in a separate study.

This dissertation debunks some of the standard stereotyped understanding of neighborhood upgrading. The results of this dissertation present that some degree of neighborhood upgrading can occur without massive racial changes, and potential "gentrifiers"

may not be limited to one particular race/ethnicity. Instead of being solely harmful to businesses, neighborhood upgrading can bring more opportunities to some business sectors. Through exploring the neighborhood change patterns in Los Angeles and other large cities in the US during the 2000s, this dissertation draws a more comprehensive picture for scholars, policy makers and urban planners to better understand the process.

Chapter 1. Introduction

Over the last several decades, many large metropolitan areas have undergone a dramatic transformation in a way that is quite distinct from their past trajectories. In particular, large American central cities, especially those in the South and Southwest, have gained momentum for their resurgence by attracting both policy attention and significant investment. For instance, Phoenix and Dallas have garnered billions to be spent on constructing light-rail transit systems and raising new public buildings in their central areas (Ehrenhalt, 2012). Additionally, other cities have also attempted to recruit big corporations and have expressed their aspiration to become first-tier global cities through the revitalization of their downtowns and other areas under their jurisdictions (see, e.g., Faulk, 2006; Gotham, 2005).

The recent transformations of these cities have attracted a great deal of scholarly attention in urban planning and other social science fields. Among others, a large number of studies have been devoted to uncovering the emerging patterns of urban neighborhood change (see, e.g., Byrne, 2002; Lees, Slater, & Wyly, 2008; He, 2010), while earlier studies tended to focus on the patterns of inner-city neighborhood decline and poverty concentration (Wilson, 1987; Massey & Denton, 1993; Jargowsky, 1997). Furthermore, researchers have attempted to shed light on this phenomenon by refining the working definitions of neighborhood upgrading, developing various measurement strategies, and exploring the controversial consequences of neighborhood upgrading (see, e.g., Smith, 1998; London, Lee, & Lipton, 1986; Atkinson, 2000a; Redfern, 2003).

Most researchers generally agree that neighborhood upgrading can bring in new real estate investment, improve housing quality, and stimulate new neighborhood services. Additionally, in some cases, neighborhood upgrading can help to increase homeownership, and

thus lead to more stable communities. For society as a whole, taxable income, sales taxes collected, and property values all increase from such changes (Mieszkowski & Mills, 1993). It is also believed that many long-term residents may benefit from these developments and enjoy improved living environments (Lee, 2010). Given rapid economic changes, Smiths (2002) concludes that neighborhood upgrading becomes "a crucial urban strategy for city governments in consort with private capital in cities around the world" (p. 440). In addition, scholars point out that concerns about neighborhood upgrading are often exaggerated, and that the departure of low-income residents might not be tightly associated with neighborhood upgrading processes (Brummet & Reed, 2019; Dragan et al., 2019).

Nonetheless, current residents and businesses do not always benefit from neighborhood improvements. Poor residents and small local businesses are sometimes anxious about the possibility of being displaced due to neighborhood upgrading (see, e.g., Newman & Wyly, 2006). With such upgrading, residents bear higher living expenses, and businesses face increased operating costs and different consumer bases. Because of this changed situation, poor residents are often forced to move out, and they sometimes struggle to find affordable neighborhoods to move into in which they feel comfortable (DeVerteuil, 2010; Pearsall, 2012). Beginning in the twentieth century, people started to notice that the harm brought on by displacement for low-income populations not only frequently drove people from their original homes, where some families had lived for generations, but also lies in many aspects in life. For instance, studies find that displacement limits displacees' access to various services and opportunities, as they are relocated to peripheral areas where facilities and infrastructure are highly underdeveloped (He, 2010). Furthermore, compared to families who move from their neighborhoods voluntarily, children in displaced families have fewer friends and tend to be more socially isolated in their

new neighborhoods (Goetz, 2002). In other words, overall, displacees' quality of life worsens. Meanwhile, incumbent residents in upgraded neighborhoods may experience greater job losses (Meltzer & Ghorbani, 2017). Indeed, various studies point out that the process of neighborhood upgrading brings uneven development, inequality, and residential polarization (see, e.g., Smith, 1982; Marcuse, 1985).

Although there has been increased scholarly attention on this subject, given the complexity of the neighborhood upgrading processes, there has been no consensus on the real consequences of neighborhood upgrading so far. Thus, critical questions need to be asked: Does neighborhood upgrading take place in a single form and result in common consequences? Is displacement an unavoidable consequence of neighborhood upgrading? Are the influences of neighborhood upgrading the same on residents and businesses? Through empirical studies, this research attempts to answer the above questions to better understand the complex mechanisms of neighborhood upgrading in contemporary urban areas and the possible displacement consequences on residents and businesses.

Specifically, the following chapter of this dissertation provides a general literature review that covers multiple academic fields relevant to understanding the dynamics of urban neighborhood upgrading. Here, I synthesize the literature concerning the following two crucial questions: 1) What is neighborhood upgrading? 2) And why does it take place in the way it does? Although seemingly straightforward, these questions have been debated among scholars for decades. By summarizing the various perspectives found in the literature, this chapter provides readers with a more thorough understanding of the concepts and the theories behind urban neighborhood upgrading.

Next, three different empirical studies, together with their own literature review sections, are discussed. The first study explores the complex patterns of neighborhood-change dynamics and provides a typology of neighborhoods that have experienced upgrading. More specifically, using a finite normal mixture modeling approach, this work identifies the diverse pathways of neighborhood change that took place in the first decade of the twenty-first century. In addition, I perform exploratory analysis, combined with logistic regression, to reveal the determinants of the distinct patterns of recent—and perhaps ongoing—neighborhood changes in contemporary urban spaces. Through an empirical investigation of the 10 most populous US cities, this study concludes that neighborhood upgrading does not always take place in a single form, nor does the share of the White population always increase significantly when neighborhoods experience upgrading, which defies the stereotypical dichotomic understanding of neighborhood upgrading.

Next, in order to understand the correlation between neighborhood upgrading and displacement, the second study in this dissertation looks beyond the net changes of racial compositions, since some low-income minority households can be displaced by middle- or high-income households in the same racial/ethnic group. Firstly, this study explores the possibility of displacement by the same racial/ethnic group by analyzing data from the American Community Survey's (ACS) public use microdata sample (PUMS) and comparing the incomes of households who have recently moved with those who have lived there for years for each Public Use Microdata Area (PUMA). As will be detailed, the results show that displacement by the same race does occur and that patterns of each racial/ethnic group vary. To detect what factors exist that are likely to be associated with displacement both across and within races, I use the ACS data to explore other variables as well. This work shows that displacement within the same race

tends to occur in relatively less developed areas, but that higher-income in-movers tend to choose neighborhoods that have larger young populations. In a further step, I present interviews I conducted with neighborhood council members to further explicate the patterns of displacement in the City of Los Angeles, which further confirms that neighborhood upgrading not only can lead to racial displacement but also to displacement by the same racial group—a fact that is often neglected in the literature.

Furthermore, unlike the above two studies, in which attention is paid explicitly to residential displacement, the last chapter of the dissertation before the conclusion looks at the impacts of neighborhood upgrading on businesses. The chapter examines the changing patterns of retail stores in the City of Los Angeles from 2000 to 2010. Unlike most previous research, the current study examines the business dynamics from two critical facets: business survival, and new business creation. More specifically, by conducting survival analysis and presenting Poisson count regression models, I demonstrate the unique dynamics of retailers located in the upgraded neighborhoods, and how they differ from those in other areas in terms of their survival outcomes and new business creation. The results reveal that neighborhood upgrading can influence businesses in different ways. Generally speaking, neighborhood upgrading can shorten the survival lengths of particular business sectors, even though the magnitude of the impacts may not be significant. On the other hand, for most business sectors, neighborhood upgrading is very likely to help with attracting new businesses into the neighborhoods.

Overall, this research sheds light on the complexity of contemporary urban neighborhood upgrading. By conducting the three empirical studies discussed above, this dissertation better explicates how urban neighborhoods have evolved over time and what we should expect in terms

of consequences. In addition, these studies provide some meaningful lessons for planners and policy makers concerned with housing and neighborhood development.

Chapter 2. Literature Review

2.1. Neighborhood upgrading in contemporary urban areas

Urban neighborhood upgrading, understood as a change in the built environment or the socioeconomic attributes of residents, has drawn a great deal of scholarly attention over the last several decades (e.g., Atkinsons, 2000a; Freeman, 2005; Wyly & Hammel, 1999). Scholars understand this changing process differently: while some consider it positively, as a process of "revitalization," "reinvestment," "urban renewal," most often, authors refer to it as "gentrification," a term which has more negative associations. The term gentrification was first coined by Glass (1964); she described it as: "One by one, many of the working class quarters of London have been invaded by the middle-class—upper and lower. Once this process of 'gentrification' starts in a district it goes on rapidly until all or most of the original working-class occupiers are displaced and the whole social character of the district is changed" (p. xviii). Thus, this term was originally used to describe the influx of "gentrifiers" in London during the 1950s and '60s but is now used broadly across the world. Since the time of its greater ubiquity, in many studies, "gentrification" has been used interchangeably with "neighborhood upgrading" in many studies.

Various definitions have been used to describe the neighborhood upgrading process. For instance, as defined by Smith (1998), gentrification is a process whereby central city neighborhoods that have undergone disinvestment begin to experience reinvestment, and along with it, an influx of middle- and upper-middle-class residents. Harlem, a neighborhood in upper Manhattan, New York, is a good example of this process (Schaffer & Smith, 1986). Historically, Harlem had a great concentration of African American residents. However, as more middle-class households began transitioning from Harlem to the suburbs, the neighborhood faced greater

amounts of disinvestment, beginning around the start of World War I. Then, from the early 1980s, the area began to witness a significant increase in income and rent levels caused by new investment and the influx of residents with higher socioeconomic status—in other words, gentrification. Schaffer and Smith (1986) describe this process as "not a curious anomaly but a trenchant restructuring of urban space" (p. 362).

Another group of scholars examines neighborhood upgrading from the perspective of resident composition changes. Overall, these scholars agree that neighborhood upgrading refers to the influx of higher-income households and the outflow of lower-income households, but the focus of each author's work differs from one another. For instance, both Byrne (2002) and Guerrieri et al. (2013) view gentrification as a change brought on by residents with different incomes. Thus, they define gentrification as a process by which higher-income populations move into lower-income central city neighborhoods and attempt to change the physical and social environment in the direction of their preferences. Ley (1986) also defines gentrification as a change in household social status, but with a focus on occupational and educational levels. For his part, Hamnett (1991) suggests that in addition to single factors, gentrification may occur when three specific conditions are present: the existence of potential gentrifiers, adequate housing supplies, and cultural preferences for urban living. Meanwhile, many other scholars place more emphasis on changes in racial composition when defining or measuring gentrification. They consider gentrification as a process of minority groups being displaced by White population (e.g., Crowder & South, 2005; Freeman & Cai, 2015; Goetz, 2011).

Additionally, physical changes to neighborhoods are also important for understanding neighborhood upgrading. Here, three characteristics of gentrification are gauged by Hwang and Sampson (2014): (1) the structural mix of an area (i.e., the conditions of older structures, as

reviewed using Google Street View, and the percentage of new structures, as measured the number of new or rehabilitated building structures, as well as new traffic signs/structures, new public courtesies, new large-scale developments, and new constructions for sale); (2) visible beautification efforts (i.e., efforts discouraging disorder, personal frontage beautification, and vacant/public space beautification); and (3) a lack of disorder and decay (i.e., a lack of physical disorder, loam of unkempt vacant/public spaces, and a lack of decaying structures).

More recently, adopting various novel approaches, neighborhood upgrading is examined by some in terms of business changes. For instance, Glaeser, Kim, and Luca (2018) use data from the online review site Yelp to measure neighborhood changes. They find that the entry and total numbers of cafes, vegetarian restaurants, and hair salons, as well as various other types of businesses, are associated with the gentrification process and can be used as indicators for identifying changing neighborhood upgrading processes. Similarly, other researchers demonstrate that the presence of upscale coffee shops, especially Starbucks stores, is a symbol of neighborhood upgrading (Hwang & Sampson, 2014; Papachristos et al., 2011).

Smith (2002) also points out that instead of a purely self-motivated and unplanned process, gentrification can be a planned process put in place by governments, corporations, or corporate-government partnerships aimed at improving neighborhoods and growing local economies. Governments, for example, may provide incentives to attract investment to their inner cities, especially to previously deteriorated neighborhoods and areas that have undergone disinvestment (Smith, 1979). For instance, some policies were implemented in prioritizing investment in certain inner-city neighborhoods, such as “redlining” and “inclusionary zoning.” These sorts of planning processes have taken place all over the world. Although there are many

ways to identify and measure neighborhood upgrading, scholars have not yet reached a consensus on a single definition of it, nor one ideal measurement tool.

In addition to investigators' various definitions and indicators for measuring neighborhood upgrading, scholars also debate the consequences of neighborhood upgrading processes, with many scholars contending that contemporary urban neighborhood upgrading often comes with undesirable consequences. Although still debated, numerous academics state that the most noticeable consequence of neighborhood upgrading is the displacement of disadvantaged populations (Freeman, 2005; Freeman & Braconi, 2004; He, 2010). In other words, this is a situation where poor households are no longer able to stay in their neighborhoods due to their lack of ability to afford the rising rents. In many cases, such households do not have enough power or resources to change the situation, and thus, they are essentially forced out.

It has also been suggested that neighborhood upgrading generates other negative consequences, as well. For instance, according to Atkinson and Bridge (2005), with encroaching gentrification, the availability of affordable housing can shrink quite substantially. Furthermore, upgrading in one area can intensify the housing demand pressure on surrounding low-income neighborhoods. Consequently, homelessness may increase, and community resentment and conflict grow stronger. As Florida (2016) points out, "Urban revitalization, in the pessimists' view, is driven by rapacious capitalists who profit by rebuilding some neighborhoods and running others down" (p. 4).

Conversely, urban optimists believe that neighborhood upgrading is not as harmful as others suggest. For instance, Byrne (2002) argues that poor households are not likely to be displaced from upgraded neighborhoods. Further, he suggests that urban neighborhood upgrading can increase the demand for services, which creates new job opportunities. Hence, in

this view, existing residents are more likely to receive benefits in their newly upgraded neighborhoods that they might not be able to obtain otherwise. Moreover, in Byrne's view, urban neighborhood upgrading can lessen the social isolation of the poor, as well as, to some extent, reduce crime.

Lees et al. (2008) also think of gentrification as a beneficial process. In their view, socially, gentrification can be regarded as an important way to create a stronger social mix. The social mix brings greater diversity, which can represent an advantage in child-rearing, compared with "homogeneous suburbs," since children are now exposed to more diverse groups of neighbors and can learn how to interact with those who are different. In addition, the incoming households can increase the tax base of the central city. Moreover, the upper class gentrifiers can increase social security and provide the longtime, existing residents with new role models.

Brummet and Reed's (2019) research also demonstrates that in gentrified neighborhoods, the original residents can benefit from the changes that the possibilities of poverty exposure have been declined. Some of the results of their work are also surprising, in that they show that the effects of rent increases in gentrified neighborhoods have only impacted the more-educated renters of those neighborhoods, whereas no effects were found for less-educated renters. Furthermore, for long-term resident homeowners, the values of their houses have been driven up in the course of the neighborhood upgrading processes. Moreover, children in gentrified neighborhoods are more likely to both attend and complete college. For their part, Dragan et al. (2019) demonstrate that neighborhood upgrading is not necessarily associated with the displacement of children in low-income families. Instead, children living in gentrifying areas are found to experience significant neighborhood poverty reductions.

Along these same lines, gentrifying or gentrified neighborhoods often meet the selection criteria of "great neighborhoods," as defined by the American Planning Association. Such criteria include walkability, adequate amenities, and good design, among other aspects. From this link between gentrification and the defined "great neighborhoods," it is clear that higher-income people often prefer walkability and proximity to amenities, and thus, they attract or create more services and amenities for their neighborhoods. However, as previously discussed, this process simultaneously raises gentrification-induced concerns, such as decreased affordability and racial/class segregation. Thus, whether such gentrifying neighborhoods, with their exclusionary essences, can be identified as "great neighborhoods" is still questionable (Talen et al., 2015).

It is difficult to calculate the gains or losses from neighborhood upgrading processes, not only because of the many complex aspects and the various stakeholders involved but also because it is challenging to measure or quantify the scales of the impacts. Taking the subject of displacement, for instance, there are data limitations, a lack of direct association between displacement and neighborhood change, ambiguous reasons for people's decisions to move, etc., all of which constrain scholars' capacity to fully capture the extent to which displacement occurs along with neighborhood change (Zuk et al., 2018).

Often, residential displacement is understood from the perspective of racial/ethnic compositions. It is frequently assumed that when neighborhood upgrading occurs, White people move in and displace minority groups, especially African Americans (Spain, 1980; Wilson, 1992). However, measuring displacement solely on race/ethnicity factors is far from enough, as signs of displacement by higher-income minority groups have been detected in several studies (Anderson & Sternberg, 2013; Moore, 2009); such displacement by non-White populations has yet to receive substantial scholarly attention.

2.2. Theories of neighborhood upgrading

There is a voluminous amount of literature on the mechanisms behind urban neighborhood upgrading, as well as neighborhood change dynamics more broadly. The work of Schwirian (1983), Hamnett (1991), Temkin and Rohe (1996), Pitkin (2001), and others contribute to our understanding of such mechanisms and dynamics by synthesizing various theoretical foundations. Generally, theories explaining the mechanisms of neighborhood upgrading fall in line with three broad perspectives: (1) ecological, (2) political and economic, and (3) subcultural. Ecological explanations suggest that neighborhood change can be viewed as an evolutionary process. Political and economic theories explain such dynamics with a focus on the decisions made by various political and economic agents and their interactions. Finally, subcultural theories suggest that neighborhood upgrading mainly takes place due to a collective change in individuals' ideological or cultural preferences. Although distinct, all of the theories under the three perspectives are significant for researchers, urban planners, and policy makers to understand the underlying, highly complex nature of neighborhood change.

2.2.1. Ecological perspectives

There is a long tradition of seeing cities and urban neighborhoods as an organism or natural environment in which various ecological processes take place. Such theories about neighborhood change present a model that neighborhoods are ecosystems, and that neighborhood changes occur when the ecosystem's intra-equilibrium is broken, which thus leads to new equilibriums (Park et al., 1925).

Most notably, Chicago School scholars believe that neighborhood change happens through a process of invasion and succession (Burgess, 1967). This succession-invasion model suggests that neighborhood change begins with the invasion of an area by a group of socially or racially different individuals, and because of their differences, the newcomers might meet resistance from the original group. If the original group withdraws, succession occurs, and thus a visible form of neighborhood change takes place. In many of these studies, the primary difference between the newcomers and the established groups lies in race or economic class, which may manifest, for example, with an influx of White residents and the outflow of African Americans, or the influx of middle-income households and the outflow of lower-income households.

Freeman and Cai (2015) provide an empirical analysis of urban neighborhood change dynamics based upon the invasion-succession theory. Using the Longitudinal Tract Database, the authors investigate the phenomenon of White entry into African-American neighborhoods between 1980 and 2010 and report that, compared with the 1980s or 1990s, the 2000-2010 decade witnessed a much higher proportion of Black neighborhoods experiencing White incursion. Furthermore, the authors employ multilevel logistic models to explain the invasion of White households in the 2000-2010 period. They conclude that White incursions were more common in (a) inner-city neighborhoods, (b) neighborhoods in markets where housing costs were high, (c) neighborhoods that were HOPE VI redevelopment sites, and (d) neighborhoods that were closer to central business districts (CBDs). In addition, the authors show that White renters have been more likely than White owners to move into Black neighborhoods because, generally speaking, renters take less risk.

Atkinson (2000b) examines neighborhood changes through studying the changing patterns of potential gentrifiers and displacees in Greater London between 1981 and 1991. He uses professionalization as a proxy indicator for gentrification and seven variables (including numbers of working class, elderly, unskilled laborers, etc.) as a proxy for displacement in order to study the link between gentrification and displacement. The study suggests that increases of people with professional occupations are closely associated with increases of displacees, indicating a possible invasion-succession process that takes place during neighborhood change.

Another example of the ecological perspective is the so-called life-cycle model. This model traces the overall trajectory of neighborhood change, rather than looking at certain characteristics of population change, as the invasion-succession model does. The conventional life-cycle model suggests that there are five distinct stages: development, transition, downgrading, thinning out, and renewal. Although it is also important to note that some neighborhoods may not go through all five stages, that some may continue to loop through the same two or three stages, or that some may remain in one stage for an extended period of time (Hoover & Vernon, 1959).

The neighborhood life-cycle model provides a theoretical lens for many neighborhood change studies. For instance, Smith and McCann (1981) examine neighborhood changes between 1921 and 1971 in Edmonton, Canada, with a focus on residential land-use changes. They find that in Edmonton, there have been three stages of neighborhood transformation over the study period. Further, similar to what is described in Hoover and Vernon's (1959) life-cycle model, Smith and McCann (1981) state that in the first phase (approximately prior to the early 1950s), a great number of single-family housing units were constructed in Edmonton in the postwar years. Then, as the demand for housing increased and the older buildings aged, a transition stage took

place between 1951 and 1961 in which a large number of single-family housing units were converted to upper-story and multiple-family housing. Subsequently, from 1961 to 1971, high-density apartment redevelopment became the major form of change, corresponding to the renewal stage.

In other work, Schwab (1987) assesses the accuracy of the neighborhood life-cycle theory on neighborhoods in Cincinnati, Ohio, from 1970 to 1980. After conducting linear discriminant analysis, he concludes that the life-cycle theory fits most of the neighborhood transformation patterns during the study period. The model correctly predicted three out of five stages of neighborhood dynamics: development, stable—the equivalent of the transition stage in Hoover and Vernon's (1959) model—and thinning out. However, he also suggests that since the life-cycle theory was unable to predict all of the neighborhood change patterns, it is important to incorporate other, multidisciplinary perspectives to explain neighborhood changes.

2.2.2. Political and economic theories

Rather than focusing on the evolutionary process itself, other scholars choose to pay attention to the complex economic mechanisms that underlie dynamic urban neighborhood changes. For instance, the filtering model (Grigsby, 1963) describes neighborhood change as a market-driven process, which results in the best use of land. This theory states that many households with higher socioeconomic status vacate their neighborhoods to move to locations where a higher level of utility can be attained, and in doing so, leave their former housing to poorer occupants. In this way, less decent housing is filtered down to lower socioeconomic households (Smith, 1982). This type of classic filtering model assumes that needier households will generally have lower housing demand, and that new housing will be constructed at the edges

of cities where land is more plentiful. Subsequently, one would expect to see income declines in city centers, but increases on the peripheries of cities. Though this may have once been the case, in recent decades, we have witnessed a reversed filtering process, whereby inner-city housing is renewed and redeveloped, and thus becomes more attractive to higher-income households, who then move in from the suburbs.

In his work, Skaburskis (2006) examines filtering and reversed filtering processes using the 1996 census microdata for Canadian metropolitan areas. Changes in the housing-value profiles suggest that the housing prices of older owner-occupied buildings in most cities appear to be more affordable for lower-income households, which implies a filtering process, although the process is too slow. On the contrary, housing-value changes in Toronto and Vancouver show a clear reversal, indicating a gentrification trend for these two cities.

From the production side, Smith (1979) explains that neighborhood change is a way of restructuring urban society and generating uneven development. He points out that there is a gap between the capitalized ground rent and the potential cost of redeveloping buildings. When this gap becomes wide enough, developers seeking to maximize their profits will build new housing units or redevelop existing buildings. Subsequently, the middle class responds to these new housing opportunities by moving in.

