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# The Local Socioeconomic Impact of Destination Redevelopments in Detroit and Las Vegas (1990-2010): A Novel Geographically-Weighted Shift-Share Analysis Approach

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The Local Socioeconomic Impact of Destination Redevelopments in Detroit and Las Vegas  
(1990-2010): A Novel Geographically-Weighted Shift-Share Analysis Approach

Joseph John Danko III, Ph.D.

University of Connecticut, 2017

**ABSTRACT**

The construction of new or renovation of old theaters; sport stadiums; museums; casinos; parks; and other destination sites (i.e., henceforth referred to as “destination redevelopments”) are among the most popular, alluring and expensive types of urban revitalization projects around the world. In addition to aiming to attract new visitors, local officials and other community stakeholders often invest in these projects in an attempt to both retain existing residents and recruit new residents into the neighborhoods in which these redevelopments are located. Previous research has documented some of the socioeconomic effect of specific subcategories of destination redevelopments, most particularly with respect to its impact on real estate value. However, despite the fact that the entire category of these projects are promoted to have a similar socioeconomic impact, many of the subcategories are relevant to only specific cities. Scant research has explored the degree to which this entire category of redevelopments alters the local socioeconomic composition of nearby neighborhoods. Moreover, previous studies have tended to draw conclusions about local statistical changes without simultaneously controlling for municipal trends, trends in commonly defining characteristics (for analyses of cohorts), and the effects of spatial dependency. To bridge these gaps in the literature, the present research proposes a novel geographically-weighted shift-share analysis approach that uses GIS to analyze the socioeconomic impacts at the local level. It then applies this technique to assess the impact of the collective category of destination redevelopments in the seemingly disparate cities of Detroit and Las Vegas between 1990 and 2010.

The Local Socioeconomic Impact of Destination Redevelopments in Detroit and Las Vegas  
(1990-2010): A Novel Geographically-Weighted Shift-Share Analysis Approach

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B.A., Clark University, **2013**

M.S., Clark University, **2014**

A Dissertation

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APPROVAL PAGE

Doctor of Philosophy Dissertation

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(1990-2010): A Novel Geographically-Weighted Shift-Share Analysis Approach

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## INTRODUCTION

Intra-urban change has been and remains one of the most analyzed topics in geography and other social sciences. Understanding how and why the composition of these areas change is an important task for community development corporations, local officials and other stakeholders, including local institutional, business and community leaders (Hoyt, 1939; Whyte, 1988; Mallach, 2008; PPS, 2012). Monitoring intra-urban change helps evaluate the effectiveness of public policy regarding sustainable and equitable economic and community development (Perry, 1929; Mumford, 1958; Glass, 1964; Murray, 1984; Davis 1990; Mele, 2013). It also aids in tracking changes in the needs and well-being of local residents and businesses (Olmsted, 1870; Du Bois, 1899; Jackson, 1952; Young and Willmott, 1957; Jacobs, 1961; Bunge, 1971; Wilson, 1984).

Although a lot of research on intra-urban change was inspired by the effects of industrialization on cities, previous literature on pre-industrial cities provided the foundation for academic understandings of the physical layouts of cities and the factors that affected the evolution of certain intra-urban areas. For example, Kitto (1951) explored the importance and changing form of the Polis, or Greek city of antiquity, including the characteristics of specific neighborhoods (e.g., the marketplace or agora – the center of communal life) and synoecism (i.e., the process of neighboring villages becoming incorporated and annexed into the substructure of nearby poleis). Sjoberg (1955) examined the geography of other types of pre-industrial cities, dedicating part of his research to examining the features and events that affected the formation of various intra-urban areas, such as those during the medieval era and age of enlightenment.