Similarly, Hamnett and Randolph (1986) present a value gap theory from the perspective of the landlords. They believe that landlords tend to sell their properties when they are better off—that is, when the possession value (sale price) exceeds the profit from tenanted investment (rental income). In other words, the value gap tends to change the tenure of a property, and that this leads to gentrification. These researchers contend that the gentrification process not only

involves the actions of individual gentrifiers, but rather, the combined actions of developers, landlords, buyers, and renters.

Clark (1988) uses cases in Malmo, Sweden, to assess the rent gap theory. His study looks at redeveloped properties and compares the historical curves of capitalized land rents, building values, and potential land rents. This work suggests that rent gaps had emerged in the redeveloped areas, although there was no general rule regarding how old a building needed to be when the rent gap appeared. Clark's conclusion is consistent with the rent gap theory, which states that rent gaps tend to stimulate new development and redevelopment in urban areas.

However, the rent gap theory has received some criticism, as well. Ley (1987), for instance, comments that "Smith ... has no empirical results of his own to report" (p. 466). More importantly, Redfern (1997) points out that "sufficient wideness" of the rent gap is ambiguous in explaining gentrification, and this vagueness protects the theory from any empirical criticism: that if gentrification did not occur, then, according to Smith, this means that the gap was not wide enough.

The well-known growth machine theory (Molotch, 1976) provides a broader perspective regarding urban neighborhood change beyond individual developers or landlords. It differs from traditional economic explanations for urban neighborhood change, in that it views urban development as driven by a coalition of interest groups, including governments, business factions, and local elites. In this sense, the city can be viewed as a growth machine through which these groups can profit from their positions.

Lin (2008) uses Los Angeles's Chinatown as an example to illustrate the growth machine concept. From the last century onward, various institutions and organizations have pushed the economic development of Chinatown. Since the 1960s, a number of new branches of Chinese

American and Chinese banks have been established in Los Angeles. These banks are actively involved in the development of shopping plazas in Chinatown. Later, in the 2000s, the property owners of the Chinatown Business Improvement District created an urban growth machine that included a coalition of Chinese developers, White developers, the City of Los Angeles, and the Community Redevelopment Agency (CRA). With the coming of the Gold Line Metro to LA's Chinatown, the coalition facilitated a great number of redevelopment projects, such as converting old buildings into new mixed-use projects, which have transformed the area dramatically.

Similarly, Levine (1987) discusses how Baltimore's downtown redevelopment process in the 1970s and '80s was a case that can be explained by the growth machine theory. The author argues that the redevelopment projects did not function as an economic development strategy, but instead, were a profit generator for developers, real estate speculators, and financiers. The projects did not benefit many residents, nor did they generate revenues for the improvement of the downtown area; rather, disadvantaged residents suffered from displacement and shrunken economic opportunities. However, given the various projects' profitability, the developers ignored the negative consequences and continued to pursue growth.

Later in his work, Smith (2002) argues that neighborhood change has become a political strategy for stimulating private financial investment in response to sustained disinvestment. He argues that "the connections between capital and the state, social reproduction and social control have been drastically altered" (p. 429), which has led to the globalization of gentrification. Other scholars also point out that political decisions, such as welfare state arrangements, have been key factors that have led to neighborhood changes. For instance, the promotion of homeownership could lead to housing price increases, which constrains access to homeownership only to those who are financially well-off (Forrest & Hirayama, 2015). As Hochstenbach and Musterd (2018)

write, housing policies are "always an integral part of state-led gentrification, whether it is to manage and control neighborhoods or to attract capital investment and the middle classes as part of more entrepreneurial state strategies" (p. 32).

This sort of state-led gentrification is taking place in many different parts of the world. For instance, in Shanghai, China, the government has stimulated gentrification in some central areas through both the supply and demand sides: by loosening regulations on home purchases to enable gentrifiers to choose where to buy a house, something that they could not do previously; by providing resettlement housing to low-income gentrified residents; and by exempting or decreasing administrative charges or land use fees for redevelopment projects, among other things. Through those actions, areas like Taipingqiao and Liangwancheng, both located in central Shanghai, have been attracting greater numbers of middle-upper class residents and more investment, and have rapidly gentrified under the government's actions (He, 2007).

2.2.3. Subcultural explanations

Subcultural theories place greater emphasis on the importance of the social and institutional factors that shape individuals' location choices, thereby leading neighborhood change (Allen, 1984). People have different preferences in selecting their residential locations with respect to the density and quality of built environments, historical or cultural characteristics, and various types of amenities that each neighborhood provides (Hunter, 1975). Thus, along with other constraints (i.e., income, employment, etc.), individuals make their locational choices based on these preferences. Collectively, their decisions result in visible neighborhood changes (Allen, 1984). Here, Ahlbrandt and Cunningham (1979) contended that "neighborhoods are

composed of people, and in the last analysis, it is the willingness of residents to remain in their neighborhood and to work to improve it that will determine the stability of the area" (p. 29).

In most cases where subcultural factors can explain neighborhood change effectively, urban neighborhoods tend to have certain unique characteristics and subcultures that attract one or more specific groups of individuals. For instance, Douglas (2012) uses a case study of a place that he refers to anonymously as "Edgetown," which is located somewhere near Chicago, to illustrate that cultural considerations are an important factor behind gentrification. Unlike other gentrification cases explained by urban economic theories, Edgetown is located at the urban frontier, but has revealed the clear characteristics of gentrification. To explore the reasons for gentrification, the author interviewed people who recently moved to the area, finding that gentrification in this area was closely tied to "the search for a pre-hip authenticity and edginess that is central to bohemian and 'hipster' sub-cultures" (p. 3568).

Additionally, Lloyd (2002) conducted interviews to investigate the cultural influences on the dynamics of neighborhood change in the Wicker Park neighborhood of Chicago. During the earlier part of the 1980s, Wicker Park experienced severe disinvestment. Since the late 1980s, however, its famous music scene began to attract a number of artists to the neighborhood. As Lloyd discusses in his research, for this community, art is no longer a means to make a living but, more importantly, a general lifestyle approach that the neighborhood enjoys. As the reputation of the Wicker Park neighborhood continued to grow, it has continuously attracted more people who love the arts, thus spurring gentrification of the neighborhood.

Each of the theories discussed above illustrates the different facets of neighborhood change from the perspectives of various stakeholders, either from the demand side or from the supply side. It is undeniable that each theory provides valuable insights into explaining the

complex process of neighborhood upgrading. However, given the controversial essence of neighborhood change, the mechanisms behind gentrification should never be a one-size-fits-all case. As Hamnett (1991) points out, a comprehensive explanation of neighborhood upgrading should be able to answer four questions: (1) Why does neighborhood upgrading only occur in some large cities? (2) What are the characteristics of a neighborhood that enables it to be upgraded? (3) Who became gentrifiers, and why? (4) Why did neighborhood upgrading take place at a particular time? As Ball (1979) indicates, an actual explanation of neighborhood change should be a combination of several theories, plus some additional random factors. Thus, building on a combination of theoretical approaches, I next look at neighborhood change dynamics from multiple facets and various perspectives.

Chapter 3. Beyond Dichotomy: Identifying Diverse Pathways of Inner-City Neighborhood Change in the 2000s

3.1. Introduction

Since first coined by Glass (1964), the term "gentrification" has gained greater popularity and is now used internationally. The term has beenused to describe the process of middle- or upper-middle-class influx and particular kinds of neighborhood renovation. As discussed earlier, many studies are dedicated to exploring the consequences of gentrification. Among the large volume of gentrification studies, there is much heated scholarly debate regarding the changes encountered by residents through gentrification. These studies include cases in London and Los Angeles that DeVerteuil (2010) examines, in Shanghai that He (2010) investigates, in New York that Pearsall (2012) explores, and in US neighborhoods that Newman and Wyly (2006) consider. The results of all of these studies show that gentrification changes the overall sociodemographic composition of local residents. On the other hand, other investigations, such as those by Freeman and Braconi (2004) and Freeman (2005), indicate that gentrification does not necessarily lead to residential displacement, and thus, does not alter the population compositions significantly. Undoubtedly, overall, these gentrification studies greatly contribute to elucidating the new trend of urban neighborhood change that does not fit into the long-standing view of central cities as places with great poverty, crime, and/or abandonment.

As more and more scholars contribute to elucidating the more controversial consequences of gentrification, a small number of scholars are more focused on whether the universal usage of the term "gentrification" best describes all of the different cases. As Bondi (1999) states, "the more researchers have attempted to pin it down the more burdens the concept has had to carry.

Maybe the loss of momentum around gentrification reflects its inability to open up new insights, and maybe it is time to allow it to disintegrate under the weight of these burdens" (p. 255).

Although scholars generally agree that the process of gentrification should contain multiple elements, such as social upgrading, reinvestment, and possibly displacement (Davidson & Lees, 2005), the massive amount of gentrification-oriented research fosters a perspective of viewing urban neighborhood change dynamics stereotypically; this is a dichotomous view—gentrified areas versus all the rest—which is increasingly found in both academia and in the realm of policy-making. This simplified view prevents us from understanding the full breadth of urban neighborhood change dynamics.

This chapter thus looks beyond the dichotomy of how we sometimes see the emerging patterns of neighborhood upgrading or revitalization. Through an empirical investigation of the 10 most populous cities in the US, I discuss how American inner-city neighborhoods have actually been transformed in the 2000s. More specifically, using a finite normal mixture modeling approach, the present study identifies the diverse pathways of neighborhood change that have taken place in the first decade of the 21st century. Additionally, I also provide an exploratory analysis, combined with logistic regression, to reveal distinct patterns of recent (and perhaps ongoing) neighborhood changes in contemporary urban spaces.

3.2. Literature review

The complexity of neighborhood change patterns should not be seen—and, indeed, cannot be captured—by the simple binary classification of gentrified versus non-gentrified. Understanding the full intricate nature of this subject, there are a handful of studies that attempt to explore the diverse, multifaceted patterns of neighborhood change. For instance, Morenoff and

Tienda (1997) develop a multidimensional typology of urban neighborhood change to reveal patterns of inner-city neighborhood change in Chicago. In their work, they identify four distinct types of neighborhoods—stable middle-class neighborhoods, gentrifying yuppie neighborhoods, transitional working-class neighborhoods, and ghetto underclass neighborhoods—and find that in Chicago, the "gentrifying yuppie neighborhood" spread extensively between 1970 and 1990, whereas the number of underclass neighborhoods shrank. They also detect an association between the emergence of Hispanic neighborhoods in that city and the transitions that have occurred across neighborhood types (i.e., the movement from stable middle-class to transitional working-class neighborhoods) in the study period.

For her part, Delmelle (2015) explores neighborhood changes between 1970 and 2010 with a focus on four American cities: Buffalo, New York; Portland, Washington; Charlotte, North Carolina; and Chicago, Illinois. In her work, the author conducts a cluster analysis and classifies the neighborhoods into five categories: suburban, stability, blue collar, struggling, and new stars. Delmelle shows that both Portland and Charlotte have had greater proportions of neighborhoods on the rise and that these two cities have had a high degree of variability in their neighborhood change trajectories. In contrast, she finds that many neighborhoods in Buffalo and Chicago have experienced a traditional downgrading process, from suburban to stability to blue collar to struggling. Furthermore, her work shows that in these last two cities, their struggling neighborhoods have largely remained at the same locational position.

In another study, Delmelle (2016) employs a sequential pattern mining technique to explore the diverse pathways of neighborhood change dynamics in Chicago and Los Angeles. According to the author's analysis, these cities' neighborhoods can be grouped into a wide range of categories, including newer suburban, struggling, stability, stable older suburban, young

urban, blue collar, and elite. In the case of Chicago, neighborhood upgrading changes have often taken place in the form of struggling to blue collar while various downgrading changes have occurred in various ways, for example, from blue collar to struggling, from stable older suburban to blue collar, and from newer suburban to stable older suburban. In Los Angeles, the most notable pattern of neighborhood upgrading occurred in suburban neighborhoods, where both newer suburban and stable older suburban neighborhoods changed to elite neighborhoods.

In addition to studies that examine the different types and stages of neighborhood changes, some urban scholars also explore dynamic variations, particularly for those neighborhoods that are on the rise. Van Criekingen and Decroly (2003), for instance, conduct a fourfold typology analysis to investigate the neighborhood renewal processes in Brussels, Belgium, and Montreal, Canada. They find that neighborhood changes in these cities cannot be effectively described with binary classification, but rather, they should be classified into more specific categories using the terms gentrification, marginal gentrification, upgrading, and incumbent upgrading. According to their analysis, gentrification—one of the four categories—represents only a small portion of Brussels and Montreal areas, which contrasts "sharply with the often overgeneralising claims made in the literature regarding the extent of gentrification … [and demonstrating] how inner-city neighbourhoods are being diversely reshaped in Western cities" (p. 2466).

Owens (2012) conducts a comprehensive analysis to develop a typology of ascending neighborhoods in the US using 1970-2010 census tract-level data. Her cluster analysis demonstrates that gentrification is just one of many forms of neighborhood ascent that has taken place in the US since 1970 and that neighborhoods with different sociodemographic backgrounds show quite distinct patterns of neighborhood ascent. Different from what is commonly

considered “gentrification,” many of the ascendant neighborhoods did not involve population displacement; rather, the neighborhood changes that occurred involved built environment or other aspects. Over the four decades under review, she finds that suburban neighborhoods with larger White populations were most likely to be ascendant, but also that there was an increasing ascendant trend in neighborhoods with large portions of minority immigrants as well. At the same time, her study indicates that Whites tend to live in neighborhoods where the socioeconomic status of residents is relatively higher, which could generate greater neighborhood inequality.

Hincks (2015) empirically investigates urban neighborhood change dynamics, focusing on the Greater Manchester city-region. Specifically, he examines the divergent transition pathways of deprived neighborhoods from 2001 to 2010 in that region. The author first uses four indicators (i.e., unemployment changes, population changes, housing transaction changes, and changes in house prices) to develop a typology of the annual neighborhood transition pathways. Then, in a further step, based on the clustering outcomes, he groups the neighborhoods according to how many different states they experienced during the 10-years period and classifies them into: transitioning along a mono-state, dual-state, or multi-state. According to his analysis, 2001-2004 and 2004-2007 were the two periods when the dominant deprived neighborhoods generally had similar change pathways across the entire metro area, and that 2007-2010 was the period when deprived neighborhoods experienced a “relative rebound,” having either average or above-average changes.

Foote and Walter (2016) provide a similar analysis focusing on neighborhood and socioeconomic changes between 1980 and 2010 of three rapidly growing US metropolitan areas—Las Vegas, Nevada; Austin, Texas; and Raleigh, North Carolina. Using a K-means

clustering analysis and principal component analysis technique, the authors identify five types of neighborhoods, which they labeled as the following: stability (neighborhoods with older housing and long-term residents); suburban (neighborhoods with owner-occupied, new housing, and young residents); mixed new starts (neighborhoods with a mix of racial groups and housing types); immigrant starts (neighborhoods having a large composition of foreign-born residents); and minority-concentrated (neighborhoods with a large proportion of African Americans or Hispanics). They find that "suburban" neighborhoods were dominant across all MSAs in these three locations, while the number of "minority-concentrated" neighborhoods increased most rapidly over the study period.

These recent investigations show how researchers can explore more detailed patterns of urban neighborhood change than having just a binary classification system, yielding additional insights. In the literature, conventional K-means partitioning techniques are often adopted for this purpose. Although useful, this approach has some methodological limitations—specifically pertaining to the exogenous class number and identical spherical variance among all variables—and does not work perfectly for identifying an optimal set of neighborhood change pathways. Therefore, the present study adopts a finite normal mixture modeling approach, which enables us to compare the various clustering models to obtain the optimal class number, as well as the shapes and sizes of the variances for clustering. Furthermore, to examine which factors lead to the differences in neighborhood changes, I investigate the identified pathways through an additional set of exploratory analyses and logistic regression analyses.

3. 3. Study areas, data, and methodology

To examine the patterns of neighborhood change dynamics in contemporary urban spaces between 2000 and 2010, I reviewed the 10 most populous cities in the US: New York, Los Angeles, Chicago, Houston, Philadelphia, Phoenix, San Antonio, San Diego, Dallas, and San Jose. For all these cities, neighborhood evolution patterns were measured in terms of census tract-level sociodemographic characteristics. For both the 2000 and 2010 data, information regarding the total 6,366 census tracts within the 10 cities was primarily gathered from Geolytics's Neighborhood Change Database (NCDB), which provides a wide range of census information based on a consistent 2010 tract boundary definition.[1] Census boundary shapefiles and the United States Environmental Protection Agency's (EPA) Smart Location Database were also utilized to take into account each neighborhood's geographic position and built environment characteristics.

Table 1 summarizes the variables and the data sources used for this study. These include the tracts' racial/ethnicity compositions and other demographic attributes, as well as the residents' income levels, housing ownership status, educational attainments, and occupational characteristics. I used a spatial lag variable of median household income (Spatial.Lag.HH.Income) to distinguish tracts adjacent to wealthy neighborhoods, and thus, more likely to be influenced by a possible diffusion process (see, e.g., Guerrieri, Hartley, & Hurst, 2013; Tong & Kim, 2019), as opposed to those located in the middle of distressed areas.

To identify the major pathways of neighborhood change, I employed a cluster analysis method, as it can "bridge the … gap between the seemingly unique character of an individual

[1] The original sources of information are the 2000 census and the 2006-2010 American Community Survey, Five-Year Estimates.

Table 1. Variables and Data

Variables	Description	Data Source
White.Share	Share of White population in 2000	NCDB [b]
White.Share.Change [a]	Change in the White population share between 2000 and 2010	NCDB
Hispanic.Share	Share of Hispanic population in 2000	NCDB
Hispanic.Share.Change [a]	Change in the Hispanic population share between 2000 and 2010	NCDB
African.American.Share	Share of African American population in 2000	NCDB
African.American.Share.Change	Change in the African American population share between 2000 and 2010	NCDB
Asian.Share	Share of Asian population in 2000	NCDB
Asian.Share.Change	Change in the Asian population share between 2000 and 2010	NCDB
House.Value	Median housing value for specified owner-occupied housing units in 2000 (logged)	NCDB
House.Value.Change [a]	Change in the (logged) median housing value for specified owner-occupied housing units between 2000 and 2010	NCDB
HH.Income	Median household income in 1999 (logged)	NCDB
HH.Income.Change [a]	Change in the (logged) median household income between 1999 and 2009	NCDB
Ownership.Ratio	Share of owner-occupied housing units in 2000	NCDB
Ownership.Ratio.Change [a]	Change in the share of owner-occupied housing units between 2000 and 2010	NCDB
Married.Share	Share of married couple families in 2000	NCDB
Married.Share.Change	Change in the share of married couple families between 2000 and 2010	NCDB
High.Edu.Share	Share of population aged 25 or over with bachelor's degree or higher educational attainment in 2000	NCDB
High.Edu.Share.Change	Change in the share of population aged 25 or over with bachelor's degree or higher between 2000 and 2010	NCDB
Pro&Tech.Share	Share of population with professional or technical occupations in 2000	NCDB
Pro&Tech.Share.Change	Change in the share of population with professional or technical occupations between 2000 and 2010	NCDB
Unemployment.Rate	Unemployment rate in 1999	NCDB
Unemployment.Rate.Change	Change in the unemployment rate between 1999 and 2009	NCDB
Poverty.Rate	Share of population below poverty line in 1999	NCDB
Poverty.Rate.Change	Change in the share of population below poverty line between 1999 and 2009	NCDB
Young.Share	Share of population aged 25-44 in 2000	NCDB
Young.Share.Change	Change in the share of population aged 25-44 between 2000 and 2010	NCDB
Distance.CBD	Logged distance to the city's central business district	TIGER[c]

Jobs.HH.Ratio	Jobs per household in the census tract	SLD[d]
Street.Inter.Density	Street intersection density (weighted, auto-oriented intersections eliminated)	SLD
Spatial.Lag.HH.Income	Spatial lag of median household income in 1999 (logged)	NCDB

[a] Variables used in the second step of the cluster analysis; [b] Neighborhood Change Database, Geolytics; [c] Topologically Integrated Geographic Encoding and Referencing, US Census Bureau; [d] Smart Location Database, US Environmental Protection Agency.

Note: Ten (binary) city variables (e.g., New York, Los Angeles, Chicago, etc.) indicating where the tract was located are not listed here for brevity.

observation and the well-understood behavior of groups of similar observations" (Mikelbank, 2004, p. 936). More specifically, following Owens (2012), a two-step process was implemented to explore the diverse trajectories of neighborhood ascent. First, the census tracts that met the following two criteria were selected in order to focus on a subgroup of neighborhoods within the 10 cities often assumed to be "gentrified": (1) the tract's median household income had to be lower than the city average in 2000, and (2) the tract climbed up the city's income rank ladder from 2000 to 2010. Applying these two criteria yielded 1,839 tracts (out of a total of 6,366 tracts). These 1,839 tracts were then analyzed (i.e., clustered into multiple distinct classes) using a finite normal mixture modeling approach (in an R package, mclust) with a focus on the following five major indicators: (1) White.Share.Change, (2) Hispanic.Share.Change, (3) House.Value.Change, (4) HH.Income.Change, and (5) Ownership.Ratio.Change. This approach can endogenously determine the optimal model with the number of clusters based on the observation patterns captured in the data (see Fraley & Reftery, 1999). The approach compares 12 clustering models, including the unequal volume spherical model (VI), the equal volume and shape diagonal model (EEI), the unequal volume and shape diagonal model (VVI), and so on, among which, K-means clustering is also included in the comparison—termed as the equal volume spherical model (EI).

Once the two-step clustering was complete, each cluster representing a distinct pathway of neighborhood change was further investigated through an exploratory analysis of its group characteristics and logistic regression, designed to reveal the major factors behind each group. The exploratory analysis used the descriptive statistics of the variables listed in table 3 to capture the detailed features of each cluster, while the logistic regression was conducted to determine what led to neighborhood upgrading (i.e., selected through the first screening step of the cluster

analysis), as well as to determine each of the identified change patterns. The clustering and follow-up analyses were expected to provide a more comprehensive understanding of the diverse pathways of neighborhood change in America's 10 largest cities.

3.4. Results

3.4.1. Cluster analysis outcomes

Using the tract-level data of the 10 cities discussed above, I conducted a two-step cluster analysis. As described in the previous section, the first step was a screening process based on median household income, which identified 1,839 census tracts (neighborhoods)—approximately 30% of the total 6,366 census tracts considered—that rose from the bottom of each city's income ranking between 2000 and 2010. At 605 tracts, New York had the largest number, followed by Los Angeles and Chicago. San Diego, however, was ranked at the top in terms of the proportion of neighborhoods that grew from the city's bottom income ranking, having 92 out of 303 tracts (30.4%) that did so, as shown in figure 1 below.

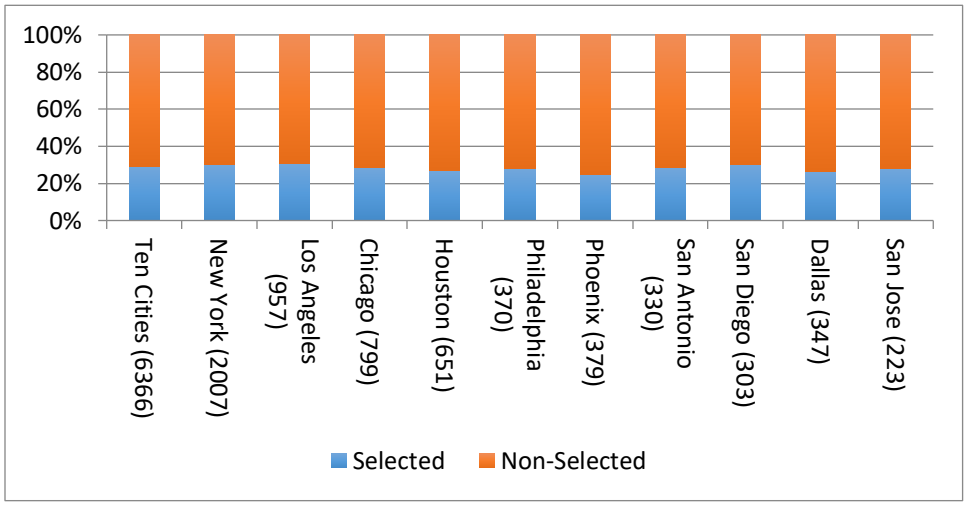

Figure 1. Selection Outcomes of Each City

Note: Numbers in parentheses represent the total number of census tracts in each city.