Considerable interest in intra-urban change research arose as a consequence of the Industrial Revolution. The deplorable living conditions and the rise of urban slums in the rapidly

industrializing cities in the 19<sup>th</sup> and early 20<sup>th</sup> centuries alarmed many and remained a societal concern throughout this time period. One of the first, and perhaps most notable, studies on intra-urban change in industrial cities was written by Friedrich Engels (1845), who vividly described the deteriorating quality of life of the working class and disturbing amount of decline in their neighborhoods throughout various large English manufacturing centers (e.g., Manchester and Liverpool). There were a multitude of themes in research on industrial cities, including the development of urban form and land use models (Park et al., 1925; Mumford, 1937; Harris and Ullman, 1945; Berry and Horton, 1970), the changing character of urban neighborhoods (Geddes, 1915; Hoyt, 1939; Goodman and Goodman, 1947; Jackson, 1952; Young and Willmott, 1957; Mumford 1961; Lewis, 1966; Downs, 1968; Webster, 1968; Bunge, 1971; More, 2000; Warner, 2011), racial discrimination (Du Bois, 1899; Bunge, 1971; Warner, 2011), and the (often) negative influence of automobiles on neighborhood vitality (Perry, 1929; Mumford, 1958; Jacobs, 1961; Caro, 1974; Horvath, 1974).

Other studies not only described problems of the urban decline in industrial cities but also policy solutions. Some argued that increasing the amount and access to urban greenery as well as reducing housing density would resolve many of the social ills of industrial cities (Olmsted, 1870; Howard, 1898; Le Corbusier, 1929; Wright, 1935). Sitte (1889) focused on historical conservation of cultural landmarks and iconic structures as a means of preserving the value of neighborhoods and cities. Le Corbusier (1929), one of the pioneers of the Modernist Movement (i.e., International Style) in architecture, argued that modern architecture and urban design (e.g., through the “skyscraper in the park” idea that is ubiquitous today) could resolve many of the issues confronting cities of the 20<sup>th</sup> century. Despite critical opposition, Le Corbuser (1929), Robert Moses (a powerful planner of New York City during the early and mid-20<sup>th</sup> century) and



other colleagues argued for automobile-oriented urban design in the name of economic prosperity (Perry, 1929; Mumford, 1958; Jacobs, 1961; Caro, 1974). Lynch (1960) illustrated the power of mental mapping and urban semiotics as a means of further enhancing the understanding, desirability and meaning of urban spaces. Jacobs (1961) argued for pedestrian-oriented developments and helped lead grassroots movements to protect existing neighborhoods from slum clearance practices (often for highway construction). Emmons (1965) emphasized the importance of pedestrian traffic to neighborhood vitality. Arnstein (1968) discussed how citizen participation influences community development.

Post-WWII deindustrialization shifted the emphasis in intra-urban change research towards studying the urban decline and poverty associated with economic restructuring in post-industrial communities (Harvey 1973; Castells, 1977; Wilson and Kelling, 1982; Murray, 1984; Berry, 1985; Kasarda, 1990; Davis, 1990; Wilson, 1996; Madanipour and Allens, 1998; Anderson, 1999; Putnam, 2000; Beauregard, 2009). During this period, a whole set of new factors emerged as the drivers behind how and why certain neighborhoods declined, such as suburbanization (Jackson, 1985; Kunstler, 1994), neoliberalism (Harvey, 1989; Porter, 1995), and globalization (Sassen, 1994). These new factors inspired “innovative” solutions to revitalizing struggling neighborhoods, including redesigning public spaces (Gehl, 1987; Jacobs and Appleyard, 1987; Whyte, 1988), relying on New Urbanism philosophies (Congress for the New Urbanism, 1993; Bohl, 2000; Grant, 2006), remediating brownfields (Meyer et al., 1995; De Sousa et al. 2009), exploiting the competitive advantages of cities and specific neighborhoods (Porter, 1995; Begg, 1999; Parker, 2014), sharing regional tax revenue (Orfield, 1997), developing enterprise zones (Oakley and Tsao, 2007; Neumark and Kolko, 2010; Ham et al.,

2011; Hanson and Rohlin, 2013), and even engaging in gentrification (Glass, 1964; Bell and Valentine, 1995; Wyly and Hammel, 1999).