Unsurprisingly, the sociodemographic features of the selected tracts in the initial study year of 2000 were quite different from those of the unselected ones (see table 2). Specifically, the White population shares of the former were much lower than those of the latter, unselected group, with means of 41% and 58%, respectively; meanwhile, on average, the selected census tracts had larger shares of African Americans and Hispanics. In addition, the selected group was found to have relatively higher unemployment and poverty rates and lower incomes, educational attainment levels, and homeownership rates. The differences between the two groups were also apparent in their 2000-2010 change patterns. The selected tracts gained a large number of Whites, while the non-selected tracts showed a decline in their shares of this population. Furthermore, the data revealed that housing values, household incomes, and homeownership rates increased more rapidly in the selected tracts during the study period.

The second step of clustering involved finite mixture modeling. It revealed that the selected 1,839 census tracts could be categorized into eight distinct classes[2] representing unique pathways of neighborhood change that took place between 2000 and 2010, as summarized in table 3. The largest class, Class #1, had 626 observations, and the smallest class, Class #7, included only 39 neighborhoods. With the exception of Class #7, all classes were found to have at least one tract from each of the 10 cities.

[2] According to the finite mixture modeling, the diagonal, varying volume and shape model (VVI) with seven clusters shows the optimal Bayesian information criterion. The second and third optimal results are the ellipsoidal, equal orientation model (VVE) with five and eight classes, respectively.

Table 2. Selected Versus Nonselected Tracts

Variables	Mean of Selected Tracts	Mean of Non-selected Tracts
New York	0.329	0.310
Los Angeles	0.159	0.147
Chicago	0.124	0.126
Houston	0.096	0.105
Philadelphia	0.056	0.059
Phoenix	0.051	0.063
San Antonio	0.051	0.052
San Diego	0.050	0.047
Dallas	0.049	0.057
San Jose	0.034	0.035
White.Share	0.408	0.578
White.Share.Change	0.054	-0.015
Hispanic.Share	0.405	0.294
Hispanic.Share.Change	0.015	0.045
African.American.Share	0.299	0.233
Asian.Share	0.074	0.091
House.Value	11.753	12.037
House.Value.Change	0.720	0.566
HH.Income	10.206	10.718
HH.Income.Change	0.400	0.178
Ownership.Ratio	0.306	0.508
Owenship.Ratio.Change	0.043	0.008
Married.Share	0.352	0.444
High.Edu.Share	0.152	0.285
Prof&Tech.Share	0.079	0.135
Unemployment.Rate	0.120	0.074
Poverty.Rate	0.276	0.142
Young.Share	0.326	0.334
Distance.CBD	4.494	4.678
Jobs.HH.Ratio	13.767	7.656
Street.Inter.Density	100.931	93.412
Spatial.Lag.HH.Income	10.335	10.665

From table 3, it is clear that most of the classes involved an increase in their proportions of White population, with Class #5 as the most obvious one. This finding may suggest that urban neighborhood upgrading is often associated with a demographic mix change or even the displacement of minority population groups. However, importantly, the results showed that this was not always the case. Class #2, for instance, presented a pathway of neighborhood change

with a slight decrease (although rounded to 0 in the table) in the proportion of White population, thus defying one stereotypical view of gentrification.

Table 3. Eight Pathways of Neighborhood Change

Variable	Class #1	Class #2	Class #3	Class #4	Class #5	Class #6	Class #7	Class #8
White.Share.Change	0.026	-0.000	0.105	0.006	0.184	0.082	0.049	0.110
Hispanic.Share.Change	0.030	0.003	-0.082	-0.000	-0.088	0.079	-0.032	0.032
House.Value.Change	0.822	0.701	1.166	0.555	0.820	0.353	1.393	0.614
HH.Income.Change	0.348	0.324	0.611	0.538	0.956	0.175	0.473	0.384
Ownership.Ratio.Change	0.010	0.024	0.041	0.097	0.240	0.005	0.045	0.071
New York	267	58	87	100	17	6	23	47
Los Angeles	151	29	26	29	6	3	4	45
Chicago	27	41	14	49	20	30	5	42
Houston	37	13	9	10	8	59	0	40
Philadelphia	36	27	9	12	8	5	2	4
Phoenix	13	1	1	8	6	43	1	21
San Antonio	33	5	2	5	2	33	0	14
San Diego	44	12	5	11	4	2	1	13
Dallas	8	3	4	9	2	43	1	21
San Jose	10	4	1	6	0	33	2	7
Total Number of Tracts	626	193	158	239	73	257	39	254

3.4.2. Major characteristics of each class

I also undertook a further exploration to better understand the major characteristics of each class (see tables 4 and 5).

As mentioned above, the results showed that the Class #1 category contained the largest number of tracts: 626 out of 1,839 tracts. Additionally, the findings showed that 66.8% of Class #1 tracts were located in New York City and the City of Los Angeles. Tracts in this group were characterized as having the smallest proportions of populations with professional and technical occupations (7.3%); furthermore, the share of the population having higher educational attainment was also found to be small. In the study period, the demographic changes, such as changes in racial composition, income, and education levels, in this group of tracts were at

moderate levels. In addition, as shown in Table 4, a majority of Class #1 tracts were found to have income increased by less than one decile.

Class #2 tracts were found to present relatively unique sociodemographic and change patterns. Unlike most of the other groups, most residents in Class #2 were African Americans; on average, they consisted of 52.1% of the population. Also, during the study period, Class #2 was the only group with a decrease in its share of White population, although the change was found to be subtle. In addition, as shown in table 4, which presents the percentages of census tracts within each group that experienced certain racial/ethnic changes, there was a relatively lower percentage of Class #2 tracts that experienced increases in their shares of the White population. Furthermore, changes in the shares of other racial/ethnic groups were found to be very small, as well. Although there was a 1.3 percentage-point decrease in the share of African Americans in

Table 4. Percentages of Census Tracts Experienced Certain Racial/Ethnic and Income Changes Within Each Group

Racial/Ethnic Changes	**Class #1**	**Class #2**	**Class #3**	**Class #4**	**Class #5**	**Class #6**	**Class #7**	**Class #8**
White.Share.Increase	0.564	0.492	0.785	0.586	0.863	0.739	0.564	0.697
African.American.Share.Decrease	0.666	0.642	0.658	0.749	0.740	0.677	0.795	0.717
Hispanic.Share.Decrease	0.334	0.404	0.785	0.469	0.671	0.226	0.615	0.398
Asian.Share.Decrease	0.510	0.544	0.335	0.381	0.329	0.595	0.385	0.480
Income.Increase.Less.Than.One.Decile	0.367	0.311	0.108	0.176	0.014	0.545	0.359	0.161
Income.Increase.One.Decile	0.447	0.466	0.158	0.205	0.041	0.440	0.333	0.346
Income.Increase.Two.Deciles	0.163	0.181	0.247	0.238	0.082	0.016	0.154	0.331
Income.Increase.Three Deciles	0.022	0.036	0.247	0.234	0.137	0.000	0.103	0.142
Income.Increase.Four.Deciles	0.000	0.005	0.152	0.071	0.151	0.000	0.026	0.016
Income.Increase.More.Than.Five.Deciles	0.000	0.000	0.089	0.075	0.575	0.000	0.026	0.004

Table 5. Descriptive Statistics

Variable	Class #1	Class #2	Class #3	Class #4	Class #5	Class #6	Class #7	Class #8
New York	0.427	0.301	0.551	0.418	0.233	0.023	0.590	0.185
Los Angeles	0.241	0.150	0.165	0.121	0.082	0.012	0.103	0.177
Chicago	0.043	0.212	0.089	0.205	0.274	0.117	0.128	0.165
Houston	0.059	0.067	0.057	0.042	0.110	0.230	0.000	0.157
Philadelphia	0.058	0.140	0.057	0.050	0.110	0.019	0.051	0.016
Phoenix	0.021	0.005	0.006	0.033	0.082	0.167	0.026	0.083
San Antonio	0.053	0.026	0.013	0.021	0.027	0.128	0.000	0.055
San Diego	0.070	0.062	0.032	0.046	0.055	0.008	0.026	0.051
Dallas	0.013	0.016	0.025	0.038	0.027	0.167	0.026	0.083
San Jose	0.016	0.021	0.006	0.025	0.000	0.128	0.051	0.028
White.Share.	0.421	0.311	0.391	0.366	0.413	0.483	0.342	0.434
White.Share.Change	0.026	0.000	0.105	0.006	0.184	0.082	0.049	0.110
Hispanic.Share	0.448	0.230	0.444	0.238	0.356	0.496	0.372	0.490
Hispanic.Share.Change	0.030	0.003	-0.082	0.000	-0.088	0.079	-0.032	0.032
African.American.Share	0.242	0.521	0.289	0.429	0.328	0.208	0.332	0.231
African.American.Sh-.Ch-.	-0.034	-0.013	-0.051	-0.037	-0.123	-0.027	-0.051	-0.042
Asian.Share	0.093	0.046	0.070	0.080	0.054	0.056	0.119	0.059
Asian.Share.Change	0.013	0.001	0.016	0.013	0.031	-0.001	0.027	0.013
House.Value	11.849	11.712	11.880	12.059	11.860	11.385	10.864	11.658
House.Value.Change	0.822	0.701	1.166	0.538	0.820	0.353	1.393	0.614
HH.Income	10.198	10.186	10.122	10.128	10.095	10.366	10.019	10.269
HH.Income.Change	0.348	0.324	0.611	0.536	0.956	0.175	0.473	0.384
Ownership.Ratio	0.290	0.312	0.201	0.241	0.258	0.457	0.165	0.353
Ownership.Ratio.Change	0.010	0.024	0.041	0.097	0.240	0.005	0.045	0.071
Married.Share	0.369	0.314	0.319	0.303	0.302	0.405	0.303	0.372
Married.Share.Change	0.000	-0.003	0.008	0.023	0.048	-0.012	0.041	0.006
High.Edu.Share	0.141	0.159	0.156	0.202	0.182	0.130	0.153	0.136
High.Edu.Share.Change	-0.010	-0.022	0.055	-0.018	0.074	-0.032	0.015	-0.001
Pro&Tech.Share	0.073	0.086	0.082	0.096	0.087	0.075	0.074	0.073
Pro&Tech.Share.Change	0.034	0.021	0.056	0.029	0.077	0.042	0.048	0.045
Unemployment.Rate	0.119	0.135	0.133	0.140	0.131	0.090	0.151	0.108
Unemployment.Rate.Change	-0.042	-0.045	-0.062	-0.062	-0.063	-0.014	-0.080	-0.030
Poverty.Rate	0.283	0.278	0.307	0.293	0.308	0.222	0.343	0.259
Poverty.Rate.Change	-0.021	-0.017	-0.078	-0.059	-0.116	0.048	-0.079	-0.025
Young.Share	0.323	0.309	0.344	0.331	0.325	0.326	0.331	0.327
Young.Share.Change	-0.007	-0.019	0.032	-0.003	0.079	-0.016	-0.005	-0.004
Distance.CBD	4.552	4.481	4.310	4.400	4.217	4.647	4.374	4.510
Jobs.HH.Ratio	32.991	0.986	8.073	2.433	14.873	2.242	6.718	2.733
Street.Inter.Density	100.80	104.51	116.66	114.04	100.88	82.79	108.88	93.52
Spatial.Lag.HH.Income	10.318	10.272	10.312	10.308	10.447	10.437	10.288	10.337

Class #2 tracts, this change amount was the smallest among all eight groups. Additionally, a majority of Class #2 tracts were found to have income increased by one or less than one decile. Moreover, Class #2 tracts had the smallest change in their shares of people holding technical and professional occupations (an increase of 2.1 percentage points). This group also had the lowest share of young people in 2000—30.9% on average—which continued to decline in 2010, yielding a 1.9 percentage-point drop. The data showed that these tracts were found to be surrounded by poor neighborhoods, as indicated by a low mean value of the Spatial.Lag.HH.Income.

Class #3 tracts contained the largest shares of young people in 2000—34.4%, on average—compared to all others. Tracts in this group revealed some clear characteristics of the general and widespread view about gentrification: relatively large increases in the share of White population (+10.5 percentage points), house value (+1.116 in logged value), household income (+0.611 in logged value), education attainment (+5.5 percentage points), and relatively large decreases in shares of Hispanics (-8.2% percentage points) and African Americans (-5.1 percentage points), as well as decreases in both the poverty rate (-7.8 percentage points) and the unemployment rate (-6.2 percentage points). It is also found that a large number of Class #3 tracts had income increased by more than two deciles.

The tracts in Class #4, similar to Class #2, consisted of relatively large shares of African Americans (42.9% on average). The data also showed that the shares of White population (+0.6 percentage points) and Hispanic population (-0.0 percentage points) in this group remained almost unchanged in the 10-year period. However, the population share of African Americans had a larger decrease (-3.7 percentage points) than was the case for Class #2. Furthermore, as shown in table 4, there was a large portion of census tracts in Class #4 that experienced increases

in their shares of Whites and decreases in their shares of African Americans. Unlike those in Class #2, tracts in Class #4 had the highest average home values (12.059 in logged value on average), greatest shares of populations with high educational attainment (20.2% on average), and the most amount of people holding professional and technical occupations (9.6% on average). More importantly, it was found that Class #4 had many tracts with improvements over incomes, more than half of the tracts experienced income increase by more than two deciles.

Tracts in Class #5 were found to have the greatest changes in many variables in a direction that is frequently associated with concerns about gentrification and displacement. The tracts in Class #5 had the greatest increases in their shares of White (+18.4 percentage points) and Asians (+3.1 percentage points), while their shares of Hispanics and African Americans decreased significantly between 2000 and 2010, dropping 8.8 and 12.3 percentage points, respectively. In addition, this group had the greatest increase in household income (+0.956 in logged value on average), and it is really important to mention that more than half of the tracts in this class experienced income increase by more than five deciles. Also, tracts in of class had the largest improvement over homeownership (+24.0 percentage points), marriage status (+4.8 percentage points), educational attainment (+7.4 percentage points), share of professional and technical occupations (+7.7 percentage points), and share of young population (+7.9 percentage points), and the largest decrease in poverty rate (-11.6 percentage points). It is worth noting that the tracts in this class were located next to wealthy neighborhoods.

The socioeconomic status of tracts in Class #6 was relatively higher compared to other groups. Although these tracts were selected from the bottom half of each city in terms of income using the first step of this analysis, this group had the highest household income (10.366 in logged value on average). In addition, Class #6 tracts had the largest shares of Whites (48.3% on

average) and Hispanics (49.6% on average) and the smallest shares of African Americans (20.8% on average). Moreover, this group had the highest homeownership rates (45.7% on average), and the lowest poverty (22.2% on average) and unemployment (9% on average) rates. However, between 2000 and 2010, this group also had the smallest improvement in nearly all variables and more than 98% of tracts had income increased equal or less than one decile.

Among all eight classes, the tracts in Class #7 showed the poorest economic situation in 2000. The tracts in this group had the highest poverty rates (34.3% on average) and the lowest average household incomes (10.019 in logged value on average). The overall unemployment rate of this group in 2000 was the lowest, at 15.1% on average, but this rate had decreased substantially by 2010, with a drop of eight percentage points. In addition, the overall homeownership rate of this group was the smallest among all classes (16.5% on average). Although its home values were low initially, they rose very quickly between 2000 and 2010, as these neighborhoods experienced upgrading over the course of that decade. The data showed that the shares of Asians in the tracts of Class #7 was the largest among all groups (11.9% on average).

Class #8 tracts were spread relatively evenly across all 10 cities. The tracts in this class had the lowest shares of people holding professional and technical occupations (7.3% on average; the same as the Class #1 tracts). Meanwhile, their share of White population was relatively high (11.0% on average). Among the eight groups, Class #8 was relative stable during the study period for most variables, although about 70% of the tracts in Class #8 experienced increases in their shares of White population and approximately 72% of its tracts experienced decreases in their shares of African Americans, although the magnitudes of these changes were small.

It should be noted that the classes were not evenly distributed across the 10 cities. Classes #1 and #4 made up over one half of the total selected tracts in New York, Los Angeles, and San Diego. Chicago had a relatively larger proportion of tracts categorized as Classes #2, #4, and #8. In other cities, Class #6 was found to account for the largest share of tracts.

The class distributions within each city suggest that neighborhood change is a complex, spatially-interdependent process. For instance, in Los Angeles, the selected tracts in which neighborhood upgrading took place were found to be clustered around the downtown area (see figure 2). Furthermore, the Moran's I statistics for the individual classes (computed with a binary variable for each class: 1, if a tract was categorized into the class, and 0 otherwise) indicated that tracts belonging to the same class tended to be located close to each other (e.g., for Class 2, Moran's I: +0.115, z-score: 4.110). All of the classes, with the exception of Class #7, showed significant, positive spatial autocorrelations.

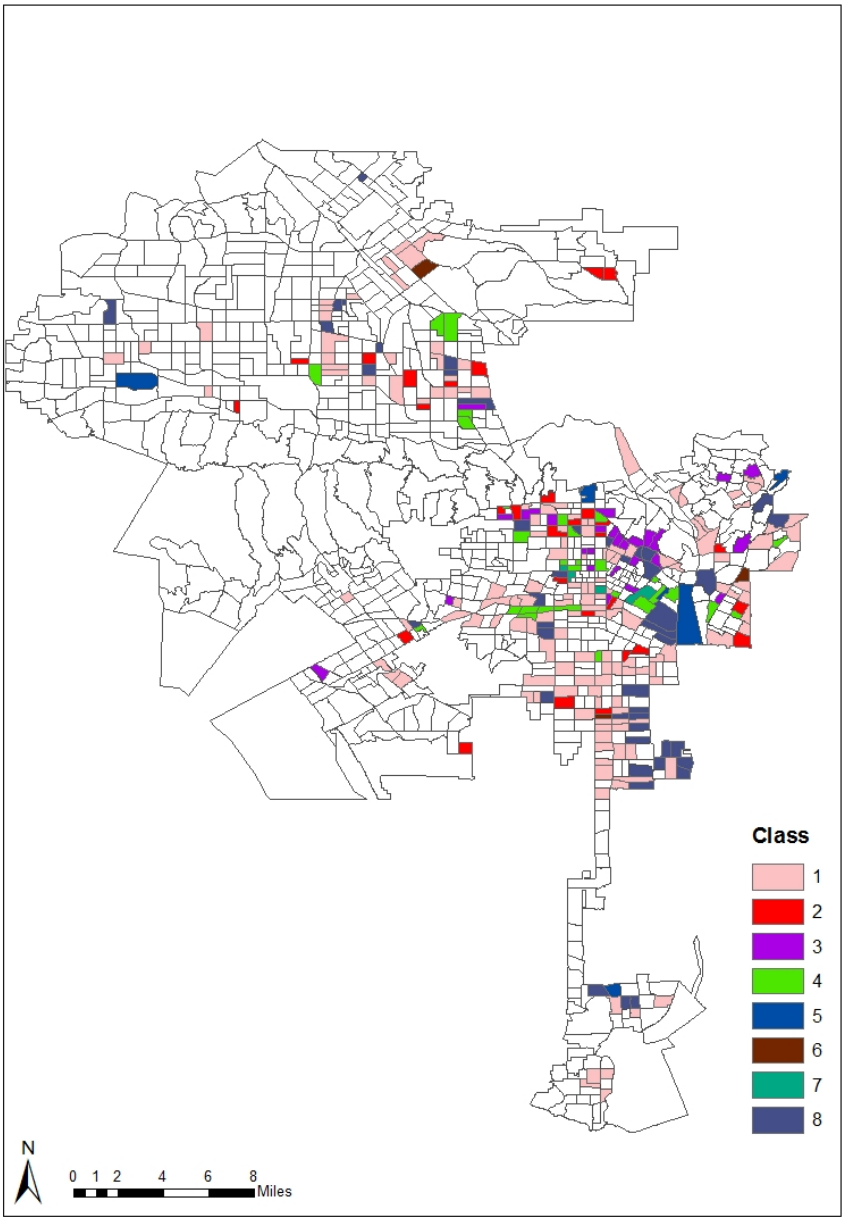

Figure 2. Spatial Distribution – Los Angele

3.4.3. Logistic regression

Based on the cluster analysis outcomes, nine logistic regression models were estimated to determine the factors behind neighborhood upgrading (model #1) and each class (models #2-1 to #2-8). The results of these logistic regression models are presented in table 6.

Pulling data from all 6,366 tracts in the 10 cities, including both the 1,839 selected tracts (y=1) and the 4,527 unselected ones (y=0), model #1 provided information about what allowed neighborhoods to be successful in climbing up the income ladder, leading them to be selected via the screening process. Among other factors, the results revealed that proximity to CBDs did matter—a shorter distance appeared to increase the probability of neighborhood upgrading. It also suggests that the odds ratio was negatively associated with unemployment rate and poverty rate in 2000. In contrast, a higher average housing value and a larger share of young population appeared to raise the probability significantly. It is also not surprising to find out that household income was negatively associated with neighborhood upgrading. It should also be noted that neighborhoods in New York, Chicago, Houston, San Antonio, San Diego and San Jose were likely to be identified as upgraded neighborhood.