In recent years, intra-urban change has remained an important subject in geography and other social science research for a number of reasons. The first and perhaps most important reason why it continues to garner attention is the global concern over the rapid rate of urbanization, proliferation of neighborhood decline and growth of urban slums around the world (Davis, 2006; Angel et al., 2011; Brenner and Keil, 2014). These trends have made intra-urban change research relevant to a larger global audience, whose well-being is increasingly becoming more connected to the vitality and prosperity of the cities in which they live, work, travel and play (Harvey, 2008; Sanders, 2011). For example, the large number of people affected by the spread of urban decline into non-industrial cities (e.g., Sun Belt cities) and increasing numbers of cities damaged by natural disasters has expanded the number of people interested in urban revitalization strategies (Vale and Campanella, 2004; Hollander, 2011).

At the same time, while certain post-industrial cities are still suffering from depopulation, others have started to experience a reversal of aggregate out-migration patterns (Wieckowski, 2010). This back-to-the-city movement has renewed interest in neighborhood and community development strategies in order to determine the best ways to sustainably and equitably renovate blighted properties, repair aging infrastructure, and bolster amenities in areas suffering from years of neglect associated with economic restructuring (Mallach, 2008; Hyra, 2014). Specifically, many urban researchers have dedicated their time to gaining insight into how this movement is altering the geography and composition of cities especially in terms of statistical data given the current era of informed citizenry and data-driven, evidence-based policy (Wyly 2014), including the recent rapid influx of minorities (Camarillo, 2007; Ellis et al., 2012;

Delmelle, 2016), rise of the creative class (Florida, 2003) and continuing trends of gentrification (Wyly and Hammel, 1999; Smith, 2002; Camarillo, 2007; Lees et al. 2007; Davidson and Wyly, 2012). Additionally, urban researchers have been particularly attentive to examining how neoliberalism (and its associated effects, such as uneven development and income inequality), globalization and community-based development practices (e.g., placemaking) have been altering urban space due to the stronghold that neoliberalism has had on urban politics since at least the early 1970s (Andersen, 2002; Peck and Tickell, 2002; Cresswell, 2004; Mele, 2013; PPS, 2012; PPS, 2015).

Destination redevelopments are a staple of the neoliberal approach to economic and community development as well as one of the most popular, alluring and expensive types of urban revitalization projects (Campo and Ryan, 2008; Grodach, 2008; Hurley, 2010; Santos and Mildner, 2010; Davidson, 2013; Ahlfeldt and Kavetsos, 2014). They are renewal projects (i.e., new construction or renovations) associated with the arts, entertainment and recreation industries (i.e., as per the 2012 North American Industry Classification System [NAICS]; United States Census Bureau, 2013; Table 1; Table 2). Examples include theaters, concert halls, sports stadiums, museums, casinos and parks. The term “destination” is used in this research to describe such redevelopments because these sites are not only expected to inspire individuals to make special trips into the areas but also help retain existing residents and recruit new ones. These projects generally fit into a classification of urban redevelopments also referred to as “special activity generators” (Robertson, 1995). These sites are expected to draw large amounts of visitors and have important neighborhood impacts, including increases in employment, business formation, and intensive real estate development near these projects (Chapin, 2004).

Table 1 – Sector number and description of 2012 North American Industry Classification System

<b>Sector</b>	<b>Description</b>
<a href="#"><u>11</u></a>	Agriculture, Forestry, Fishing and Hunting
<a href="#"><u>21</u></a>	Mining, Quarrying, and Oil and Gas Extraction
<a href="#"><u>22</u></a>	Utilities
<a href="#"><u>23</u></a>	Construction
<a href="#"><u>31-33</u></a>	Manufacturing
<a href="#"><u>42</u></a>	Wholesale Trade
<a href="#"><u>44-45</u></a>	Retail Trade
<a href="#"><u>48-49</u></a>	Transportation and Warehousing
<a href="#"><u>51</u></a>	Information
<a href="#"><u>52</u></a>	Finance and Insurance
<a href="#"><u>53</u></a>	Real Estate and Rental and Leasing
<a href="#"><u>54</u></a>	Professional, Scientific, and Technical Services
<a href="#"><u>55</u></a>	Management of Companies and Enterprises
<a href="#"><u>56</u></a>	Administrative and Support and Waste Management and Remediation Services
<a href="#"><u>61</u></a>	Educational Services
<a href="#"><u>62</u></a>	Health Care and Social Assistance
<a href="#"><u>71</u></a>	Arts, Entertainment, and Recreation
<a href="#"><u>72</u></a>	Accommodation and Food Services
<a href="#"><u>81</u></a>	Other Services (except Public Administration)
<a href="#"><u>92</u></a>	Public Administration

Table 2 – Sector number and description for arts, entertainment, and recreation industries according to the 2012 North American Industry Classification System

<u>71</u>	Arts, Entertainment, and Recreation
<u>711</u>	Performing Arts, Spectator Sports, and Related Industries
<u>7111</u>	Performing Arts Companies
<u>71111</u>	Theater Companies and Dinner Theaters
<u>71112</u>	Dance Companies
<u>71113</u>	Musical Groups and Artists
<u>71119</u>	Other Performing Arts Companies
<u>7112</u>	Spectator Sports
<u>71121</u>	Spectator Sports
<u>711211</u>	Sports Teams and Clubs
<u>711212</u>	Racetracks
<u>711219</u>	Other Spectator Sports
<u>7113</u>	Promoters of Performing Arts, Sports, and Similar Events
<u>71131</u>	Promoters of Performing Arts, Sports, and Similar Events with Facilities
<u>71132</u>	Promoters of Performing Arts, Sports, and Similar Events without Facilities
<u>7114</u>	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures
<u>7115</u>	Independent Artists, Writers, and Performers
<u>712</u>	Museums, Historical Sites, and Similar Institutions
<u>7121</u>	Museums, Historical Sites, and Similar Institutions
<u>71211</u>	Museums
<u>71212</u>	Historical Sites
<u>71213</u>	Zoos and Botanical Gardens
<u>71219</u>	Nature Parks and Other Similar Institutions
<u>713</u>	Amusement, Gambling, and Recreation Industries
<u>7131</u>	Amusement Parks and Arcades
<u>71311</u>	Amusement and Theme Parks
<u>71312</u>	Amusement Arcades
<u>7132</u>	Gambling Industries
<u>71321</u>	Casinos (except Casino Hotels)
<u>71329</u>	Other Gambling Industries
<u>7139</u>	Other Amusement and Recreation Industries
<u>71391</u>	Golf Courses and Country Clubs
<u>71392</u>	Skiing Facilities
<u>71393</u>	Marinas
<u>71394</u>	Fitness and Recreational Sports Centers
<u>71395</u>	Bowling Centers
<u>71399</u>	All Other Amusement and Recreation Industries

Local officials and other community stakeholders also often invest in these projects in an attempt to retain existing residents and recruit new residents into the neighborhoods in which these redevelopments are located (Grodach, 2008; Santos and Mildner, 2010). Consequently, policymakers increasingly view these projects as integral to sustaining the success of fast-growing cities, increasing the competitiveness of emerging cities, and revitalizing declining cities (Judd and Fainstein, 1999; Clark, 2002; Grodach and Loukaitou-Sideris, 2007; Polese, 2012). Some even go so far as arguing that cities are “at risk of rapid decline” without these “key urban amenities” (Orfield, 1997).

The arguments for investing in destination redevelopments are multi-layered. Supporters suggest that people will be attracted to these neighborhoods not only because they love a spectacle (Judd and Fainstein, 1999) but also because these projects are frequently undertaken in areas (or even entire cities) where people might have otherwise complained that there is nothing to do in terms of entertainment (Owen, 2004). They are also justified using theories of place promotion and the creative class, which have been especially popular in late 20<sup>th</sup> and early 21<sup>st</sup> century urban politics (Ward, 1998; Florida, 2003; Grodach and Loukaitou-Sideris, 2007; Santos and Mildner, 2010; Rich, 2012). Specifically, the rationale of these arguments is that the key to improving the quality of life and economic productivity of especially deprived, inner-city neighborhoods depends on the marketability of these areas to (particularly young) members of the creative class via tax incentives and the transformation of these places into destinations desired by individuals working in “creative” industries.