The remaining eight models, models #2-1 through #2-8, showed under what circumstances neighborhoods were likely to follow each of the eight identified pathways. For instance, neighborhoods in New York were more likely to lead to a Class #3 or Class #7 type of neighborhood transition, while it tended to be a decreased odds ratio for Class #2 or Class #8. Meanwhile, Class #5 was more likely to be found in Chicago and Philadelphia. The residents' socioeconomic status in the initial year could make a difference as well. A higher proportion of African American population was found to lead to the #2 or #4 type of neighborhood transition, while it tended to decrease the odd ratio for Class #5 or #8. The residents' educational attainment

Table 6. Logistic Regression Outcomes

Variable	Model 1	Model 2-1	Model 2-2	Model 2-3	Model 2-4	Model 2-5	Model 2-6	Model 2-7	Model 2-8
	Selected or not	Class #1	Class #2	Class #3	Class #4	Class #5	Class #6	Class #7	Class #8
New York	0.781***	-0.089	-1.364***	1.119***	-0.038	0.014	0.384	1.484*	-0.470
Chicago	0.309*	-1.629***	-0.787*	-0.058	0.027	1.299*	3.553***	0.458	0.605*
Houston	0.517**	-1.334***	-1.541***	-0.387	-0.079	1.847*	4.385***	--	1.144**
Philadelphia	-0.798**	0.158	-0.389	0.204	-0.361	2.552**	3.443***	-0.845	-0.773
Phoenix	0.172	-1.764***	-2.839**	-2.697*	0.606	1.610*	5.339***	-0.122	0.385
San Antonio	0.825**	-1.974***	-1.533	0.009	0.604	2.666	2.073*	--	0.762
San Diego	1.029***	0.318	-0.233	-0.927	-0.362	0.125	1.528	0.431	0.074
Dallas	0.297	-2.157***	-2.222***	-0.734	0.506	0.343	5.360***	-0.563	0.860*
San Jose	3.352***	-1.422**	-0.646	-2.455	-0.132	--	5.681***	3.942**	-0.948
White.Share.	-1.140	2.177*	5.102*	-0.297	3.761	-6.933**	-1.619	4.948	-4.979***
Hispanic.Share	-0.159	1.719*	0.659	0.853	0.127	-2.823	0.377	3.330	-2.754**
African.American.Share	-1.256	1.563	6.126**	-0.488	4.338*	-6.764*	-0.519	4.403	-6.007***
Asian.Share	-1.586	3.768**	1.036	-2.165	3.687	-9.080**	0.160	8.079	-5.180***
House.Value	0.378***	0.003	-0.134	-0.110	0.978***	1.099**	0.152	-1.720***	0.265
HH.Income	-6.915***	0.739	1.288*	-1.052	-1.466**	-2.171*	1.144	-1.018	1.821**
Ownership.Ratio	0.950**	-0.121	-1.333	-1.240	0.980	0.912	-0.475	-2.348	0.223
Married.Share	0.096	0.602	1.840	0.457	-0.459	-3.480	1.828	-3.440	-3.023*
High Edu.Share	-0.808	-1.210	1.071	-3.724	3.821*	3.320	-5.863*	3.033	-3.395
Pro&Tech.Share	-0.101	-0.594	-1.107	7.537	-3.588	-7.885	7.144	-1.606	1.313
Unemployment.Rate	-3.113**	-0.056	-0.111	0.369	2.481	-1.264	-2.058	-1.801	-2.938
Poverty.Rate	-4.650***	1.305	-0.830	-0.319	-0.211	1.747	-1.059	-0.287	0.467
Young.Share	4.612***	-1.360	-3.547	7.502***	2.446	-3.454	3.069	3.461	-1.612
Distance.CBD	-0.655***	0.638**	0.026	-0.944***	-0.089	-0.959**	2.006***	0.712	0.116
Jobs.HH.Ratio	0.000	0.000	-0.035	0.000	-0.004	0.000	-0.013	0.000	0.000
Street.Inter.Density	0.000	0.000	0.000	0.003*	0.002	-0.005	0.000	-0.002	-0.001
Spatial.Lag.HH.Income	-0.058	-0.560	-0.933*	0.763	-0.315	5.132***	-1.093*	-0.557	-0.900*
Pseudo R_2	0.338	0.121	0.145	0.138	0.155	0.226	0.373	0.282	0.078

Note. *** = 0.1% significance level; ** = 1% significance level; * = 5% significance level.

in the initial year (i.e., High.Edu.Share) were significant in explaining the different pathways as well – i.e., it raised the probability of Classes #4 and #6, while prevented neighborhoods from following the second pathway which involved a dramatic house price escalation. Housing value, median household income, and some other demographic characteristics also appeared to be tightly associated with the probabilities, while the share of professional and technical population, homeownership, unemployment rates and poverty rates turned out to be an insignificant predictor for the determination of detailed pathways of neighborhood upgrading.

The results of model 2-2 showed the factors that could contribute to a census tract to be identified as Class #2, which presented the possibility of ascending without a massive White influx. Neighborhoods with higher shares of both White and African American populations were likely to be associated with a larger likelihood of being identified as a Class #2 tract. Whereas, neighborhoods with a lower income level of surrounding neighborhoods were more likely to be identified as Class #2 tracts. The results also showed that Class #2 neighborhoods tended to be located farther from CBDs. In addition, compared to neighborhoods in Los Angeles, those located in New York, Houston, Phoenix, and Dallas were less likely to be Class #2 tracts.

It should be stressed that the income level of surrounding neighborhoods (i.e., Spatial.Lag.HH.Income) had a significant effect on the transitions. The results suggested that census tracts adjacent to, or surrounded by, wealthy neighborhoods (i.e., those having a high level of Spatial.Lag.HH.Income) were more likely to be categorized as Class #5, which exhibits many of the attributes of the traditional idea of gentrification, rather than as Class #2 or some other pathway. This is consistent with both the phenomenon of "endogenous gentrification" (Guerrieri, Hartley, & Hurst, 2013) and the wealth clustering process that Tong and Kim (2019) discuss. In addition, the estimated coefficients on another location variable (Distance.CBD) also

indicated that proximity to core areas increased the odds ratio for Class #3, Class #4, and Class #5, while I found that this variable limited the occurrence of the Class #1, Class #2, or Class #6 pathways. These findings seemed to reveal the importance of locational position and the spatially interdependent nature of urban neighborhood change processes.

3.5. Summary and discussion

To reveal the full breadth of current neighborhood change dynamics, this study investigated how urban neighborhoods were transformed between 2000 and 2010 in 10 large American cities. This work was accomplished by employing a two-step cluster analysis approach, which enabled me to identify eight distinct trajectories of inner-city neighborhood change. Additionally, I explored the detailed characteristics of the identified trajectories through a set of exploratory analyses and logistic regression analyses.

Among other findings, the results suggested that inner-city neighborhood upgrading could take place in various ways. While most neighborhoods exhibited a decrease in the percentage of their non-White populations, neighborhood ascent did not always involve massive racial/ethnic displacement. More specifically, one of the eight identified pathways, Class #2 (which included 193 census tracts), showed the possibility of inner-city neighborhood improvement without a significant increase in the share of White population nor a significant decrease in its non-White population, which defies the conventional understanding of gentrification. From the results, it was also apparent that contemporary neighborhood change patterns were indeed diverse in terms of homeownership, housing price appreciation, and other indicators, and thus, could not be described simply as a dichotomous process.

It should also be stressed that inner-city neighborhood change was a spatially-interdependent process. Neighborhoods situated far from a city's CBD were more likely to take a pathway with a more rapid increase in its Hispanic population (i.e., Class #6), while those at the core showed quite distinct trajectories of change. Furthermore, proximity to wealthier neighborhoods (measured using a spatial lag variable: Spatial.Lag.HH.Income) was also found to have an effect on the change pattern, suggesting that neighborhood upgrading near affluent areas—often described as a diffusion process—was not identical to that occurring in more distressed areas. Neighborhoods located adjacent to wealthier neighborhoods were more likely to be identified with typical attributes of gentrification (i.e., Class #5), whereas tracts that showed upgrading without a massive White influx tended to have low-income neighbors (i.e., Class #2).

The displacement of disadvantaged populations is often assumed to be an unavoidable consequence of inner-city neighborhood transformation; however, we should ask whether this perception is actually true. The analyses here showed that neighborhood upgrading did not necessarily involve a dramatic shift in racial/ethnic compositions, suggesting the possibility of more inclusive revitalization processes in urban areas. Affordable housing provisions or other policy means may have been significant in this regard, and more attention should be directed toward ways to make the possibility a reality. Future research also needs to uncover the complex, spatially-interdependent mechanisms of neighborhood transformations, which, in turn, can support context-specific policy/planning interventions to protect disadvantaged groups under various circumstances.

Although this work presents the possibility of neighborhood upgrading without massive racial changes—in other words, upgrading without racial displacement—the use of aggregated census statistics limited my ability to capture the detailed dynamics at play within each

neighborhood. Thus, even if a certain neighborhood fell into an identified group, it still would have been inaccurate to consider that the neighborhood followed all of the characteristics of that class. Hence, to further explore the distinguishing patterns of neighborhood change dynamics, disaggregated information is required. In the following chapter, I take this research a further step to examine neighborhood upgrading and displacement both within and across racial groups based on exploratory analyses and disaggregated information obtained through field study.

Chapter 4. Residential Displacement Within and Across Races: Southern California in the 2000s

4.1. Introduction

As discussed in previous chapters, a considerable number of neighborhoods in large metropolitan areas around the world have experienced dramatic upgrading in recent decades. These changes have brought improvements in many regards, such as housing quality, street cleanliness, and a wider variety of businesses. However, many residents have not been excited about these types of improvements brought by neighborhood upgrading. Instead, many individuals and groups have felt fear of being displaced, and this concern has been expressed in many ways. For instance, residents in upgraded neighborhoods in Los Angeles, such as those in Highland Park and Boyle Heights, have expressed their anxiety about such changes. They protested on York Boulevard to express their concerns about neighborhood upgrading and took actions to hinder newcomers from coming into their neighborhoods since newcomers "neglect the displacement of others" (Silva, 2014; Aron, 2016).

Besides local residents' anxiety, scholarly attention is increasingly drawing connections between neighborhood upgrading and residential displacement. A growing number of researchers deem that neighborhood upgrading is often—if not always—associated with displacement (He, 2010; Landis, 2016). They argue that displacement is an unavoidable result of neighborhood upgrading due to the desire for less expensive residences or difficulty of paying higher rent or mortgage, harassment by landlords, evictions, displacements by private action, dealing with nearby urban renewal or highway construction projects, and so forth (Newman & Wyly, 2006). On the other hand, there are scholars who contend that neighborhood upgrading does not necessarily bring a lot of harm to the poor. In their view, there is not enough evidence

showing causality between neighborhood upgrading and displacement. Rather, they find that a great portion of lower-socioeconomic-status residents had engaged in great efforts to be able to remain in their homes and that existing residents have benefitted from their improved neighborhoods in many aspects (e.g., Brummet & Reed, 2019; Dragan, Ellen, & Glied, 2019; Freeman & Braconi, 2004).

Much of the discussion on neighborhood upgrading and displacement is accompanied by conversations about race/ethnicity. Most studies dealing with this controversial issue pay attention to the statistics of displacement across races, primarily the displacement of African Americans by Whites (e.g., Spain, 1980; Wilson, 1992). Yet, this common and stereotypical view about displacement limits our understanding of the full scope of changing processes. Although Whites are the major group to displace others in the US, it is important to point out that urban neighborhood upgrading is more of a class-based transition process, in which more affluent residents move into and upgrade lower-income neighborhoods (Moore, 2009).

Indeed, due to the recent population growth of some racial/ethnic minorities, Whites are no longer the only group identified as "gentrifiers" who displace others (Anderson & Sternberg, 2013; Hyra, 2008). Signs of displacement by minority groups are discussed in several studies that examine changing neighborhood patterns of large metropolitan areas in the US, such as New York and Chicago (e.g., Anderson & Sternberg, 2013; Moore, 2009). The previous chapter of this dissertation also revealed the possibility of neighborhood upgrading without massive White influxes. On another hand, there is research that finds that the race/ethnicity of prior residents in housing units has a strong impact on the race/ethnicity of the in-moving residents; this work shows that new residents often prefer to move into units where the prior residents were of the same race/ethnicity as them (Hipp, 2012; Sampson, 2012). However, among the limited number

of studies that investigate displacement by minorities, the race/ethnicity of the "gentrifiers" are often the focus, while the displaced residents are rarely discussed or compared. Therefore, thus far, little attention is being paid to investigate displacement within racial/ethnic groups.

This chapter explores recent neighborhood upgrading and possible displacement dynamics in Southern California to examine whether displacement within and across racial/ethnic groups occurs along with neighborhood upgrading. This chapter also discusses how various people perceive such changes. More specifically, this study examines neighborhood upgrading processes in Southern California neighborhoods through two methods: (1) measures based on secondary data, and (2) interviews with representatives from neighborhood councils. Particularly, this work focuses on four neighborhoods in Greater Los Angeles: Highland Park, Elysian Valley, Sherman Oaks, and Van Nuys. In so doing, my hope is that the present study will help scholars and urban planners better understand displacement both within and across races and also demonstrate each method's merits and limitations in capturing displacement trends.

4.2. Literature review

4.2.1. Neighborhood upgrading and displacement

As more and more local residents have expressed concerns about neighborhood displacement, with some of these voices being amplified by media reports, increasing attention has been paid to the association between displacement and neighborhood upgrading in general. Although it is inconclusive that neighborhood upgrading always induces displacement, many scholars deem that displacement is a natural consequence of neighborhood upgrading. For instance, the organization Causa Justa :: Just Cause (2014) uses the San Francisco Bay Area as a case to better understand gentrification and displacement, and how people are affected by these

processes. The study suggests that in the Bay Area, the majority of poor residents have been suffering from displacement caused by gentrification. Although the residents have tried hard to avoid the negative consequences of gentrification, they have been able to do little to change the situation by themselves. Similarly, in other studies, neighborhood upgrading-induced (or gentrification-induced) displacement is discussed in cities like Shanghai, New York, and many other large metropolitan areas around the world (e.g., He, 2010; Landis, 2016; Newman & Wyly, 2006).

On the other hand, there are scholars who argue that displacement does not always co-occur with neighborhood upgrading. For instance, Henig (1980) analyzes R. L. Polk & Company's Profiles of Change dataset to detect gentrification and displacement and finds that the correlation between gentrification and displacement is weak. In some cases, the in-movement of professionals and the in-movement of vulnerable populations can occur together, indicating that gentrification does not always lead to displacement. Additionally, Freeman and Braconi (2004) point out that gentrification may not bring significant harm to the poor. By examining the New York City Housing and Vacancy Survey, they find that contrary to what is typically assumed, mobility rates in the gentrified neighborhoods have been lower than those in other, non-gentrified neighborhoods. Thus, they suggest that gentrification and displacement are not interrelated, but rather, that residents with lower socioeconomic status make greater efforts to remain in their dwellings than others do. Furthermore, some authors state that with neighborhood upgrading, there may be new opportunities and improved amenities brought to the low-income residents. This view is supported in a study by Freeman (2005), which concludes that "the results would not seem to imply that displacement is the primary mechanism through which gentrifying neighborhoods undergo socioeconomic change" (p. 480). Other recent studies express similar

opinions. For instance, Brummet and Reed (2019) contend that the changes in neighborhoods have mostly been driven by in-movers, whereas out-migration/direct displacement may not have played an important role in shaping the changes in the 100 largest US metropolitan areas. In fact, they find that the original residents who stayed are now benefiting from their upgraded neighborhoods, such as in terms of decreased poverty exposure and better environments for their children's growth. Similarly, Dragan, Ellen, and Glied (2019) discover that there was no significant association between NYC gentrification and the out-migration of low-income children in the period 2009-2015.

Among the large volume of research focused on neighborhood upgrading, a significant portion of it examines racial displacement, in which displacement is measured as the proportion of Whites replaced minority racial/ethnic households (e.g., Spain, 1980; Wilson, 1992). However, some scholars also provide anecdotal evidence regarding the possibility of displacement by minority racial/ethnic groups. For instance, Bostic and Martin (2003) use regression models to prove that Black homeowners were a gentrifying influence in the 1970s. In addition, McKinnish et al. (2010) suggest that neighborhoods that were previously dominant by black population have been attractive to middle-class Black households (2010). Moreover, Ellen et al. (2012) discuss the finding that some previously White neighborhoods have become more integrated through the growth of non-White populations. In other words, White population may not be the only group of "gentrifiers" displacing others. Indeed, such patterns of non-White gentrification have been found in various metro areas, including New York, Chicago, and Philadelphia (Boyd, 2005; Moore, 2005; Taylor, 2002).

Historically, minority middle-class residents have experienced different constraints compared to White middle-class households in terms of residential location choices, mostly

because of race-based housing restrictions. These constraints have limited minority middle-class residents' housing choices, but in the meanwhile, they have forced some minority middle-class households to reside in "gentrifiable neighborhoods" and become "gentrifiers" themselves (Bostic & Martin, 2003). Some middle-class Black families feel that, culturally, they have substantial differences with their White counterparts, and thus they choose to move into Black community neighborhoods so that they can "participate in the rituals that define daily life in this (in)famous and historically black community" (Taylor, 1992, p. 102). Meanwhile, research shows that some middle-class Black households choose to move into African American neighborhoods because of their desire to give back and help the Black community; this is done as part of their "commitment to racial uplift" (Moore, 2009, p. 129). They believe that their contribution to the African American community can create a spillover effect and improve the impression of others about historically Black neighborhoods, and about African Americans as a whole. In fact, in recent years, several historically Black neighborhoods have been attempting to attract more middle-class African Americans as part of an overall strategy for racial uplift (Boyd, 2005).

However, it is argued that such influxes of middle-class minorities, just like other types of neighborhood upgrading, can generate concerns. Increased housing and living costs and fears over poor residents' displacement in upgraded neighborhoods can be problems within the gentrification process driven by minority groups. Displacement in such cases can be even more difficult to investigate because the minority middle class and the displaced residents share common characteristics and because any conflicts of interest are often obscured by the entire community (Boyd, 2005).

As discussed, the majority of studies in the literature explore the phenomenon of how Whites displace other groups (e.g., Guerrieri et al., 2013; Landis, 2016), while only a small group of scholars focus their work on the emerging phenomenon of displacement by minority middle-class populations. Additionally, the focus of these minority displacement studies primarily examine the situation of African Americans alone. Still, among the studies on neighborhood change and displacement, displacement within the same races have not gained much attention. Neglecting displacements within the same racial/ethnic groups constrain our understanding of the full complexity of neighborhood upgrading processes, which prevents us from fully comprehending the association between displacement and neighborhood change. Thus, the present work delves more deeply into this subject in order to paint a bigger picture.

4.2.2. Measurements of displacement

As Grier and Grier (1978) point out, it is hard to obtain a universally agreed-upon definition of displacement. One definition Grier and Grier themselves provide has been widely adopted in the literature: "Displacement occurs when any household is forced to move from its residence by conditions which affect the dwelling or its immediate surroundings, and which: 1. are beyond the household's reasonable ability to control or prevent; 2. occur despite the household's having met all previously imposed conditions of occupancy; 3. make continued occupancy by that household impossible, conditions of occupancy; and hazardous, or unaffordable" (Grier & Grier, 1978). Based on this definition, two major approaches seek to identify such movements: tracking changes in socioeconomic characteristics, and investigating the reasons why people leave.

The first approach is supported by the succession-invasion theory. Scholars who adopt this tack see in-movers and out-movers as having distinct characteristics. Based on the succession-invasion theory, investigators measure displacement through changes in the composition of a neighborhood's residents, most especially, racial composition changes. For instance, Spain (1980) examines Black-to-White population transitions within city centers that occurred in the 1960s and 1970s using the nationwide Annual Housing Survey. The author finds that the percentage of such Black-to-White transitions rose gradually during this period, from an annual average of 1.3% in 1967-1971 to 4.0% in 1975-1976. This finding indicates that the overall displacement of inner-city Blacks by Whites has not been a large numerical problem. That said, Spain also finds that when there was a transition, the income and educational levels of White in-movers were significantly greater than was the case for Black out-movers.

Succession studies help us detect socioeconomic changes among populations on an aggregate level. Although valuable, these investigations have difficulties in determining whether housing or neighborhood transitions have happened involuntarily, as these studies do not incorporate the reasons as to why the families moved. Thus, in order to determine levels of involuntariness, other scholars investigate displacement by asking residents why they changed their places of residence. Some researchers perform this work by taking advantage of secondary datasets that provide answers to questions regarding reasons for moving. For instance, Freeman (2005) examines the relationship between gentrification and displacement by reviewing a longitudinal dataset that traces people's movements—the Panel Study of Income Dynamics (PSID). In this study, Freeman defines displacees as those who give their reason for moving in the previous year as due to wanting to consume less space; wanting to pay less rent; or as a

response to outside events, including being evicted, health reasons, divorce, joining the armed services, or some involuntary reason.

The strengths of the PSID data are manifold, as it provides: (1) longitudinal data on all family members, both movers and those who remain; (2) national representativeness; (3) systematic and rigorous sampling and collection procedures; and (4) data on a sizable number of low-income families (Newman & Owen, 1982). However, the PSID dataset contains only one set of questions regarding reasons for moving, and the categorized answers that are available to researchers are not very specific in determining precise cases of involuntariness, which is a core aspect of many who are displaced. As Newman and Wyly (2006) write, the structure of the survey, which only allows a single choice regarding a respondent's reason for moving, "simplifies the circumstances of renters who were pushed out of their homes in the midst of other crises, such as unexpected bills that made it more difficult to meet the rent, job loss, or a divorce" (p. 42).

Rather than using such secondary datasets, there are some other researchers who are designing and conducting their own interviews and surveys for their displacement studies. Shill and Nathan (1983), for example, explore displacement and urban revitalization through interviews and questionnaires in nine neighborhoods located in Boston, Cincinnati, Denver, Richmond, and Seattle. The authors determine cases of "displacement" when the reason(s) for moving is/are a rent increase; an eviction by a landlord for remodeling purposes, including condominium conversion; or because the house was sold by their landlord (Shill & Nathan, 1983, p. 65). Some important findings of their study include that, contrary to some popular images of displacement, African Americans were not more likely to be displaced and that having low educational attainment or being elderly was not causally related to whether a household was

displaced. In addition, they find that, for the most part, displaced households did not seem to suffer severe hardships as a result of their displacements.

4.3. Data and methodology

In order to fully grasp displacement patterns and their relationships to neighborhood upgrading, the present study mainly examines the extent to which displacement within and across racial/ethnic groups has occurred along with neighborhood upgrading. This is accomplished through two phases:

(1) An exploratory analysis, which is used to compare the differences between people who recently moved into a neighborhood versus those who have remained in the neighborhood for years for each racial/ethnic group, and thus to identify the areas where same-race displacement might occur and to explore the unique features of those areas.

(2) A more in-depth examination of four neighborhoods in the City of Los Angeles, including an exploration of demographic and housing features of those neighborhoods through aggregated tract-level data and a field study to further investigate displacement across and within racial/ethnic groups and how people perceive neighborhood upgrading changes.

In the first phase, using the American Community Survey (ACS) Public Use Microdata Sample (PUMS) datasets, I attempted to identify areas in which potential displacement within races might take place. More specifically, in this phase of the study, for each racial/ethnic group, I compared the average values of household income of (a) in-movers (potential gentrifiers)—those who moved from another place into the area in the prior 12 months—and (b) existing residents—those who did not change their residence location. This work was accomplished using the 2008-2012 and 2013-2017 five-year ACS PUMS files, each of which contains detailed

sociodemographic information for approximately 5% of the total population. First, I made comparisons for each public use microdata area (PUMA) in Southern California (including Los Angeles County, Orange County, San Diego County, San Bernardino County, and Ventura County), and then focused on the selected group of Los Angeles neighborhoods mentioned above (Highland Park, Elysian Valley, Van Nuys, and Sherman Oaks). The average income gap between in-movers and existing residents in each racial/ethnic group allows us to detect areas in which low-income households might be displaced by relatively wealthier households of the same racial/ethnic group. Additionally, to gain an even more complete understanding of the differences of the neighborhoods showing this type of income gap pattern, I analyzed additional pieces of information to round out the picture. More specifically, in this last analysis, I captured detailed neighborhood characteristics besides income levels for the periods 2008-2012 and 2013-2017. Here, the variables examined included homeownership rates, housing values, unemployment rates, shares of each racial/ethnic group, shares of young people, and educational attainment rates. Furthermore, I constructed spatial lags of the socioeconomic and housing variables mentioned above in order to better examine the features and locational patterns of each PUMA. The spatial lag variables were the weighted average of the neighboring values of a PUMA, as computed using a queen contiguity weights matrix.

In the second phase, to compare changes in different neighborhoods, I investigated the four neighborhoods of Highland Park, Elysian Valley, Van Nuys, and Sherman Oaks, each of which has distinct characteristics. Highland Park and Elysian Valley were formerly known as poor neighborhoods and have recently become gentrification arenas, Van Nuys has been—and continues to be—a typical low-income neighborhood, and Sherman Oaks has been historically wealthy. To understand the detailed features of these four neighborhoods, I aggregated the ACS

census-tract-level data for 2008-2012 and 2013-2017 to study the socioeconomic and housing features of the four neighborhoods during the two periods.

As previously discussed, although secondary data analyses provide a great opportunity to capture urban neighborhood change and displacement dynamics, there are some methodological (or data) limitations involved. In the context of this study, for instance, a PUMA is much larger than a perceived neighborhood, and thus findings based on PUMAs may obscure the real changes that have occurred in individual neighborhoods within a PUMA. Whereas a census tract is often smaller than a perceived neighborhood, aggregating census tract-level information for a neighborhood is helpful to grasp a general understanding of that neighborhood, however relying solely on the average values of each census tract in a neighborhood may over- or underestimate the weight of particular areas within the neighborhood. In addition, secondary datasets rarely provide precise information regarding the motivations behind families' choices to move, which is crucial for determining voluntary relocations or involuntary displacements. Thus, to further explore the displacement dynamics within and across races, I conducted six semi-structured interviews with neighborhood council members from the four neighborhoods. In these interviews, I paid special attention to their mentions of recent neighborhood changes, the characteristics of in- and out-movers, and what the interviewees thought were the main reasons for the changes of people's locational choices. I also asked additional questions to obtain a better understanding of each neighborhood. These questions included: What do you like or dislike about the neighborhood? Could you please describe the culture, population, and any other aspects of the neighborhood? What is the average length of people living in the neighborhood? What are the changes that the in-movers bring in? For these interviews, a protocol narrative of this research, the instrument description, sample recruiting emails, the informed consent form,

and some other materials were submitted to the University of California, Irvine's Institutional Review Board; the application was approved in June 2018. The interview participants were recruited through email. Recruitment of the interview participants started in September 2018 and ended in December 2018, and all the interviews were carried out between October 2018 and December 2018. The six sit-down interviews lasted between 40 minutes and 90 minutes.

4.4 Results

4.4.1. PUMS data analysis results

The results of the ACS PUMS data analysis are summarized in table 7. In this table, the averages of PUMA-level mean household incomes in Southern California are compared for each racial/ethnic group.

Table 7. Average Household Incomes for Each Group

	White		African		Asian		Hispanic		Entire	
	Mean	SD[a]	Mean	SD	Mean	SD	Mean	SD	Mean	SD
08-12 Existing Residents	82,464	26,135	73,356	25,437	88,934	26,745	85,482	26,527	80,506	25,728
08-12 In-movers	65,518	21,101	52,887	24,667	69,956	29,163	67,533	21,034	62,845	20,186
13-17 Existing Residents	92,039	30,527	78,440	27,549	99,660	30,059	95,525	30,447	89,810	30,104
13-17 In-movers	79,809	28,114	59,356	29,926	81,321	32,132	80,385	29,067	75,951	27,416

a: Standard Deviation

Table 7 shows that all groups experienced an increase in average household income between the two study periods of 2008-2012 and 2013-2017. More importantly, the results revealed that, in general, existing residents—meaning those who have stayed in their same houses—had incomes relatively higher than in-movers, which is consistent with the expectation that low-income households would tend to have a lower level of residential stability. The overall household income gaps between the two groups were about $13,000 to $20,000 across the entire population. This gap was shown not to vary significantly, although African Americans were at the higher end of this spectrum.

Even though, in general, the in-movers had a much lower level of household income than their counterparts, there were some PUMAs showing a reverse pattern, thus indicating that displacement within races might have taken place in these locations. In this study, areas that had lower average household incomes of existing residents than the incomes of the in-movers in the same racial/ethnic group were identified as higher-income in-movers (HIIMAs). For example, if one PUMA had incomes of White in-movers higher than the incomes of its existing White residents, this PUMA was labeled as a White higher-income in-movers (White HIIMAs) area. Figures 3 and 4 present the locations of such areas for the two periods, respectively. It is important to note that there were larger numbers of PUMAs exhibiting the reverse income pattern in the second study period.

In the 2008-2012 period, the areas that showed income patterns indicating the possibility of same-race displacement (as identified based on a comparison of the average household income of in-movers and existing residents, as explained above) were spread throughout Southern California. More specifically, there were seven PUMAs identified as Asian HIIMAs, six African American HIIMAs, six White HIIMAs, and five Hispanic HIIMAs. Displacement

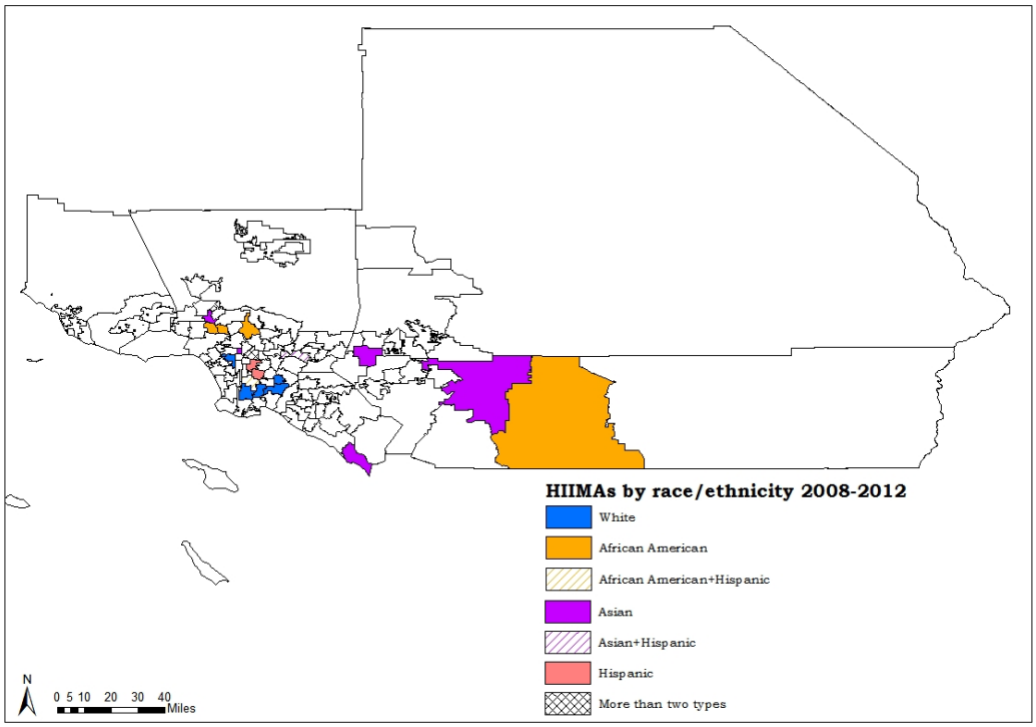

Figure 3. Locations of HIIMAs for 2008-2012

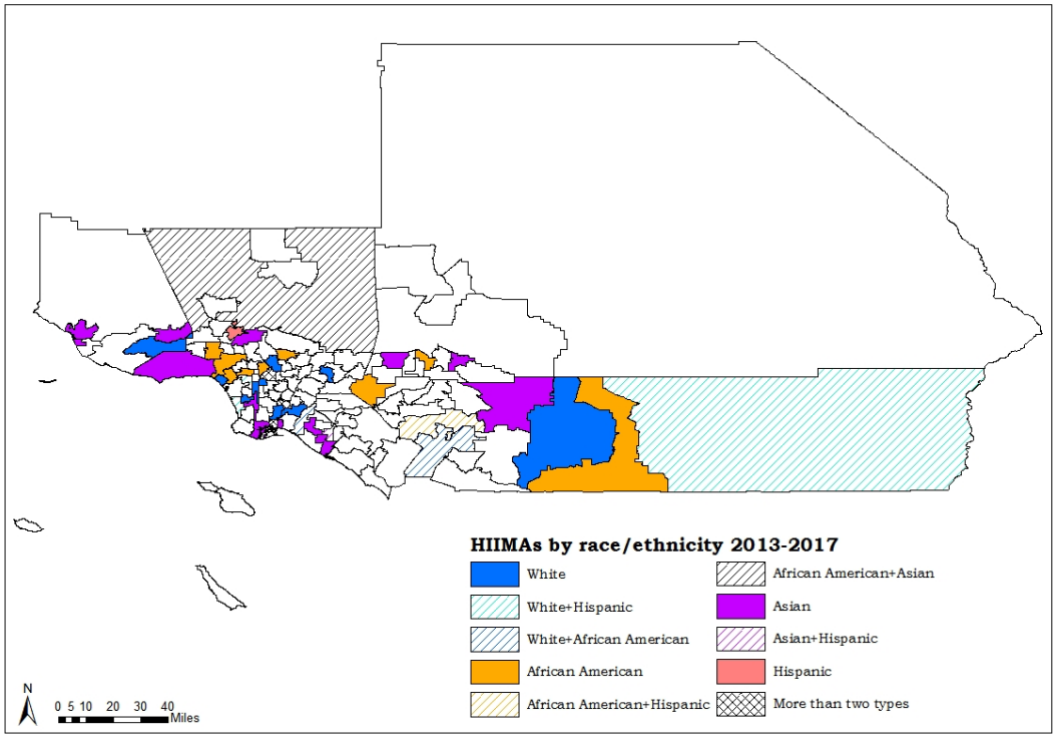

Figure 4. Locations of HIIMAs for 2013-2017

within the Hispanic population was most likely to take place in the Greater Los Angeles County area. In the case of Hispanics, these HIIMAs tended to be clustered in eastern Los Angeles proper and in Campton City, whereas signs of displacement among African American and Asian populations were detected in the southeastern part of the region, as well as a few other areas. Meanwhile, most of the White HIIMAs were clustered in southern Los Angeles County, especially in Carson City.

The data demonstrated that HIIMAs were more common in Southern California in the second period (2013-2017). In this period, there were 18 White HIIMAs, 17 Asian HIIMAs, 15 African American HIIMAs, and 9 Hispanic HIIMAs. The data also showed that the HIIMAs of a particular race were likely to be close to one another. In particular, Asian HIIMAs were mostly located close to the southwestern border of the region, such as the Rancho Palos Verdes area, and in southern Los Angeles proper; African American HIIMAs were likely to be clustered in the eastern part of the regions in Riverside County, and Los Angeles City, and as well as some scattered in other regions; White HIIMAs were mostly located in Los Angeles County, along with some in Riverside and Orange Counties; whereas Hispanic HIIMAs were more scattered across the entire region. It should be noted that among the five counties in Southern California, San Bernardino County had fewer HIIMAs than any other for both study periods.

The various HIIMAs were also found to have some unique demographic and socioeconomic characteristics. Tables 8-11 summarize the average housing and demographic values of the HIIMAs and compare them with other areas. Generally speaking, the HIIMAs had existing residents with lower socioeconomic status compared to the others. For instance, in the first study period, the average household income for the African American HIIMAs was

Table 8. Features of Areas where White In-movers' Incomes were Higher than those of Existing White Residents (White HIIMAs) Versus Other Areas (Non-White HIIMAs)

	08-12 Non-White HIIMAs	08-12 White HIIMAs	13-17 Non-White HIIMAs	13-17 White HIIMAs
Number.PUMAs	114	6	110	18
HH.Income	60,220	52,201	67,130	60,695
Ownership.Ratio	0.598	0.566	0.594	0.527
House.Value	416,548	356,667	474,332	472,611
Unemployment.Rate	0.068	0.071	0.047	0.049
White.Share	0.621	0.404	0.610	0.535
African.American.Share	0.056	0.167	0.053	0.099
Asian.Share	0.125	0.181	0.137	0.122
Hispanic.Share	0.417	0.473	0.418	0.456
Young.Share	0.265	0.266	0.258	0.264
High.Edu.Share	0.210	0.159	0.231	0.227
Spatial.Lag.HH.Income	61,083	53,408	67,060	62,025
Spatial.Lag.Ownership.Ratio	0.611	0.516	0.604	0.525
Spatial.Lag.House.Value	418,091	415,757	467,509	478,520
Spatial.Lag.Unemployment.Rate	0.068	0.070	0.047	0.048
Spatial.Lag.White.Share	0.619	0.513	0.614	0.538
Spatial.Lag.African.American.Share	0.059	0.112	0.052	0.091
Spatial.Lag.Asian.Share	0.125	0.120	0.133	0.132
Spatial.Lag.Hispanic.Share	0.408	0.509	0.416	0.420
Spatial.Lag.Young.Share	0.262	0.274	0.256	0.257
Spatial.Lag.High.Edu.Share	0.209	0.179	0.229	0.228
White.In-movers.Income	68,326	88,070	82,365	110,117
White.Existing.Residents.Income	87,109	81,249	97,706	102,091
African.American.In-movers.Income	51,916	45,839	62,782	62,418
African.American.Existing.Residents.Income	72,407	65,922	77,697	79,905
Asian. In-movers.Income	74,241	78,889	89,228	99,921
Asian.Existing.Redisents.Income	92,514	89,542	106,351	103,860
Hispanic. In-movers.Income	70,489	80,116	84,523	104,824
Hispanic.Existing.Residents.Income	89,658	84,807	101,113	103,125

Table 9. Features of Areas where African American In-movers' Incomes were Higher than those of Existing African American Residents (African American HIIMAs) Versus Other Areas (Non-African American HIIMAs)

	08-12 Non- African American HIIMAs	08-12 African American HIIMAs	13-17 Non-African American HIIMAs	13-17 African American HIIMAs
Number.PUMAs	114	6	113	15
HH.Income	60,682	43,423	66,084	67,286
Ownership.Ratio	0.604	0.443	0.588	0.555
House.Value	415,439	377,750	464,124	549,167
Unemployment.Rate	0.068	0.076	0.047	0.046
White.Share	0.609	0.625	0.597	0.618
African.American.Share	0.060	0.088	0.060	0.056
Asian.Share	0.130	0.083	0.135	0.128
Hispanic.Share	0.419	0.436	0.429	0.386
Young.Share	0.264	0.271	0.256	0.277
High.Edu.Share	0.207	0.202	0.225	0.277
Spatial.Lag.HH.Income	61,073	53,593	66,522	65,142
Spatial.Lag.Ownership.Ratio	0.610	0.526	0.599	0.546
Spatial.Lag.House.Value	417,544	426,154	462,016	522,834
Spatial.Lag.Unemployment.Rate	0.068	0.072	0.047	0.050
Spatial.Lag.White.Share	0.613	0.623	0.604	0.600
Spatial.Lag.African.American.Share	0.062	0.062	0.058	0.059
Spatial.Lag.Asian.Share	0.127	0.091	0.133	0.130
Spatial.Lag.Hispanic.Share	0.410	0.461	0.419	0.402
Spatial.Lag.Young.Share	0.262	0.274	0.254	0.269
Spatial.Lag.High.Edu.Share	0.208	0.201	0.226	0.255
White.In-movers.Income	69,105	73,067	85,302	91,955
White.Existing.Residents.Income	86,913	84,816	97,334	106,026
African.American.In-movers.Income	51,237	61,080	60,217	82,597
African.American.Existing.Residents.Income	72,796	54,810	78,975	69,956
Asian. In-movers.Income	74,685	68,314	90,358	93,015
Asian.Existing.Redisents.Income	92,516	88,826	106,100	105,394
Hispanic. In-movers.Income	70,772	75,191	86,359	94,081
Hispanic.Existing.Residents.Income	89,526	87,000	100,644	107,359

Table 10. Features of Areas where Asian In-movers' Incomes were Higher than those of Existing Asian Residents (Asian HIIMAs) Versus Other Areas (Non-Asian HIIMAs)

	08-12 Non-Asian HIIMAs	08-12 Asian HIIMAs	13-17 Non-Asian HIIMAs	13-17 Asian HIIMAs
Number.PUMAs	113	7	111	17
HH.Income	60,572	47,664	66,427	64,906
Ownership.Ratio	0.602	0.508	0.587	0.569
House.Value	417,336	352,500	479,198	440,735
Unemployment.Rate	0.068	0.077	0.048	0.046
White.Share	0.612	0.572	0.597	0.619
African.American.Share	0.063	0.039	0.059	0.061
Asian.Share	0.128	0.122	0.135	0.133
Hispanic.Share	0.412	0.548	0.427	0.400
Young.Share	0.264	0.277	0.258	0.260
High.Edu.Share	0.210	0.154	0.234	0.210
Spatial.Lag.HH.Income	60,910	57,303	66,250	67,113
Spatial.Lag.Ownership.Ratio	0.608	0.567	0.593	0.590
Spatial.Lag.House.Value	417,715	422,156	469,103	468,575
Spatial.Lag.Unemployment.Rate	0.068	0.071	0.047	0.047
Spatial.Lag.White.Share	0.614	0.602	0.600	0.625
Spatial.Lag.African.American.Share	0.062	0.050	0.058	0.057
Spatial.Lag.Asian.Share	0.125	0.126	0.134	0.123
Spatial.Lag.Hispanic.Share	0.410	0.459	0.418	0.410
Spatial.Lag.Young.Share	0.262	0.269	0.256	0.252
Spatial.Lag.High.Edu.Share	0.208	0.203	0.229	0.230
White.In-movers.Income	68,802	73,632	83,029	102,429
White.Existing.Residents.Income	86,893	86,246	96,434	108,401
African.American.In-movers.Income	52,258	45,352	63,320	59,627
African.American.Existing.Residents.Income	73,042	63,077	76,965	83,581
Asian. In-movers.Income	72,454	93,463	84,880	121,900
Asian.Existing.Redisents.Income	93,497	81,597	106,107	105,562
Hispanic. In-movers.Income	70,349	76,641	83,788	105,865
Hispanic.Existing.Residents.Income	89,867	85,227	100,077	108,496

Table 11. Features of Areas where Hispanic In-movers' Incomes were Higher than those of Existing Hispanic Residents (Hispanic HIIMAs) Versus Other Areas (Non-Hispanic HIIMAs)

	08-12 Non-Hispanic HIIMAs	08-12 Hispanic HIIMAs	13-17 Non-Hispanic HIIMAs	13-17 Hispanic HIIMAs
Number.PUMAs	115	5	119	9
HH.Income	60,684	39,930	66,997	56,008
Ownership.Ratio	0.601	0.479	0.590	0.513
House.Value	418,970	289,000	478,790	411,944
Unemployment.Rate	0.068	0.080	0.047	0.052
White.Share	0.614	0.521	0.606	0.513
African.American.Share	0.060	0.101	0.056	0.098
Asian.Share	0.131	0.054	0.137	0.100
Hispanic.Share	0.404	0.797	0.412	0.578
Young.Share	0.264	0.283	0.257	0.280
High.Edu.Share	0.213	0.062	0.236	0.169
Spatial.Lag.HH.Income	61,491	42,480	66,930	58,743
Spatial.Lag.Ownership.Ratio	0.612	0.458	0.598	0.516
Spatial.Lag.House.Value	421,708	332,097	471,371	437,605
Spatial.Lag.Unemployment.Rate	0.068	0.074	0.047	0.048
Spatial.Lag.White.Share	0.619	0.480	0.608	0.540
Spatial.Lag.African.American.Share	0.060	0.098	0.056	0.077
Spatial.Lag.Asian.Share	0.126	0.107	0.133	0.122
Spatial.Lag.Hispanic.Share	0.401	0.696	0.415	0.444
Spatial.Lag.Young.Share	0.262	0.275	0.256	0.254
Spatial.Lag.High.Edu.Share	0.213	0.098	0.231	0.200
White.In-movers.Income	69,183	71,391	81,920	118,224
White.Existing.Residents.Income	87,384	71,315	96,335	113,560
African.American.In-movers.Income	52,233	34,803	62,239	66,488
African.American.Existing.Residents.Income	72,729	54,434	77,213	84,061
Asian. In-movers.Income	74,374	77,306	86,374	123,870
Asian.Existing.Redisents.Income	93,133	71,012	105,295	111,720
Hispanic. In-movers.Income	70,662	78,841	82,910	120,838
Hispanic.Existing.Residents.Income	90,054	71,848	99,827	113,538

$43,423—which was significantly lower than the regional average of $59,819—whereas the figure for non-African American HIIMAs was much higher, at $60,682. The income difference between the two groups did not occur by chance, as each of the six identified African American HIIMAs had an average household income far below the regional average. Similar gaps were found with other variables, as well. More specifically, the HIIMAs generally had lower housing values—an average of $358,368, whereas the regional average was $413,554—with the Hispanic HIIMAs having the lowest average figure, at $289,000. In fact, each of the five identified Hispanic HIIMAs had an average housing value much lower than the regional average. Additionally, the HIIMAs typically had higher unemployment rates (0.076 on average), with the Hispanic HIIMAs having the highest rate (0.08). All five identified Hispanic HIIMAs' unemployment rates were above the regional average. Furthermore, the HIIMAs also had lower homeownership rates—0.530 on average—with African American HIIMAs having the lowest rate, at an average of 0.443. The HIIMAs also generally had smaller shares of residents holding bachelor's degrees, with 0.164 on average, whereas the regional average was 0.207. Here, the Hispanic HIIMAs had the lowest shares—only 0.06 on average—and this trend applied to all five Hispanic HIIMAs. However, it is also important to note that the HIIMAs had larger young population shares, indicating the potential gentrifiers' preference for residing close to a certain age group, specifically, the 24-44 age group.

The second study period (2013-2017) showed similar patterns as the previous period. The HIIMAs in the second period generally had lower incomes compared to the non-HIIMAs, and this was especially the case for the Hispanic HIIMAs, which had an average of $56,008. Other examined factors showed that the HIIMA residents had lower status than the non-HIIMA residents. In addition, similar to what was found in the 2008-2012 period, the HIIMAs in the

2013-2017 period tended to have larger younger populations. However, the African American HIIMAs presented a reverse pattern in this latter period: these areas, on average, had higher incomes ($67,286), higher housing values ($549,167), lower unemployment rates (0.046), and higher education attainments (0.277).

Additionally, the racial compositions among the different groups also showed distinct patterns. For instance, the HIIMAs tended to occur in areas where the shares of White population were smaller, and the shares of African Americans were larger, although the African American HIIMAs and the Asian HIIMAs were exceptions here. The African American HIIMAs tended to have higher shares of White population in both periods—0.625 in the first period, and 0.618 in the second period—and lower shares of African Americans in the second period, at 0.056. Additionally, there were clear patterns that higher-income Hispanic in-movers often chose areas with larger Hispanic populations but with fewer Asians. In the first period, the Hispanic HIIMAs consisted of a Hispanic population share of about 80% on average, whereas that proportion was only about 40% in the other areas. In the second period, the comparison was58% versus 41%.

It is also worth noting that not only did the HIIMAs themselves have residents with lower socioeconomic status but that their neighboring areas showed similar patterns. More specifically, the HIIMAs had surrounding PUMAs with lower household incomes, lower homeownership rates, higher unemployment rates, and with many having fewer Whites and more African Americans (again, with the African American HIIMAs and Asian HIIMAs as the exceptions).

It is also found that in certain HIIMAs, in-movers' incomes are not only higher than the existing residents' income in the same race/ethnic group, but also surpass those in other racial groups. In White HIIMAs, it is shown that White in-movers' average income is $88,070 in the first study period, which is higher than the existing residents' incomes of most groups (with

Asian as an exception); and in the second period, White in-movers' average in HIIMAs is the highest among all examined groups. This indicates that in addition to the possibilities of higher-income White populations displacing lower income Whites, in White HIIMAs, it is also likely that White in-movers would displace other groups of existing residents. Similar patterns are also found in Asian HIIMAs and Hispanic HIIMAs. In both Asian and Hispanic HIIMAs, Asian in-movers' incomes and Hispanic in-movers' incomes are higher than all existing residents' incomes, respectively. However, this pattern is not seen in African American HIIMAs, and that in African American HIIMAs, African American in-movers' incomes are only higher than African American existing residents' incomes during both periods.

4.4.2 Displacement in the four neighborhoods

As explained in previous sections, four neighborhoods in Los Angeles were selected for detailed analysis. Over the two study periods, the neighborhoods' PUMAs were shown to have potential White and African American HIIMAs, indicating the possibility of same-race displacement. More specifically, during the 2008-2012 period, only Van Nuys was shown to be located in an African American HIIMA, whereas in the 2013-2017 period, both Sherman Oaks and Elysian Valley were located in African American HIIMAs, and Highland Park was in a White HIIMA.

In addition to the PUMS-level exploration, by aggregating the census tract data, I gathered information on the four selected neighborhoods. Table 12 presents the average values of some of the demographic and housing variables collected from the ACS 2008-2012 and 2013-2017 datasets. As is clear from this table, the four neighborhoods demonstrated distinct patterns. Generally speaking, Sherman Oaks was shown to be a wealthy White neighborhood, with the

highest household incomes, largest shares of young populations, very large shares of residents with higher educational attainments, and highest housing values. Conversely, Van Nuys was shown to have low household incomes, very high poverty rates, and low educational attainments. Most of the residents in this neighborhood were Hispanics. The two remaining neighborhoods, Highland Park and Elysian Valley, were also found to be relatively low-income neighborhoods compared to the entire region, and with Hispanic majorities as well.