Yet some reject this logic, questioning the effectiveness of destination redevelopments as catalysts of “true” socioeconomic change and offer alternative explanations for the increased investments in these projects. The main crux of these counterarguments contend that these sites

are one of many forms of neoliberal urban redevelopments that continue a “ceaseless war” segregating rich and poor communities, whereby “the state intervenes regularly in the name of ‘progress,’ beautification’ and even ‘social justice for the poor’ to redraw spatial boundaries to the advantage of landowners, foreign investors, elite homeowners, and middle-class commuters” (Davis, 2006, 98). As such, individuals with political clout and a conflict of interest (i.e., profit from the increases in land value, population, and marketability of the neighborhood or city) attempt to bias initial, and retrospective (if any) urban impact studies (Molotch, 1976; Ward, 1998; Santos and Mildner, 2010). Those who profit (or will profit) from these projects overstate benefits, especially using economic theories and approaches that are difficult to verify due to data limitations and time requirements (e.g., the multiplier effect; Santos and Mildner, 2010). They also try to mask any and all negative consequences of destination redevelopments. For example, some contend that the businesses associated with these projects often cause the cycle of poverty in the nearby intra-urban areas to persist (Judd and Fainstein, 1999). These businesses tend to outsource high paying jobs to suburban commuters and only provide nearby residents temporary or part-time low-paying employment with limited job mobility, especially if the project is located in an economically depressed area or city. Additionally, these projects don’t just divide communities based on class and income, but also by race. As Mele (2013, 612) contends, “race continues to be the underlying ordering mechanism of urban redevelopment despite neoliberal discursive efforts to present it as color-blind.”

There are a lot of studies that both support and criticize destination redevelopments as catalysts of socioeconomic change, so the longstanding debate regarding the impact of these sites remains unresolved. There is still much that can be learned about how these projects alter their neighborhoods, especially given recent trends in neighborhood change research and goals for

geographic research (NRC 2010). Consider the following questions. How are areas with destination redevelopments changing given that some contend that we live in an era of urban renaissance vis-à-vis the back-to-the-city movement (Hyra, 2014)? How is this migration reshaping the identities of the community (NRC 2010)? How have these projects altered the geography of the newest generations of young adult urban residents (i.e., Millennials) and do these changes (if any) differ from those of previous generations and distributions of the same age groups from previous decades (Lachman and Brett, 2015)?

Beyond sports stadiums, there appears to be scant quantitative evaluations of the local impact of destination redevelopments or even special activity generators. Markusen and Gudwa (2010) reviewed a number of evaluations of urban cultural destinations containing (or near) flagship architectural sites. However, these studies only examine economic-base style visitor impacts and not local spillover effects. Ahlfedlt and Maennig (2010) reviewed a number of studies analyzing the local spillover effects of sport stadiums and found that these effects vary depending upon the stadium, examined distance of interest, and the method of assessment. A majority of these studies were only focused on the spillover effects of sports stadiums on real estate prices and relied on various forms of hedonic regression including those with a direct spatial terms and difference-in-difference specifications with a time component.

The present research makes three unique contributions to the aforementioned urban change literature. First, unlike previous studies that focused on the local impact of destination redevelopments, this analysis primarily focuses on demographic changes as opposed to changes in real estate prices, business formations or tourist spending. Second, it focuses on the entire category of destination redevelopments rather than specific subcategories (e.g., sports stadiums). While many of subcategories are only found in specific cities, almost every city has at least one



example of these types of redevelopments. Thus, studying the entire category increases the relevancy of this work. Third, this research opts to present a new approach to measure the local impact of destination redevelopments using a geographically weighted version of shift-share analysis, instead of commonly used approaches in the related literature. For example, a straightforward hedonic regression analysis would be inappropriate since the present research focuses on demographic changes and not the impact on real estate prices. A difference-in-difference regression model could be used, but the method presented in this research simplifies the analysis by avoiding some of the specification problems common to difference-in-difference analysis (Bertrand et al., 2004) and by making it possible to isolate local effects in demographic change.

The present research attempts to fill the aforementioned questions and gaps in the literature regarding destination redevelopments. The specific research objectives are two-fold. The first objective is to create a geographically-weighted version of the local component of shift-share analysis for intra-urban impact studies. The second objective is to use this new technique to examine the local socioeconomic impact of destination redevelopments in two case studies that are both making substantial investments into these types of projects: one city is declining (Detroit) and the other is growing (Las Vegas).

The proposed research will attempt to confirm the promoted benefits of destination redevelopments. It will do so by testing the hypothesis that these types of redevelopments have a positive impact on the local demographic composition and economic characteristic of nearby neighborhoods. Specifically, it will attempt to verify that destination redevelopments have had a positive local socioeconomic impact in Detroit and Las Vegas between 1990 and 2010.

This dissertation is subdivided into three chapters. The first chapter describes the study areas, data and methodology. The method sections concerns the development of the novel neighborhood-level, GIS-based approach that uses a geographically weighted version of shift-share analysis. The second chapter focuses on the application of the approach put forth in the previous chapter to evaluate whether destination redevelopments alter the demographic composition of nearby areas. The third chapter centers on the application of the aforementioned approach to evaluate whether these projects alter the economic characteristics of nearby areas.

## **CHAPTER 1 – STUDY AREA, DATA & METHODOLOGY**

### **1.1 STUDY AREA**

Detroit and Las Vegas were chosen as study sites for a multitude of reasons. Public and private organizations in each place have made substantial investments into building new, and renovating old, destination redevelopments between 1990 and 2010, namely, as a means of escaping insolvency in Detroit, and bolstering the global competitiveness of Las Vegas as well as combating the decline of its downtown and older neighborhoods (City of Las Vegas, 2000; Congressional Quarterly Staff, 2009). Both are large cities with similar land areas and populations; as of 2010, Las Vegas was 136 mi<sup>2</sup> (353 km<sup>2</sup>) in area and had a population of 583,736, while Detroit was 143 mi<sup>2</sup> (370 km<sup>2</sup>) in area and had a population of 713,777.

An analysis of the local socioeconomic impact of destination redevelopments in Detroit will be used to evaluate the success of such sites at spurring socioeconomic change in a declining city without a historical reliance on the arts, entertainment and recreation industries. The analysis of this same process in Las Vegas, on the other hand, will illustrate whether destination redevelopments spur socioeconomic change in a growing, globally competitive city that has had a historical reliance on the arts, entertainment and recreation industries.

Although the proposed research only focuses on a small sample (i.e., only two subject sites) due to the intensive process of collecting all of the redevelopment data in two relatively large cities over a two decade period, commonalities in local socioeconomic impacts of destination redevelopments in Detroit and Las Vegas will provide evidence that could be used to help identify potentially generalizable trends associated with these projects. Differences in local socioeconomic impacts of destination redevelopments will provide evidence that could be used to help identify trends that are unique to declining and growing cities, as well as cities with and

without a historical reliance on arts, entertainment and recreation industries. The generalizability of the results could then be explored in future research focused on such projects in other cities.

## **1.2 DATA**

Data used in this research are from the United States Census (henceforth referred to as the U.S. Census) and American Community Survey (henceforth referred to as the ACS). They are taken from the database housed in the National Historical Geographic Information System (NHGIS) of the Minnesota Population Center at the University of Minnesota (MPC, 2011). U.S. Census and ACS data are from the years 1990, 2000 and 2010. 2006-2010 ACS is used for any variables that were included in the 1990 and 2000 Censuses but not in the 2010 U.S. Census (i.e., as long as the survey results are reliable).

The type of census units used in the analyses are the smallest ones that exist for the variables under consideration. Census blocks are used for all variables that do not rely on American Community Survey (ACS) data, such as population by age and vacant housing units. For the other variables that are included in the ACS data and excluded from the 2010 U.S. Census, the units are census block groups.