Table 12. Four Selected Neighborhoods

	Van Nuys	**Sherman Oaks**	**Highland Park**	**Elysian Valley**
08-12.HH.Income	38,964	74,580	50,661	45,060
08-12.Unemployment.Rate	0.080	0.073	0.089	0.061
08-12.White.Share	0.474	0.811	0.583	0.459
08-12.African.American.Share	0.057	0.047	0.023	0.007
08-12.Asian.Share	0.080	0.066	0.115	0.238
08-12.Hispanic.Share	0.608	0.121	0.686	0.648
08-12.Young.Share	0.322	0.376	0.317	0.339
08-12.Ownership.Ratio	0.247	0.448	0.429	0.380
08-12.Poverty.Rate	0.244	0.085	0.183	0.153
08-12.Pro&Tech.Share	0.071	0.202	0.095	0.072
08-12.High.Edu.Share	0.176	0.556	0.229	0.215
08-12.House.Value	340,000	640,319	410,856	427,033
13-17.HH.Income	42,214	92,320	58,051	55,964
13-17.Unemployment.Rate	0.068	0.055	0.056	0.037
13-17.White.Share	0.416	0.795	0.487	0.428
13-17.African.American.Share	0.043	0.050	0.020	0.010
13-17.Asian.Share	0.068	0.080	0.118	0.214
13-17.Hispanic.Share	0.620	0.119	0.675	0.632
13-17.Young.Share	0.314	0.367	0.339	0.314
13-17.Ownership.Ratio	0.226	0.431	0.449	0.415
13-17.Poverty.Rate	0.234	0.073	0.188	0.155
13-17.Pro&Tech.Share	0.072	0.210	0.110	0.093
13-17.High.Edu.Share	0.123	0.421	0.188	0.163
13-17.House.Value	392,536	807,681	532,544	539,500

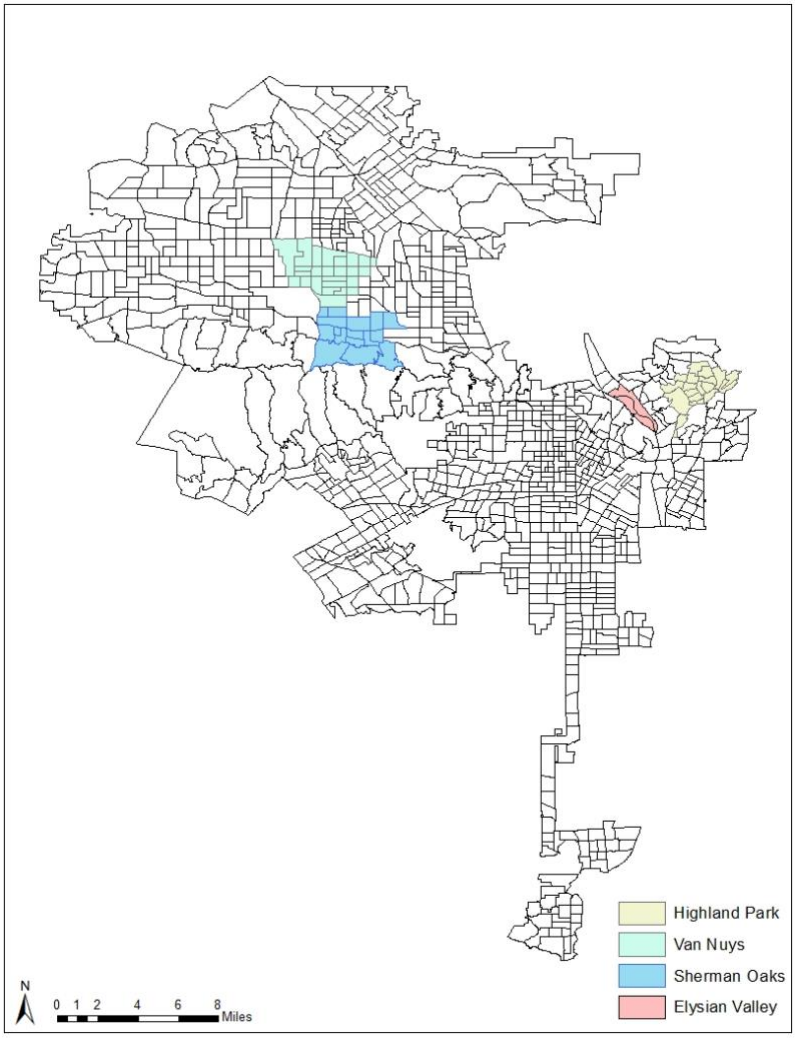

Figure 5. Four Selected Neighborhoods

Through the exploration of the income differences between in-movers and the existing residents via the PUMS analyses, the results showed the possibility of displacement by the same racial/ethnic group. To further explore and validate the patterns and mechanisms behind these recent changes and to understand how people have been affected, six semi-structured interviews were conducted with neighborhood council members from the four different neighborhoods shown in figure 5. Various strands of information were obtained through these interviews,

including how they thought the changes had occurred, who the in-movers were, and how the council members perceived the neighborhood changes.

With the exception of those speaking for Van Nuys, the neighborhood council members felt that their neighborhoods had experienced dramatic improvements in the previous two decades. The expansions of the Red, Gold, and EXPO Metro lines, as well as other city development projects, had attracted many real estate investors and developers, leading to the construction of new development or investment in redevelopment projects. Consequently, they believed that the houses had become bigger and the neighborhoods more beautified, which led to an influx of people attracted by these upgraded neighborhoods. On the negative side, they said that these changes had led property values to skyrocket.

The neighborhood council members indicated that they had seen changes in terms of the business environment, as well. For three of the four neighborhoods—again, with Van Nuys as the exception—as neighborhood changes had occurred, the types of businesses catering to the residents' needs had changed. They stated that the upgraded neighborhoods had brought in more affluent people who could afford to spend more on their hobbies and the arts and in cafes, restaurants, and higher-end stores. Meanwhile, both the upgrading of the neighborhoods and the changing needs of the residents had contributed to the raising of rents on businesses. As a result, there were now more bars, recreational facilities, galleries, and cafes in these neighborhoods, while a lot of traditional mom-and-pop stores had disappeared.

Neighborhood changes mean different things to different people. Poor residents who have been local renters for years are the most vulnerable to such changes. As housing prices and the general cost of living have gone up, some poor residents have been unable to afford the skyrocketing rents and have been forced to move out, with some even being evicted. As a result,

many have lost the lifestyle they had grown accustomed to. They have had to find new, more affordable places to live, which has led some to be located farther from their jobs, services, and friends. There have also been some low-income renters who have struggled to remain in their same neighborhoods due to their social ties and their sense of belonging. These changes and struggles have generated some upset and resistance by these lower-income residents. Among the six participants, four expressed their strong concern about the impacts of the changes on the longtime residents. Meanwhile, the council members stated that some homeowners were happy about their increased home values and appreciative of the cleaner streets, increased bike lanes, and new types of stores. Newcomers to the neighborhoods have enjoyed what they see as an ideal urban life, and real estate investors and developers have made good profits from the changes. Among the six participants, four expressed strong concern about the impacts of the changes on the residents, whereas two stated that they had been enjoying their improved neighborhoods.

The neighborhood in-movers were found to have very different demographic and economic characteristics compared to both the long-term residents and those who had to move out because of the neighborhood changes. “The newcomers are successful people,” as one neighborhood council member from Highland Park described them. Generally, the new residents have been middle- to high-income young couples who hold professional, technical, or managerial occupations, as well as some “hipsters. Although most have purchased a home in the neighborhood, the interviewees also mentioned that some of the “successful” in-movers were renters, since even the neighborhood rents have become so high that only higher-income individuals can afford them. Whereas, those who were forced to leave their neighborhoods have mostly been Hispanics with low-income jobs.

A common conception that many people have is that in-movers of an upgraded neighborhood tend to be White. When I asked the council members about the races of the newcomers, some—but not all—answered that "they are normally White" They also indicated that some of the in-movers have also been Hispanics and Asians. As one participant stated succinctly, "It is not about race. All races of people moved in. But it is about income. They are all high-income."

Although Whites may not be the only race to move in, many existing residents have become wary of White strangers, who they believe may be "gentrifiers," with the potential to displace others. One council member from Elysian Valley pointed out that some people have been very frustrated about the White in-movers, as well as the ones who longtime residents think are White: "When I moved here [10 years ago], gentrification has been so ugly; people [have] been calling me out for being Jewish, for being White, for being different. My house and car have been vandalized. They said you are the problem; you are poison. Although I consider myself as Latino, because of gentrification, there [is] a lot of hatred."

Highland Park and Elysian Valley neighborhood council members mentioned that some displacement by those of the same race with more money had occurred in their neighborhoods. For example, some higher-income Hispanics have moved into these neighborhoods and have replaced lower-income Hispanic families who had long resided there. The new residents were attracted by the great location, good schools and parks, and good accessibility to local transportation. Additionally, some in-movers have come from nearby neighborhoods, where the property values and rents were even higher.

Sherman Oaks was described as wealthy and decent. Most of the neighborhood residents were said to be Whites. Although Sherman Oaks is located in a PUMA area where same-race

displacement could have occurred, the council members from this neighborhood mentioned that the neighborhood residents were mostly middle- to upper-income, and since the property values have long been high, no real displacement has been detected, even though improvements have been taking place.

Unlike the other neighborhoods, the Van Nuys council members stated that they had not seen improvements in their neighborhood. In fact, instead, they said that there had been a decline: a lot of stores have closed, and those empty storefronts have remained vacant for a long time. Although they said that there had been in-movers to the neighborhood, they described them as mostly low-income households unable to afford the high rents in other neighborhoods. The only exception here has been the Historic Preservation Overlay Zone in Van Nuys, where the historical features of this particular zone are unique. I was told that when there were higher-income people moving into the neighborhood, they often chose this area, but also that "young people tend to avoid the historical area because they don't like things from the 1920s." Returning to the businesses that have closed down in Van Nuys, the neighborhood council members expressed hope that the neighborhood would be able to attract more enterprises, leading to the possibility of economic improvement.

4.5. Summary and discussion

This study used a two-step process of analysis to understand neighborhood changes in Southern California in the 2000s. More specifically, it worked to capture the occurrences of displacement both across and within races. I conducted explorative analyses to compare the income levels of those who had recently moved in with other, longer-term residents in order to detect the possibility of displacement. I also examined additional variables beyond income to better understand the different characteristics between the identified HIIMAs and the other

neighborhood residents. The interviews I held were used to explore the actual changes within each neighborhood further, as well as to assess how people have perceived such changes in the four chosen Los Angeles neighborhoods.

The PUMS exploratory analysis suggested that, overall, the recent in-movers have had relatively lower average incomes compared to the other residents for each racial/ethnic group across the two study periods, 2008-2012 and 2013-2017. Among other discoveries, I found that the discrepancy between African American in-movers and other African American residents was the smallest among all racial/ethnic groups. A close look at the patterns showed that there have been many in-movers having higher incomes than their counterparts, indicating the possibility of the displacement of lower-income households not only by other racial/ethnic groups but also by same-race higher-income in-movers. This finding is consistent with the results of prior studies (Hipp, 2012; Sampson, 2012), which suggest that the race/ethnicity of longtime residents has a large impact on the decision of potential in-movers: it is more likely for an in-mover to choose a unit where the prior resident was of the same race/ethnicity. This might be explained by a signaling effect, meaning that in-movers view the race/ethnicity of prior residents as the "appropriateness of the neighborhood for someone of their own race/ethnicity" (Hipp, 2012, p. 1303).

In a further step, I investigated additional variables to better understand the HIIMAs and to discover possible distinctive features of places where same-race displacement is likely to take place. Similar to what is conventionally understood about displacement, the HIIMAs were likely to have lower incomes, which are also often featured with high unemployment rates, low educational attainments, low homeownership rates, and so on. However, it is also important to point out that for both study periods, the HIIMAs were likely to have large shares of young

people, as well. A possible inference from this might be that many in-movers are pursuing new lifestyle choices that are commonly attributed to younger people. In the second study period, the African American HIIMAs had distinctive features. Unlike any other group, the results showed that middle-class African Americans chose to move into areas with relatively high socioeconomic levels, especially in the second study period.

There were also some meaningful findings from the interviews I conducted. The participants from the different neighborhood councils indicated that recent changes to their neighborhoods had altered local residents' lives from different aspects. Perhaps more importantly, the participants from both Highland Park and Elysian Valley stated that their neighborhoods had been experiencing upgrading for many years, with more higher-income families moving into their neighborhoods and with higher-end stores opening up. In addition, some of the council members pointed out that a considerable proportion of the new incomers have been higher-income Hispanics. Indeed, both Highland Park and Elysian Valley are two neighborhoods with very high percentages of Hispanics. Thus, one might infer that in recent years, higher-income Hispanics have chosen to move into neighborhoods that already had large proportions of Hispanic residents. This idea is consistent with place stratification theory (Logan & Molotch, 1987), which suggests that people tend to make residential choices based on being closer to people who are of the same racial/ethnic group for various, including to protect themselves against racial prejudice and discrimination. However, this general pattern raises concerns about possible racial segregation.

The various outcomes of the multidimensional analyses complemented each other in particular ways. For instance, the PUMS analysis showed that in some of the neighborhoods, higher-income White and African Americans had moved in, but this fact was not reflected in the

interviews. Reasonable explanations for this difference might include the possibility that existing White residents already had high incomes compared to other populations, and that the average income of the Black in-movers was no higher than the other groups, as neither of these two groups was identified as "displaced" or "gentrifiers" by the neighborhood council members.

The exploratory analysis shows the overall picture of the income dynamics of the neighborhoods, which local residents might be unaware of. Thus, exploratory analyses based on secondary datasets provide useful information for people to understand the changing patterns of neighborhoods through a relatively easy-to-access approach. However, this type of analysis only presents rough patterns of income comparison and general explorations of certain other variables. Although income is an important factor for understanding the changing patterns of neighborhoods, if one does not consider other facets, such as the possible reasons one might move, this limits such analyses based on secondary datasets.

Both the exploratory analyses and the interviews suggest that the scope of displacement is beyond people's conventional understanding of the term (i.e., the assumption that Whites are displacing ethnic minority populations). The findings of this study point to the possibility that higher-income minorities are displacing lower-income residents of the same racial/ethnic groups. The interviewees indicated that the higher-income minority "displacers" were predominantly Hispanics, and the exploratory analyses suggested other possibilities. Overall, the idea of displacement by the same race/ethnic group is often neglected in the literature. As Moore (2009) states, "race and ethnicity shape the processes of gentrification in more complex ways than relegating minorities to the dichotomous roles of victims of gentrification or emulators of white gentrifiers" (p. 118). Therefore, future research should tackle the emerging patterns of neighborhood dynamics with more attention paid to segregation patterns, as well as other

important urban phenomena, as this work could provide further lessons for planners and policy makers as they look at the overall situation of neighborhoods.

Chapter 5. Business Dynamics Under Neighborhood Upgrading

5.1. Introduction

In addition to the significant consequences for residents from urban neighborhood upgrading, shifts in businesses also occur. Walking down certain streets of Los Angeles, one can find more hip cafes, trendy boutiques, high-end markets, and gourmet restaurants than existed several years ago (Barragan, 2018; Huynh, 2018). Meanwhile, signs announcing that businesses are closing or moving hang outside small, longtime family-owned storefronts (Seidman, 2018). As Slater (2006) points out, "The perception is no longer about rent increases, landlord harassment and working-class displacement, but rather street-level spectacles, trendy bars and cafes, i-Pods, social diversity and funky clothing outlets" (p. 738). This transition in a neighborhood can affect businesses in two broad ways: (1) through changing consumer preferences brought about by the residential composition, and (2) through rising rents. As the composition of the neighborhood residents changes, existing businesses may find that there is a smaller market interested in their goods, which can negatively impact sales. Conversely, the changing composition could make the location attractive to other types of businesses, which then enter the neighborhood. The second manner in which existing businesses can be impacted by neighborhood change is that some could face the same situation as vulnerable residents—forced out due to rising rents and terminated leases (see, e.g., Meltzer, 2016; Zukin et al., 2009).

To investigate the business dynamics associated with neighborhood upgrading, this study provides an empirical investigation of the changing patterns of retail stores in the City of Los Angeles from 2000 to 2010. Unlike earlier works that focus primarily on the negative consequences of this change, explicit attention here is paid to both business closures and new business openings by utilizing the ReferenceUSA dataset (geocoded), which provides detailed

information about individual business establishments in the study area. I accomplished this work by employing accelerated failure time models (for business closures) and Poisson count models (for new business openings) to reveal the distinct patterns of two-sided business dynamics in rapidly changing urban neighborhoods and the factors contributing to these dynamics. I also conducted a comprehensive set of sensitivity analyses to examine how the results varied along with the various types of neighborhood upgrading and the inclusion and exclusion of some neighborhood-level control variables.

5.2 Literature review

Although a great amount of attention is being paid to residential displacement, there are significantly fewer studies examining the influences of neighborhood upgrading on business dynamics. It is thought that, at least to some extent, neighborhood upgrading can threaten existing neighborhood businesses. On the demand side, changes taking place in a neighborhood can induce a shift in the local market system and result in a mismatch between existing services and products and the demands of the new residents (Meltzer & Schuetz, 2012; Zukin, 2008). The businesses that cater to longtime residents are often the ones that serve basic goods and services, whereas, generally speaking, newcomers are more in favor of businesses that can provide "discretionary tastes" (Sullivan & Shaw, 2011, p. 415). For instance, Waldfogel (2008) finds that college-educated individuals are more likely to visit bagel stores, coffee shops, and expensive chain restaurants than non-college-educated individuals, and also that, overall, African Americans may patronize chain chicken restaurants like KFC and Popeyes more frequently than non-Blacks. Similar results are found in other studies, as well, such as in the work of Sullivan (2014), Powell et al. (2007), and Meltzer and Schuetz (2012). In addition, the cultural symbols of existing businesses often create boundaries that exclude new residents. For instance, Zukin

(2008) points out that White, middle-class newcomers often feel uncomfortable patronizing markets where Afrocentric elements are dominant.

On the supply side, as discussed above, neighborhood upgrading is reported to be associated with rising rents and increasing housing prices; in addition, such upgrading also sometimes leads to higher employment costs. For these reasons, some businesses are unable to bear these increased costs and must either relocate or shut down (Giloth & Betancur, 1988). Examples of businesses suffering from such situations can be found in places like downtown Chicago (Giloth & Betancur, 1988) and New York City's Harlem and Williamsburg neighborhoods (Zukin et al., 2009). In addition, in some neighborhoods, space conversions—which developers use to chase profits—also place severe constraints on businesses, leading some to close down (Curran, 2007). Using the case of the upgraded neighborhood of Williamsburg, Curran finds that the upgrading that has taken place has led to a relatively large number of illegal industrial-to-residential-use transitions. These conversions have caused business relocations for various reasons, including limited spaces for businesses to grow, continuously increasing real estate costs, the need to downsize to survive, the loss of longtime customers, and the possibility of businesses to sell their spaces for profit. The above studies conclude that neighborhood upgrading can be a threat to local businesses.

However, exits from and entries into a local market are interrelated phenomena, and neighborhood upgrading can often attract more new businesses to a neighborhood. When shifts in demand take place, incentives to enter the market can increase. Waldfogel (2010) finds that, in general, non-Blacks spend much more on pets, toys, and alcohol, among other items, compared to Blacks, and that relatively higher-income households spend more on all product categories

than lower-income households, indicating that higher-income households are typically more capable and willing to purchase more than lower-income households.

There is also some research that reveals more explicit reasons why neighborhood upgrading is likely to change residents' preferences and to increase business entries into a neighborhood. For instance, Bridge and Dowling (2001) examine the consumption patterns of "gentrifiers" of four upgraded neighborhoods within Sydney, Australia. They point out that neighborhood upgrading has shaped the neighborhoods with symbolic patterns of retail. In terms of restaurant patterns, the upgraded neighborhoods had large shares of "cafes," various types of "exotic food," and "modern Austrian" restaurants. Furthermore, the researchers also find that "gentrifiers" tend to "eat in" (i.e., buy food, and then bring it home to cook it), and often prefer healthy and organic food. In terms of buying furniture, "gentrifiers" often like to shop at small local stores rather than at large chain stores. In terms of personal service establishments (e.g., beauty salons), this group tends to pursue individuality more than any other factor.

Meltzer (2016) contends that neighborhood upgrading is not always a threat to local businesses, but also can be an opportunity for them. To test this assumption, the author uses a longitudinal database, the National Establishment Time-Series (NETS) database, to study business dynamics vis-à-vis neighborhood upgrading between 1990 and 2011 in New York City. Overall, compared to non-upgraded NYC neighborhoods, businesses in the upgraded neighborhoods did not show significantly different changing patterns. Meltzer finds that although displacement did occur, it was not on a large scale. The newcomers that replaced existing establishments were mostly smaller, chain businesses, often providing new types of services. However, this study also found that businesses that exited upgraded neighborhoods often left vacant units that sat empty for relatively long periods.

Although the impacts of neighborhood upgrading are controversial, most studies suggest that business dynamics are closely related to neighborhood upgrading. Furthermore, the literature indicates that business dynamic patterns vary across different types of enterprises. However, due to the difficulty of obtaining detailed point-level business data, most studies exploring the relationship between business and neighborhood dynamics are qualitative case studies that focus on a relatively small study area, often on just one or two neighborhoods, with Meltzer (2016) as an exception. Additionally, existing studies mostly investigate the concerns that neighborhood upgrading can bring to local businesses, and they do not fully explore the possible opportunities that neighborhood improvements might produce. Thus, although still quite valuable, the existing studies that focus on local contexts may not present a comprehensive view of business dynamics in contemporary urban spaces.

5.3. Study area, data, and methods

This current study examined the patterns of business dynamics in the City of Los Angeles from 2000 to 2010 in relation to neighborhood upgrading. According to the 2010 census, Los Angeles proper, as the second-largest city in the United States, is home to about four million people. While it has not been growing at the same pace it did in earlier times, the city has continued to attract new residents and businesses to its neighborhoods over the last several decades. More importantly, many neighborhoods in the city have undergone rapid structural changes in recent years, and a number of Los Angeles neighborhoods have been involved in heated discussions about the effects of neighborhood upgrading.

This chapter focuses on the dynamics of retail businesses in particular, which can be influenced significantly by neighborhood upgrading for both demand- and supply-side reasons (see Meltzer & Schuetz, 2012; Waldfogel, 2010). More specifically, attention is given to the

births and deaths of retailers that have taken place within the City of Los Angeles between 2000 and 2010. The data for individual business establishments in retail sectors were collected from the ReferenceUSA establishment data (Infogroup, 2015), which provides a comprehensive list of business establishments in the US, along with their street addresses, North American Industry Classification System (NAICS) codes, and other attributes. The business entries were geocoded to discover each establishment's location within the city in the years 2000 and 2010.

Based on the NAICS codes, the retail business establishments were classified into 12 subcategories. In addition, for each establishment that existed in 2000, I identified whether it continued to operate in the same neighborhood in 2010, and if not, when it shut down or moved from the neighborhood in the course of that decade. For these businesses, the length of a business's survival was identified as the period from 2000 until its closure or relocation outside the neighborhood. In addition, by comparing the 2000 and 2010 data, I was also able to identify all newly-established businesses in each neighborhood during the 2000-2010 study period. While this approach does have a caveat—namely, the inability to capture establishments that opened after 2000 and closed before 2010—it was able to provide reliable counts for business creation at a disaggregated scale.

Consistent with the definitions provided by Byrne (2002) and Guerrieri et al. (2013) of neighborhood upgrading, in this work, I used household income as a measure of neighborhood upgrading, as was done in previous chapters. Generally, we can define upgraded neighborhoods as census tracts that had a median household income below the city's average in 2000 and that climbed up to some level between 2000 to 2010. Defining an "income rank increase" as an increase of at least one higher decile, approximately one third of Los Angeles neighborhoods can be classified as upgraded (293 out of 957 neighborhoods). Table 13 summarizes the residents'

sociodemographic characteristics and the changes that took place during the decade for both upgraded and non-upgraded neighborhoods in Los Angeles under the same definition. In order to check whether the definition of upgraded versus non-upgraded neighborhoods could alter the findings, I tested different thresholds for defining this upgrading process. Table 14 contains the multiple definitions of neighborhood upgrading I examined in this research.

Table 13. Residential Characteristics in Upgraded and Non-Upgraded Census Tracts

Variables	Mean of Upgraded Tracts	Mean of Non-Upgraded Tracts
White.Share	0.375	0.574
White.Share.Change	0.068	0.004
Hispanic.Share	0.610	0.391
Hispanic.Share.Change	0.003	0.029
African.American.Share	0.155	0.098
Asian.Share	0.098	0.109
House.Value	12.055	12.397
House.Value.Change	0.779	0.659
HH.Income	10.132	10.693
HH.Income.Change	0.427	0.226
Ownership.Ratio	0.231	0.465
Owenship.Ratio.Change	0.022	0.004
Married.Share	0.366	0.431
High.Edu.Share	0.131	0.285
Pro&Tech.Share	0.067	0.138
Unemployment.Rate	0.126	0.083
Poverty.Rate	0.305	0.168
Young.Share	0.344	0.342
Distance.CBD	4.501	4.789
Jobs.HH.Ratio	1.385	1.530
Street.Inter.Density	107.8	95.3
Spatial.Lag.HH.Income	10.250	10.647

Table 14. Definitions of "Neighborhood Upgrading"

Neighborhood Upgrading	Description	Data Source
Definition 1	Neighborhood that had a median household income below city average in 2000 and a rank increase in 2010	NCDB*a*
Definition 2	Neighborhood that had a median household income below city average in 2000 and a rank increase of at least one higher decile in 2010	
Definition 3	Neighborhood that had a median household income below city average in 2000 and a rank increase of at least two deciles higher in 2010	
Definition 4	Neighborhood that had a median household income below city average in 2000 and a rank increase of at least three deciles higher in 2010	

a:Acronym represents Neighborhood Change Database, Geolytics.

The geocoded business data, combined with the neighborhood information, depicted two important sides of business dynamics: the survival of existing businesses, and new business creation across neighborhoods. Table 15 summarizes the survival patterns for a variety of retailers that existed in 2000. Among the 24,327 establishments, 24.6% were found to be located within the same census tract in 2010. Interestingly, food and beverage stores turned out to have the highest survival rate, at around 45%. In contrast, electronics and appliance stores did not survive as well as other categories did, with fewer than 10% of the stores surviving that decade. For all sectors except for miscellaneous store retailers, the survival rates of businesses between 2000 and 2010 were lower for those in the upgraded neighborhoods. Generally speaking, for most types of retailers, businesses in the upgraded neighborhoods had shorter survival lengths compared with those located in non-upgraded neighborhoods. It is important to note, however, that the comparison outcomes were somewhat sensitive to exactly how neighborhood upgrading was defined and measured (see table 14). If neighborhood upgrading was defined in a narrower way (i.e., larger increases in income rank), the differences in the survival lengths for the businesses in the upgraded and non-upgraded neighborhoods tended to become smaller, with

Table 15a. Descriptive Statistics for the Survival of Businesses that Existed in 2000

		Retail	Motor	Furn.	Elec.	Bldg.	Food	Health
	Count.2000	24,327	1,918	1,486	2,708	956	3,212	1,449
	Survived.Share.2010	0.246	0.213	0.19	0.095	0.301	0.451	0.315
	Average.Survival.Length	4.279	4.077	3.787	2.953	4.896	6.078	4.785
Def. 1	*Count.(Share).in.U.Ns*[a].	10327 (0.425)	789 (0.411)	494 (0.332)	1024 (0.378)	379 (0.396)	1459 (0.454)	553 (0.382)
	Survived.Share.in.U.Ns.2010	0.235	0.200	0.174	0.092	0.280	0.432	0.315
	Survived.Share.in.N.U.Ns.2010	0.253	0.221	0.198	0.096	0.315	0.467	0.316
	Average.Survival.Length.in.U.Ns	4.191	4.011	3.733	3.091	4.739	5.855	4.821
	Average.Survival.Length.in.N.U.Ns	4.345	4.122	3.815	2.869	5.000	6.265	4.763
Def. 2	*Count.(Share).in.U.Ns.*	6373 (0.262)	545 (0.284)	441 (0.213)	645 (0.238)	271 (0.100)	933 (0.290)	339 (0.234)
	Survived.Share.in.U.Ns.2010	0.246	0.213	0.190	0.087	0.284	0.421	0.304
	Survived.Share.in.N.U.Ns.2010	0.248	0.215	0.192	0.097	0.308	0.463	0.319
	Average.Survival.Length.in.U.Ns	4.249	4.077	3.787	3.081	4.915	5.734	4.622
	Average.Survival.Length.in.N.U.Ns	4.320	4.099	3.741	2.913	4.889	6.219	4.835
Def. 3	*Count.(Share).in.U.Ns.*	3147 (0.129)	212 (0.111)	117 (0.079)	324 (0.120)	113 (0.118)	348 (0.108)	170 (0.117)
	Survived.Share.in.U.Ns.2010	0.232	0.217	0.179	0.090	0.283	0.445	0.282
	Survived.Share.in.N.U.Ns.2010	0.248	0.212	0.191	0.095	0.304	0.452	0.320
	Average.Survival.Length.in.U.Ns	4.114	4.000	3.932	3.244	4.920	6.078	4.394
	Average.Survival.Length.in.N.U.Ns	4.034	4.086	3.775	2.914	4.893	6.079	4.837
Def. 4	*Count.(Share).in.U.Ns.*	1241 (0.051)	58 (0.030)	46 (0.031)	105 (0.039)	32 (0.033)	135 (0.042)	56 (0.039)
	Survived.Share.in.U.Ns.2010	0.244	0.207	0.174	0.086	0.250	0.356	0.250
	Survived.Share.in.N.U.Ns.2010	0.246	0.213	0.190	0.095	0.303	0.456	0.319
	Average.Survival.Length.in.U.Ns	4.253	4.086	4.391	3.181	4.563	5.156	4.286
	Average.Survival.Length.in.N.U.Ns	4.284	4.081	3.769	2.944	4.913	6.118	4.809

a: U.N. stands for upgraded neighborhood; N.U.N. stands for non-upgraded neighborhood.

Table 15b. Descriptive Statistics for the Survival of Businesses that Existed in 2000

		Gas	Cloth.	Hobby	General	Other	Non-Store
	Count.2000	609	5,622	1,441	546	4,032	348
	Survived.Share.2010	0.399	0.217	0.219	0.218	0.219	0.152
	Average.Survival.Length	5.706	3.971	4.002	4.038	4.121	3.27
Def. 1	*Count.(Share).in.U.Ns.*	218 (0.358)	2987 (0.531)	560 (0.389)	293 (0.537)	1457 (0.361)	114 (0.328)
	Survived.Share.in.U.Ns.2010	0.362	0.197	0.214	0.195	0.221	0.114
	Survived.Share.in.N.U.Ns.2010	0.419	0.239	0.222	0.245	0.218	0.171
	Average.Survival.Length.in.U.Ns	5.491	3.745	4.068	3.840	4.095	3.079
	Average.Survival.Length.in.N.U.Ns	5.826	4.227	3.960	4.269	4.136	3.363
Def. 2	*Count.(Share).in.U.Ns.*	148 (0.243)	1684 (0.300)	381 (0.264)	143 (0.262)	895 (0.222)	74 (0.213)
	Survived.Share.in.U.Ns.2010	0.365	0.191	0.231	0.259	0.235	0.095
	Survived.Share.in.N.U.Ns.2010	0.410	0.228	0.215	0.203	0.215	0.168
	Average.Survival.Length.in.U.Ns	5.291	3.530	4.234	4.530	4.113	2.824
	Average.Survival.Length.in.N.U.Ns	5.839	4.159	3.919	3.873	4.123	3.391
Def. 3	*Count.(Share).in.U.Ns.*	63 (0.103)	1075 (0.191)	163 (0.113)	64 (0.117)	467 (0.116)	31 (0.089)
	Survived.Share.in.U.Ns.2010	0.365	0.209	0.215	0.250	0.210	0.032
	Survived.Share.in.N.U.Ns.2010	0.403	0.219	0.220	0.214	0.220	0.164
	Average.Survival.Length.in.U.Ns	5.460	3.670	4.074	4.453	3.938	2.968
	Average.Survival.Length.in.N.U.Ns	5.734	4.042	3.993	3.983	4.145	3.300
Def. 4	*Count.(Share).in.U.Ns.*	18 (0.030)	518 (0.092)	56 (0.039)	28 (0.051)	185 (0.046)	4 (0.011)
	Survived.Share.in.U.Ns.2010	0.389	0.243	0.268	0.214	0.207	0.000
	Survived.Share.in.N.U.Ns.2010	0.399	0.215	0.217	0.220	0.217	0.154
	Average.Survival.Length.in.U.Ns	5.278	4.048	4.679	4.286	4.497	4.250
	Average.Survival.Length.in.N.U.Ns	5.719	3.966	3.979	4.057	4.103	3.259

some sectors even showing the opposite pattern of association, thus suggesting the need for sensitivity analysis or robustness checks.

Table 16 summarizes the patterns of new business creation, which is, of course, another important aspect of business dynamics. In total, there were 17,966 new retail establishments created between 2000 and 2010, among which, clothing and clothing accessories stores made up about 28% of them. New business creation was generally more frequent in the upgraded neighborhoods, with clothing and clothing accessories stores having the largest difference compared to those in non-upgraded neighborhoods. Under definition 1, there was an average of 30.7 new businesses per square mile in the upgraded neighborhoods, versus 11.5 new businesses per square mile in the non-upgraded neighborhoods. This finding was also mostly stable across the varying definitions of neighborhood upgrading, but this does not necessarily mean that the sensitivity matters only for business closures.

To gain deeper insights into the relationship between neighborhood upgrading and business dynamics, two sets of analyses were conducted: (1) business survival analysis using an accelerated failure time (AFT) model, and (2) new business creation analysis using a Poisson count regression model. While these two analyses were carried out separately, they complemented one another. Together, they enable us to better understand how urban neighborhood upgrading can shape the ups-and-downs of urban retail business establishments.

Specifically, the survival analysis I employed followed the formulation of the AFT model (see, e.g., Cader & Leatherman, 2011) to determine key factors that affect the length of business survival, namely,

$$\ln t = X_i * \beta + \sigma\mu,$$

Table 16a. Descriptive Statistics for Retail Businesses Newly Established Between 2000 and 2010

		Retail	Motor	Furn.	Elec.	Bldg.	Food	Health
	Count.New.Businesses.2010	17.97	1,285	956	1,359	1,170	1,866	1,187
	Density.New.Businesses.(per.square.mile)	67.52	4.417	3.465	5.07	3.903	7.977	5.048
Def. 1	*Density.New.Businesses.in.U.Ns.(per.square.mile)*	96.84	5.662	4.093	6.342	4.517	12.221	6.331
	Density.New.Businesses.in.N.U.Ns.(per.square.mile)	52.94	3.798	3.152	4.438	3.597	5.868	4.41
Def. 2	*Density.New.Businesses.in.U.Ns.(per.square.mile)*	82.63	5.094	3.802	5.918	4.727	10.197	6.193
	Density.New.Businesses.in.N.U.Ns.(per.square.mile)	62.94	4.212	3.363	4.814	3.653	7.306	4.702
Def. 3	*Density.New.Businesses.in.U.Ns.(per.square.mile)*	96.60	4.110	5.031	6.675	5.596	9.326	7.355
	Density.New.Businesses.in.N.U.Ns.(per.square.mile)	64.26	4.451	3.289	4.890	3.713	7.826	4.790
Def. 4	*Density.New.Businesses.in.U.Ns.(per.square.mile)*	108.84	3.057	3.052	4.729	5.328	9.095	5.762
	Density.New.Businesses.in.N.U.Ns.(per.square.mile)	65.73	4.476	3.483	5.085	3.841	7.929	5.017

Table 16b. Descriptive Statistics for Retail Businesses Newly Established Between 2000 and 2010

		Gas	Cloth.	Hobby	General	Other	Non-Store
	Count.New.Businesses.2010	339	4,956	1,101	619	2,858	270
	Density.New.Businesses.(per.square.mile)	1.169	17.896	3.978	2.808	10.97	0.812
Def. 1	*Density.New.Businesses.in.U.Ns.(per.square.mile)*	1.616	30.74	5.222	4.469	14.83	0.799
	Density.New.Businesses.in.N.U.Ns.(per.square.mile)	0.947	11.512	3.36	1.981	9.059	0.818
Def. 2	*Density.New.Businesses.in.U.Ns.(per.square.mile)*	1.713	22.245	4.621	3.754	13.50	0.870
	Density.New.Businesses.in.N.U.Ns.(per.square.mile)	1.005	16.581	3.784	2.521	10.21	0.794
Def. 3	*Density.New.Businesses.in.U.Ns.(per.square.mile)*	1.373	32.897	5.076	4.028	14.23	0.905
	Density.New.Businesses.in.N.U.Ns.(per.square.mile)	1.146	16.214	3.855	2.671	10.61	0.801
Def. 4	*Density.New.Businesses.in.U.Ns.(per.square.mile)*	0.775	52.974	4.131	4.325	14.34	1.266
	Density.New.Businesses.in.N.U.Ns.(per.square.mile)	1.186	16.377	3.972	2.742	10.828	0.792

where *t* denotes the survival length of a retail business establishment; X_i is a covariate vector; β is the estimable coefficient vector; σ is a scale factor, which is related to the shape of the hazard function; and μ is an error term, assumed to be normally distributed. X_i includes both neighborhood attributes and firm characteristics.

For the neighborhood attributes, consideration was given to whether the retailer was located in a neighborhood experiencing upgrading, as well as that neighborhood's population density, median household income, and other socioeconomic indicators. Moreover, each establishment's relative position and its relation to other businesses were considered by including its distance to the CBD, its distance to the nearest transit station, and a location quotient indicator representing the density of the same type of retailers within the neighborhood. This analysis was also carried out in a way to capture (or to control for) the effects of detailed characteristics of individual establishments, including age, size (i.e., number of employees), and other firm-specific variables.

To examine the influence of neighborhood upgrading on the creation of new businesses, I adopted a multivariate Poisson count regression model. This model has widely been used in research concerning business location decisions (e.g., Acosta et al., 2011; Bhat et al., 2014; Guimaraes et al., 2004). As was done in previous studies, the business count data were assumed to have a Poisson distribution (Bhat et al., 2014):

$$Pr\ (Y = y) = \frac{e^{-\mu}\mu^{y}}{y!},$$

where y is a non-negative integer; and μ is a parameter that can be expressed as

$$E(Y) = var(Y) = \mu, \text{ and } \mu_i = exp\ \{X_i\beta\},$$

where β is a vector of coefficients, and X_i is a vector of independent variables that represent a range of neighborhood-level attributes, including neighborhood upgrading, as well as population density, median household income, racial/ethnic composition, and so forth.

Table 17. Variables and Descriptive Statistics

Variable	Description	Data Source	Model Group
Neighborhood.Upgrading	Four definitions (see table 14)	NCDB	Group 1
Employment.Size	Logged number of employees	ReferenceUSA[a]	
Business.Age	Years of business operation	ReferenceUSA	
Distance.CBD	Logged distance to City of Los Angeles CBD	TIGER[b]	Group 2
Distance.Transit	Logged distance to nearest transit stations	LACMTA[c]	
Store.Density	Density of same-sector stores in the neighborhood (stores per square mile)	ReferenceUSA	
Population.Density	Density of population of the neighborhood (thousand persons per square mile)	NCDB	
White.Share	Share of White population in 2000	NCDB	Group 3
African.American.Share	Share of African American population in 2000	NCDB	
Hispanic.Share	Share of Hispanic population in 2000	NCDB	
High.Edu.Share	Share of population aged 25 or over with a bachelor's degree or higher in 2000	NCDB	
Pro&Tech.Share	Share of population with professional or technical occupation in 2000	NCDB	
Unemployment.Rate	Unemployment rate in 1999	NCDB	
HH.Income	Logged median household income in 1999	NCDB	
Poverty.Rate	Share of population below poverty line in 1999	NCDB	
Young.Share	Share of population aged 25-44 in 2000	NCDB	
House.Value	Logged median house values in 1999	NCDB	

a: ReferenceUSA (Infogroup, 2015).
b: Topologically Integrated Geographic Encoding and Referencing, from the US Census Bureau.
c: Acronym represents Los Angeles County Metropolitan Transportation Authority.

Table 17 provides a summary of the variables and their data sources. In order to fully understand the impact of neighborhood upgrading on business dynamics, the two models were estimated not only for the entire set of retailers but also for each of the 12 subgroups. Moreover,

to reveal the sensitivity/robustness of the findings, multiple versions of the models were estimated to test different definitions of neighborhood upgrading and the inclusion and exclusion of various socioeconomic variables. Model 1 was the simplest version: it included only the neighborhood upgrading variable and the businesses' own attributes (group 1 variables). model 2 added locational variables, including the businesses' distances to the CBD and transit stations and the densities of the population and stores in the neighborhood (group 2 variables), on top of model 1. Lastly, model 3 was the most inclusive, controlling for other neighborhood-level attributes (group 3 variables).

5.4. Results

This section presents the outcomes of the AFT and Poisson count model estimations in the following order. First, I provide the results from the most inclusive version of the AFT model estimation (controlling for the group 1, group 2, and group 3 variables) to show how neighborhood and individual establishment-level factors might have influenced the survival rates of retailers overall, as well as within each subgroup. I follow this information with the presentation of the estimates obtained from the different AFT model specifications and definitions of neighborhood upgrading. This allows us to have a more thorough understanding of the association between neighborhood upgrading and business closures. Next, I present the results of the Poisson regression in a similar fashion: the most inclusive model outcomes first, and then the estimates from the other settings, revealing the sensitivity (or robustness) of the findings concerning the relationship between neighborhood upgrading and new business creation. The full model outcomes presented for both analyses correspond to definition 2 (i.e., neighborhood upgrading: poor neighborhoods and an income rank that increased at least one decile higher), model 3 (the most inclusive model) results in the sensitivity checks.

Table 18 presents the full AFT regression analyses outcomes of the most inclusive model to illustrate which factors might explain the survival lengths of businesses for each retail sector. The results showed great variation across the different sectors. For both furniture and home furnishings stores and electronics and appliance stores, these businesses were influenced solely by the enterprises' own characteristics (employment size and business age variables). For motor vehicle and parts dealers and health and personal care stores, the survival of these businesses was also associated with their locations, as well as their relative location with respect to other stores of the same type. Lastly, for building material and garden equipment and suppliers dealers, food and beverage stores, and clothing and clothing accessories stores, the neighborhood-level factors dominated the impacts.

On the individual business establishment level, both business size (i.e., number of employees) and age of the establishment showed positive correlations with the survival length of the business establishments for most sectors, indicating that large and long-established businesses were more likely to hold up well. Moreover, in some sectors, the survival rates of businesses were sensitive to location. For example, for motor vehicle and parts dealers, food and beverage stores, and clothing and clothing accessories stores, being farther from the CBD was associated with longer terms of survival. On average, for health and personal care stores and sporting goods, hobby, musical instrument, and book stores, their proximity to transit stations increased their survival lengths.

In addition to the businesses' characteristics and locations, some retail sectors were more influenced by the neighborhood environment, such as food and beverage stores, clothing and clothing accessories stores, and building material and garden equipment and suppliers dealers. Among the neighborhood attributes, the residents' races, occupations, education levels, and

Table 18a. Accelerated Failure Time Model Results

	Retail	**Motor**	**Furn.**	**Elec.**	**Bldg.**	**Food**	**Health**
Distance.CBD	0.154***	0.356**	0.025	0.075	0.004	0.408***	-0.099
Distance.Transit	-0.063**	-0.074	-0.087	-0.010	-0.025	-0.014	-0.266**
Employment.Size	0.110***	0.178**	0.205*	0.008	0.240*	-0.029	0.371***
Business.Age	0.038***	0.025***	0.036***	0.027***	0.043***	0.053***	0.050***
Population.Density	0.002*	-0.001	0.008	0.001	0.010	0.011***	0.004
Store.Density	0.000	0.003	-0.001	0.000	0.003	-0.002	0.001
White.Share	-0.320***	-0.043	-0.473	-0.011	-0.645	-0.866**	-0.395
African.American.Share	-0.324***	-0.054	-0.128	-0.223	-0.183	-0.900**	-0.428
Hispanic.Share	-0.324***	0.188	-0.068	-0.218	-0.337	-1.087***	-0.551
High.Edu.Share	-0.422**	0.704	-0.200	0.307	-2.249*	-2.976***	-0.147
Pro&Tech.Share	1.051**	-0.078	1.487	-0.507	3.217	3.416*	0.952
Unemployment.Rate	-0.158	0.970	0.855	0.473	-2.354*	0.076	-0.211
Poverty.Rate	-0.076	-0.155	-0.344	0.164	1.084	-1.251**	0.072
Young.Share	-0.348*	-0.671	0.844	-0.536	-0.428	-0.164	-1.264
House.Value	-0.029*	-0.163	-0.039	-0.053	0.347*	0.072	0.051
Neighborhood.Upgrading	-0.001	-0.006	-0.098	-0.004	-0.213*	0.049	0.100
Constant	1.827***	2.360	1.954	2.094**	-1.704	1.341	2.781*
LR Chi$_2$	1653.4	51.05	55.00	39.41	62.52	204.74	87.30

Table 18b. Accelerated Failure Time Model Results

	Gas	Cloth.	Hobby	General	Other	Non-Store
Distance.CBD	-0.061	0.314***	0.075	0.340	-0.054	0.223
Distance.Transit	-0.203	0.040	-0.228**	-0.111	-0.090	0.288
Employment.Size	0.459*	-0.009	0.268*	0.319**	0.180**	0.108
Business.Age	0.019	0.045***	0.040***	0.039*	0.026***	0.009
Population.Density	-0.012	0.001	0.003	-0.003	0.003	0.008
Store.Density	-0.003	0.000	0.000	-0.006	0.000	-0.039*
White.Share	0.062	-0.674**	-0.534	-0.373	0.108	-0.293
African.American.Share	0.476	-0.514*	-0.677	-0.675	-0.284	-0.513
Hispanic.Share	0.460	-0.411*	-0.316	-0.621	-0.195	-1.157
High.Edu.Share	1.354	0.027	-1.101	-2.636*	-0.629	-0.678
Pro&Tech.Share	-2.439	1.932*	2.967*	4.453	1.082	-1.573
Unemployment.Rate	-5.350***	-0.393	0.043	-1.374	0.225	-0.436
Poverty.Rate	0.333	0.411	-0.224	2.203*	-0.505	0.819
Young.Share	1.597	-1.070**	-0.245	-0.013	-0.361	1.427
House.Value	-0.218	-0.075***	0.007	0.094	-0.047	0.187
Neighborhood.Upgrading	-0.095	-0.073	0.066	0.194	0.101	-0.148
Constant	5.095	2.068	2.159*	-0.320	3.041***	-1.601
LR Chi^2	26.10	227.1	65.20	40.55	72.92	17.30

financial statuses tended to influence the survival lengths of retail businesses in many respects. Here, it should be noted that race factors tended to influence food and beverage stores and clothing and clothing accessories stores in an unexpected way: the shares of White, African American, and Hispanic residents all showed negative correlations with the survival lengths of the businesses in these two sectors compared to Asians or other race (the reference category).