Data are subdivided to into two categories: demographic and economic. There are 8 demographic categories (i.e., 31 variables):

1. Total population
2. Population by age
  - a. Population under 18 years old
  - b. Population between 18 and 29 years old
  - c. Population between 30 and 44 years old

- d. Population between 45 and 64 years old
  - e. Population over 65 years old
- 3. Population by sex
  - a. Males
  - b. Females
- 4. Population by sex by age
  - a. Male population under 18 years old
  - b. Male population between 18 and 29 years old
  - c. Male population between 30 and 44 years old
  - d. Male population between 45 and 64 years old
  - e. Male population over 65 years old
  - f. Female population under 18 years old
  - g. Female population between 18 and 29 years old
  - h. Female population between 30 and 44 years old
  - i. Female population between 45 and 64 years old
  - j. Female population over 65 years old
- 5. Population by Hispanic origin by race
  - a. Non-Hispanic White population
  - b. Non-Hispanic Black population
  - c. Non-Hispanic Asian population
  - d. Hispanic population
- 6. Population by place of birth
  - a. Native population

- b. Foreign-born population
- 7. Households by household type
  - a. Family households
  - b. Nonfamily households
- 8. Population by geographical mobility
  - a. Population previously living in the same residence
  - b. Population previously living in a different residence in the same city
  - c. Population previously living in a different municipality in the same metro area
  - d. Population previously living in a different metro area but the same country
  - e. Population previously living in a foreign country

There are 9 economic categories (i.e., 19 variables):

- 1. Population 16 years and over by employment status
  - a. Employed civilians
  - b. Unemployed civilians
- 2. Population 25 years and older by educational attainment
  - a. Population with a bachelor's degree
  - b. Population without a bachelor's degree
- 3. Households by household income
  - a. Households earning less than \$50,000 a year
  - b. Households earning between \$50,000 and \$100,000 a year
  - c. Households earning over \$100,000 a year

4. Employed population 16 years and over by industry
  - a. Employed population working in the art, entertainment and recreation industry
  - b. Population employed in white collar industries
  - c. Population employed in blue collar industries
5. Employed population by travel time to work
  - a. Employed population living less than 15 minutes from work
  - b. Employed population living 15 minutes or more from work
6. Employed population by means of transportation to work
  - a. Employed population using a non-automated means of transportation to/from work (e.g., walking)
  - b. Employed population using an automated public means of transportation to/from work (e.g., bus)
  - c. Employed population using an automated private means of transportation to/from work (e.g., private car)
7. Housing units
8. Housing units by occupancy status
  - a. Occupied housing units
  - b. Vacant housing units
9. Occupied housing units by tenure
  - a. Owner-occupied housing units
  - b. Renter-occupied housing units

There is a total of 17 categories and 50 variables examined in the analysis.

Destination redevelopments in Detroit and Las Vegas are identified from a large list of revitalization projects that were completed between 1990 and 2010 (Figures 1 and 2). Examples include:

- Detroit
  - Gem Theatre
  - Detroit Opera House
  - Museum of Contemporary Art Detroit (MOCAD)
  - Comerica Park
  - Campus Martius Park
- Las Vegas
  - Las Vegas Natural History Museum
  - Symphony Park
  - Neon Museum
  - La Bayou Casino
  - 24 Hour Fitness - Molasky Corporation Center

This list of redevelopments has been compiled from a variety of databases maintained by local organizations in Detroit and Las Vegas, including:

- Detroit Regional Chamber
- Midtown Detroit, Inc.
- Detroit Economic Club



- Detroit Economic Growth Corporation
- Downtown Detroit Partnership
- Detroit RiverFront Conservancy
- Detroit Buildings, Safety Engineering & Environmental Department
- Las Vegas Economic and Urban Development Department in Las Vegas
- Las Vegas Metro Chamber of Commerce
- Las Vegas Convention and Visitors Authority
- Las Vegas Global Economic Alliance

All redevelopments have been classified by their industry as per the 2012 NAICS code (United States Census Bureau, 2013; Tables 1 and 2).