Table 19 summarizes the neighborhood upgrading variable results in the 12 sets of AFT models that compare the different definitions of neighborhood upgrading and the different variables included in the models. The results showed that the neighborhood upgrading variable had impacts on the lengths of retail stores' survival for some of the sectors. For all the models, the sectors that appeared to be influenced the most by upgrading included the building material and garden equipment and supplies dealers (significant in four models), the food and beverage stores (significant in one model), and the clothing and clothing accessories stores (significant in three models). In all of the cases, the upgraded variable showed negative associations with the survival lengths of the aforementioned influenced sectors. However, it should be noted that, in general, neighborhood upgrading did not have strong associations with the survival of retail businesses, and also that the associations were sensitive to adding or dropping neighborhood variables and different definitions of upgrading, meaning that neighborhood upgrading might not have been a decisive factor in determining a business's exit from the local market.

The Poisson count model results displayed in table 20 reveal the attributes that account for new business creation. In general, among the different sectors, the number of new clothing and clothing accessories stores was best explained by the model, and about 57% of the variation was explained by the independent variables. All the sectors, with the exception of the non-store retailers, showed a significant positive association between the number of new businesses and

Table 19a. Coefficients of the "Upgraded" Variable for All Accelerated Failure Time Models

	Model[a]	Retail[b]	Motor	Furn.	Elec.	Bldg.	Food	Health
Def. 1	Model 1	-0.076	-0.068	-0.009	-0.013	-0.093	-0.051	0.042
	Model 2	-0.042*	-0.026	-0.074	-0.010	-0.212*	0.023	-0.029
	Model 3	-0.022	-0.043	-0.061	-0.009	-0.243*	0.097	0.055
Def. 2	Model 1	-0.039	-0.030	-0.048	-0.017	-0.124	-0.051	0.020
	Model 2	-0.020	0.002	-0.093	-0.012	-0.202*	-0.007	0.010
	Model 3	-0.001	-0.006	-0.098	-0.004	-0.213*	0.049	0.010
Def. 3	Model 1	-0.035	0.037	-0.070	0.012	-0.057	-0.012	-0.010
	Model 2	-0.012	0.070	-0.108	0.016	-0.097	0.015	-0.030
	Model 3	-0.018	0.090	-0.132	0.023	-0.114	0.049	0.040
Def. 4	Model 1	-0.012	-0.119	-0.041	0.008	-0.164	-0.277*	-0.068
	Model 2	0.026	-0.053	-0.110	0.020	-0.225	-0.163	-0.105
	Model 3	-0.004	-0.026	-0.111	-0.042	-0.240	-0.081	0.055

a: Model 1 contains the Group 1 variables; Model 2 contains the Group 1 + Group 2 variables; and Model 3 is the most inclusive, containing the Group 1 + Group 2 + Group 3 variables.
b: For all the retail business models, sector specific dummy variables were included.

Table 19b. Coefficients of the "Upgraded" Variable for All Accelerated Failure Time Models

	Model	Gas	Cloth.	Hobby	General	Other	Non-Store
Def. 1	Model 1	-0.195	-0.206***	0.010	-0.021	-0.033	-0.276
	Model 2	-0.141	-0.112*	0.007	0.075	-0.028	-0.190
	Model 3	-0.127	-0.103	0.078	0.012	0.020	-0.228
Def. 2	Model 1	-0.128	-0.122**	0.034	0.220	0.057	-0.286
	Model 2	-0.062	-0.070	0.034	0.182	0.065	-0.183
	Model 3	-0.095	-0.073	0.066	0.194	0.101	-0.148
Def. 3	Model 1	-0.225	-0.060	-0.030	0.091	-0.037	-0.327
	Model 2	-0.171	0.015	-0.051	0.094	-0.035	-0.221
	Model 3	-0.272	-0.071	-0.044	0.108	-0.044	-0.322
Def. 4	Model 1	-0.203	-0.026	0.136	0.079	0.186	-0.345
	Model 2	-0.121	0.081	0.125	0.072	0.188	-0280
	Model 3	-0.249	-0.074	0.203	0.094	0.167	-0.276

Table 20a. Poisson Count Model Results

	Retail	Motor	Furn.	Elec.	Bldg.	Food	Health
Store.Density	0.001***	0.033***	0.026***	0.016***	0.052***	0.018***	0.017***
Population.Density	-0.044***	-0.053***	-0.037***	-0.029***	-0.039***	-0.035***	-0.021***
Transit.Density	0.001***	0.000	0.000	-0.001*	0.003***	-0.001*	0.000
Distance.CBD	-0.247***	0.483***	0.028	0.548***	0.204	-0.551***	0.193
White.Share	-0.348***	0.113	-0.403	-0.569	0.547	0.859**	-0.134
African.American.Share	-1.468***	-0.205	-0.690	-2.288***	-0.834*	1.056***	-1.231***
Hispanic.Share	-0.705***	-0.405	-0.226	-2.102***	-1.578***	1.123***	-1.874***
High.Edu.Share	2.552***	-2.308**	-0.015	0.134	-1.619**	1.174*	2.560***
Pro&Tech.Share	-4.711***	-2.373	1.767	-2.659*	0.737	0.747	-8.211***
Unemployment.Rate	1.555***	0.461	-0.109	1.612*	-0.184	2.486***	0.393
Poverty.Rate	2.978***	1.429**	2.727***	2.503***	0.791	2.375***	1.677**
Young.Share	4.170***	4.033***	1.314*	1.673***	3.019***	1.399**	3.259***
House.Value	-0.059***	0.241*	0.207	-0.128*	-0.081	-0.163***	-0.012
Neighborhood.Upgrading	0.034	-0.113	-0.066	0.000	0.236**	-0.026	0.127
Business.Age	0.058***	0.015*	0.001	-0.002	0.030***	0.002	0.022**
Employment.Size	0.817***	0.574***	1.281***	1.404***	0.262***	0.429***	0.658***
Constant	2.666***	-5.759***	-3.812*	-0.710	-0.373	2.390***	-1.115
Pseudo R_2	0.411	0.219	0.221	0.238	0.165	0.240	0.227

Table 20b. Poisson Count Model Results

	Gas	Cloth.	Hobby	General	Other	Non-Store
Store.Density	0.068***	0.000***	0.037***	0.023***	0.007***	-0.001
Population.Density	-0.029***	-0.077***	-0.050***	-0.025***	-0.032***	-0.046***
Transit.Density	0.001	0.003***	-0.002***	0.000	0.002***	0.002**
Distance.CBD	0.416	-0.687***	-0.409***	-0.325*	-0.052	0.371
White.Share	1.022	-1.216***	-0.014	-0.326	-0.034	0.427
African.American.Share	0.257	-2.409***	-1.332**	-0.001	-0.643**	-1.181
Hispanic.Share	-0.695	0.428**	0.304	-0.273	-0.457*	-0.948
High.Edu.Share	0.142	5.916***	1.729**	0.726	0.575	2.331
Pro&Tech.Share	-3.778	-5.889***	0.437	-3.210	0.566	-4.476
Unemployment.Rate	1.644	3.688***	-0.839	-0.082	0.358	1.311
Poverty.Rate	0.113	3.605***	2.490***	2.410***	1.818***	2.137
Young.Share	-0.722	5.291***	1.541**	1.660	2.300***	4.390***
House.Value	-0.200	0.026	-0.110	0.074	-0.097**	-0.236*
Neighborhood.Upgrading	0.217	0.048	0.068	0.045	0.118*	-0.097
Business.Age	0.020	0.048***	-0.007	0.048***	0.031***	0.031
Employment.Size	0.986***	1.233***	0.854***	0.446***	0.968***	0.854***
Constant	-0.818	1.102**	1.940	-0.596	0.868	-1.753
Pseudo R^2	0.126	0.570	0.316	0.182	0.297	0.131

the density of stores in the same sector that existed in 2000. The results also revealed that for all sectors, those neighborhoods with lower population densities were more likely to have more new businesses open up.

Location was shown to be influential for most sectors. Being farther from the CBD increased a neighborhood's new stores in the sectors of motor vehicle and parts dealers and electronics and appliance stores, while the impact was the opposite for food and beverage stores, clothing and clothing accessories stores, and sporting goods, hobby, musical instrument, and book stores. Another factor was the density of transit stations in the neighborhood, which influenced the number of new stores in the sectors of building material and garden equipment and supplies dealers, miscellaneous store retailers, and non-store retailers in different ways. The socioeconomic, demographic, and housing factors of the neighborhood also played roles in the majority of the retail sectors. For instance, for many sectors, higher poverty and unemployment rates tended to have a clear association with larger numbers of new businesses opening up. Conversely, a neighborhood's racial composition was complicated for explaining the numbers of new businesses for different sectors. For food and beverage stores, for example, the shares of White, African American, and Hispanic populations were all positively associated with the number of new stores, whereas for some other types of retail stores, the impacts of the shares of African American and Hispanic populations were negative. Meanwhile, for clothing and clothing accessories stores, the three racial factors showed different effects.

Furthermore, other neighborhood characteristics, such as the share of college graduates, the share of the population holding professional and technical occupations, housing prices, and so on, all impacted the creation of new clothing and clothing accessories stores. The characteristics of same-sector businesses also influenced new business creation. For all 12

Table 21a. Coefficients of the "Upgraded" Variable for the Poisson Count Models

	Model	Retail	Motor	Furn.	Elec.	Bldg.	Food	Health
Def. 1	Model 1	0.225***	0.146*	-0.010	0.036	-0.084	0.584***	0.051
	Model 2	0.249***	0.325***	0.050	0.183**	0.017	0.349***	0.002
	Model 3	0.176***	0.006	0.075	0.111	0.199*	0.087	0.047
Def. 2	Model 1	0.105***	-0.061	-0.176*	-0.188**	-0.035	0.171***	-0.047
	Model 2	0.108***	0.094	-0.073	0.051	0.144	0.113*	0.137
	Model 3	0.034	-0.113	-0.066	0.000	0.236**	-0.026	0.127
Def. 3	Model 1	0.393***	-0.177	0.100	-0.008	0.117	0.207**	0.268**
	Model 2	0.305***	-0.033	0.033	0.218*	0.253**	0.069	0.369***
	Model 3	0.141***	-0.137	0.061	0.140	0.234*	-0.017	0.290**
Def. 4	Model 1	0.784***	-0.373*	-0.364*	0.135	0.172	0.488***	0.415***
	Model 2	0.538***	-0.199	-0.253	0.307*	0.206	0.176	0.464***
	Model 3	0.311***	-0.208	-0.258	0.167	0.141	0.130	0.289*

Table 21b. Coefficients of the "Upgraded" Variable for the Poisson Count Models

	Model	Gas	Cloth.	Hobby	General	Other	Non-Store
Def. 1	Model 1	0.056	0.927***	0.267***	0.661***	0.133***	-0.355*
	Model 2	0.253	0.570***	0.070	0.474***	0.091*	-0.114
	Model 3	0.154	0.442***	0.147	0.210*	0.127*	-0.075
Def. 2	Model 1	0.745	0.260***	-0.181*	0.265**	-0.059	-0.321*
	Model 2	0.278*	0.255***	0.094	0.162	0.152**	-0.046
	Model 3	0.217	0.048	0.068	0.045	0.118*	-0.097
Def. 3	Model 1	-0.275	0.858***	0.071	0.422***	0.187***	0.074
	Model 2	-0.153	0.573***	0.280**	0.235*	0.270***	0.306
	Model 3	-0.224	0.166***	0.154	0.206	0.155*	0.124
Def. 4	Model 1	-0.250	1.484***	0.336*	0.747***	0.354***	0.702**
	Model 2	-0.217	0.798***	0.439***	0.403**	0.293***	0.772**
	Model 3	-0.327	0.266***	0.267	0.471**	0.109	0.474

sectors, the average sizes of businesses in the same sector existing in 2000 in a neighborhood were positively associated with new business creation. Furthermore, the ages of existing businesses in the neighborhood also mattered: for half of the sectors, neighborhoods with more long-established stores in 2000 were more likely to attract more new businesses in the same sectors.

Table 21 summarizes the results of the neighborhood upgrading variable in all of the examined Poisson count models. It is important to note that neighborhood upgrading was likely to impact the creation of new business stores in many sectors. More specifically, upgraded neighborhoods were more likely to attract more new building material and garden equipment and supplies dealers, food and beverage stores, health and personal care stores, clothing and clothing accessories stores, general merchandise stores, miscellaneous store retailers, and the entire group of the retail businesses in general. Different from the impact on business deaths, neighborhood upgrading showed significant and robust results, even across the definitions and model specifications. The neighborhood upgrading variable in sectors like food and beverage stores, health and personal care stores, clothing and clothing accessories stores, general merchandise stores, and miscellaneous store retailers had significant, positive coefficients in more than six of the 12 examined models. For a small number of sectors, such as motor vehicle and parts dealers and electronics and furniture and home furnishings stores, the results were either inconsistent across the models or showed negative associations.

5.5. Summary and discussion

In this study, I analyzed both the creation and closure of retail establishments within the City of Los Angeles from 2000 to 2010 in order to better understand the association between contemporary neighborhood upgrading and changes to the business landscape. While findings

from an investigation of just a single city, Los Angeles—which is unique in many respects, are not necessarily generalizable to other settings, the present study was meant to extend the literature by providing a more systematic examination of the relationships under review using AFT and Poisson count regression models, which enable us to reveal the double-sided implications of neighborhood upgrading for business dynamics. Extensive sensitivity analyses were also carried out to assess how the results could differ when different definitions of neighborhood upgrading were employed in combination with varying sets of control variables.

Consistent with prior research, the findings showed that the impacts of neighborhood upgrading for businesses cannot be seen simply as either good or bad. On the one hand, the results showed that neighborhood upgrading could shorten the survival lengths of existing retail businesses in some subcategories, such as clothing and clothing accessories stores, while the results turned out to be sensitive to the model specifications and the measurements used. On the other hand, neighborhood upgrading appeared to be strongly associated with a larger number of new business openings, at least in terms of the retail sectors of interest.

Taken together, on the surface, these results seem to confirm the intuitive expectation that neighborhood upgrading could lead to more rapid displacement (or churning) of business establishments. While this interpretation is not necessarily wrong, a closer look at the data provides a more nuanced understanding. For example, one important finding was the substantial variation across the subcategories of retailers. Exactly how neighborhood upgrading influenced urban retail dynamics was far from uniform, as each retailer subcategory presented a distinct pattern of performance between upgraded and non-upgraded neighborhoods. While clothing and clothing accessories stores were more likely to struggle in neighborhoods on the rise, health and

personal care stores were found to proliferate in these neighborhoods with little evidence of a reduced length of survival.

Another point to be stressed is that the positive impact of neighborhood upgrading on business creation turned out to be quite substantial and robust. While the outcomes from two different models (with two different units of analysis) cannot be compared directly, evidence for the contribution to new business openings appeared to be stronger than was the case for accelerated business closures. More specifically, in most subcategories under review, the number of new businesses was found to be significantly larger in the group of updated neighborhoods compared with non-upgraded neighborhoods, although the magnitudes of the difference varied across categories. The multiple estimation settings used in this work to check the sensitivity/robustness of the results also suggested that the impacts on business creation remained statistically significant in most cases, even under different definitions of neighborhood upgrading or different model specifications. The most robust results were found in the clothing and clothing accessories stores and the food and beverage stores. For these two subcategories, the neighborhood upgrading variable exhibited a significant, positive coefficient on the number of new businesses created between 2000 and 2010 in almost every model estimation setting.

The findings also revealed that different definitions of neighborhood upgrading could alter the results for some models. A typical example of this was the impacts of neighborhood upgrading on the creation of new health and personal care stores. Under the broader definitions (definitions 1 and 2), neighborhood upgrading was not significantly correlated with the creation of stores in this subcategory, whereas, under narrower definitions (definitions 3 and 4), neighborhood upgrading was found to have a significant impact across all the models, although the reasons why this impact existed only in neighborhoods that underwent more substantial

upgrades remains obscure. Given that the effect of neighborhood upgrading on business dynamics is sensitive to the definition of neighborhood upgrading, future research should also examine the influences while considering other possible measurements or definitions of neighborhood upgrading, such as physical beautification, increased public and private investment, improved socioeconomic status other than income, and so forth.

Of course, it is important to note that the findings of this study do not imply that the economic benefits to neighborhoods will always outweigh the losses. New retail establishments, particularly those in the categories of building material and garden equipment and supplies dealers, may be created at the expense of other industries, such as manufacturers or wholesale distributors, which are increasingly decentralized in contemporary metropolitan areas. Again, the business implications of neighborhood upgrading are likely to be industry-specific, and urban planners and policy makers should pay greater attention to possible patterns of structural change rather than simply praising or blaming rapid neighborhood upgrading. It is also important to put more effort into identifying vulnerable groups of business enterprises and developing effective strategies to protect them through appropriate interventions. Future research supporting such initiatives, accomplished by promoting a more nuanced understanding of the consequences of neighborhood upgrading, is thus extremely valuable.

The two-sided approach (business survival and business creation) adopted in this study helps us to understand the impacts from each side. However, it should also be pointed out that investigating the births and deaths of businesses separately may limit urban planners and policy makers from seeing the overall picture of the role of neighborhood upgrading in terms of shaping business dynamics. Therefore, it would be useful for future research to develop ways to analyze the impacts of neighborhood upgrading on both sides simultaneously.

Chapter 6. Conclusion

While neighborhood upgrading has become a widespread, global situation, debates about its possible advantages and drawbacks have been heated. Within the literature, the dialogue about neighborhood upgrading is often binary: either gentrified or not gentrified, either displaced or not displaced, either beneficial or harmful. However, this dichotomous understanding of neighborhood upgrading neglects the true complexity of the situation. It also assumes a universal understanding of the term "gentrification," even though no consensus has been reached thus far in terms of a precise definition. Indeed, the primary aim of the present work has been to understand the nuances among the different types of neighborhood upgrading and the multidimensional impacts of such processes on various stakeholders.

This dissertation research examined neighborhood change in three key respects: (1) the various forms of neighborhood upgrading, (2) the impacts of neighborhood upgrading on local residents, and (3) the association between neighborhood upgrading and business dynamics. By exploring neighborhood change patterns in Los Angeles and other large US cities during the 2000s, this work draws a more comprehensive picture for scholars, policy makers, and urban planners, allowing all to better understand the gentrification process and its ramifications.

People are often concerned about the negative consequences of neighborhood upgrading. It is frequently taken for granted that neighborhood upgrading is associated with displacement, and often, that residential displacement is related to changes in racial compositions. However, chapter 3 discussed the diversity of neighborhood upgrading patterns in over 6,000 census tracts in the 10 most populous cities in the US, and the results of the finite mixture modeling analyses presented the multiformity of neighborhood upgrading: that updated neighborhoods were featured differently in multiple aspects, and that not all cases of neighborhood upgrading have

occurred along with significant racial changes. To better examine the factors that determined each of the identified different types of neighborhood upgrading, I applied logistic regression analyses. The results of this work showed that the census tracts identified with the typical attributes of gentrification were likely to be located adjacent to wealthy neighborhoods, whereas the tracts that underwent upgrading transformations without a massive White influx tended to have adjacent low-income neighborhoods.

Chapter 4 further explored the possibilities of displacement by the same racial group. Focusing on Southern California in the 2000s, this study paid precise attention to certain characteristics of in-movers and existing residents within the neighborhood upgrading process and examined the factors contributing to the different upgraded neighborhoods through a two-phase approach. In the first phase, I attempted to identify areas in which potential displacement within races took place using the ACS PUMS datasets for the periods 2008-2012 and 2013-2017. Here, multiple sets of comparisons were made between in-movers and existing residents. Then, in the second phase, I conducted six semi-structured interviews with neighborhood council members from four Los Angeles neighborhoods to better understand how these four areas have changed and how people have perceived the changes. By adopting both exploratory analysis and field study, I found that higher-income minorities sometimes displaced lower-income minorities and that this was most likely to occur in relatively poor neighborhoods. Meanwhile, the work also showed that higher-income minorities tended to choose neighborhoods with more young people. It is also important to mention that in the 2013-2017 period, areas that experienced displacement within the African American population exhibited distinct patterns, whereby higher-income African American in-movers tended to select areas having residents with higher socioeconomic status, thus showing new possibilities of future neighborhood change trajectories.

Likewise, business displacement has been another concern in terms of neighborhood upgrading. In chapter 5, I examined how businesses might be affected by neighborhood upgrading processes. In this work, I reviewed over 2,000 census tracts and more than 20,000 retail stores in the City of Los Angeles in the 2000-2010 period. By adopting AFT models and Poisson count models, I investigated the impacts of neighborhood upgrading in two respects: business creation, and business survival length. I also conducted a comprehensive set of sensitivity analyses to ensure the robustness of my models. The results of this work demonstrated that the association between the lengths of businesses and neighborhood upgrading was very sensitive to business sectors and other neighborhood factors, and rather, neighborhood upgrading was more likely to attract new businesses.

This work had several limitations, which can point the way for future research. Foremost among these limitations, "neighborhood upgrading" means different things to different people. Although this research explicitly viewed rises in income as a determining factor for defining which neighborhoods have undergone upgrading, various other aspects, such as physical neighborhood changes and occupational changes among residents, are also vital facets playing a part in neighborhood dynamics. Thus, future research should pay attention to other factors that may be involved in the upgrading process.

Additionally, this work focused specifically on central cities, particularly Los Angeles, and this may lead to some restrictions on scholars and urban planners hoping to generalize this dissertation's conclusions more broadly. With recent developments in suburban and outer-skirt areas, it is clear that neighborhood upgrading occurs beyond urban areas. Therefore, future research could investigate the impacts and different forms of neighborhood change in suburban areas and beyond.

It should also be pointed out that, like many other studies on neighborhood upgrading, constraints in terms of data availability limited the scope of my analyses. Factors like the physical features of neighborhoods, including neighborhood design, walkability, etc., should have been considered as controlling variables; however, due to a dearth of data, these variables were not included in the present research. Most of my analyses relied on aggregated census information to detect neighborhood-level features. Although helpful, aggregated information limits our ability to view any subtle changes in neighborhood change. While the second phase of the research for chapter 4 used interviews to investigate some of the more detailed patterns of neighborhood change, this investigation method was applied in only four neighborhoods and with six neighborhood council members. In future research, more interviews should be conducted to better understand the nuances among and within various neighborhoods and to confirm the findings of the present work.

Overall, this dissertation has debunked aspects of our traditional, stereotypical understanding of neighborhood upgrading. For example, the results of this work demonstrate that some degree of neighborhood upgrading can occur without massive racial/ethnic changes, and also that "gentrifiers" may not be limited to one particular race/ethnicity. Furthermore, instead of always being understood as harmful to businesses, this research showed that neighborhood upgrading could provide opportunities to some business sectors. Taken together, these findings suggest that it is not wise for urban planners and policy makers to simply avoid neighborhood upgrading altogether, and that it is not always judicious for local residents to fear such neighborhood changes.

That said, this dissertation does not deny that negative effects can occur with neighborhood upgrading. Efforts are needed to protect lower-income residents and small

businesses while neighborhoods engage in development and redevelopment projects. In particular, planners and policy makers should ensure that the proper amount and the proper quality of affordable housing is available so that poorer residents will not constantly be displaced. This could be accomplished either by directly constructing public housing or by subsidizing private programs, such as Section 8. In addition, since a great amount of displacement occurs because of landlords' evictions, strong policies should be enacted to protect tenants' rights. For example, we should encourage policies that help low-income households purchase their homes by ensuring they have access to loans. Furthermore, based on rental market prices, various rental regulations could be put into place as useful tools for protecting low-income renters and for ensuring the affordability of their housing.

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