Residential areas were identified from the 1992, 2001 and 2011 30-meter land cover maps created as a part of the National Land Cover Database by the United States Geological Survey (USGS, 2017). These maps were primarily used for two reasons. First, the years for which the land cover maps were created approximately match the years for which the censuses were recorded. Second, the relatively fine spatial resolution maps are utilized so that this study can be easily verified and/or the approach can be applied to other places because these maps, similar to the census data, are freely available and exist for the entire United States.

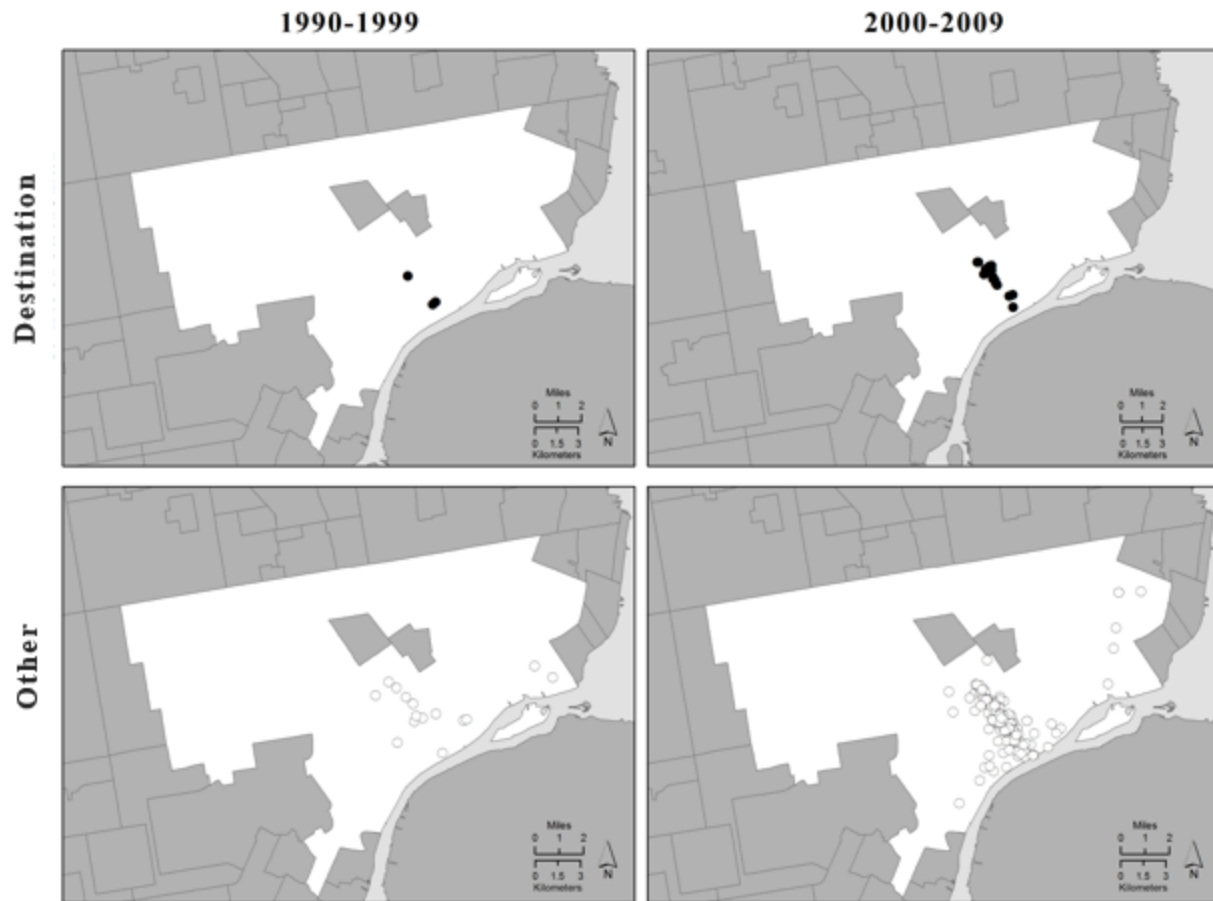


Figure 1 – Location of destination redevelopments (black circles) and other types of redevelopments (white circles) in Detroit completed between 1990 and 2010

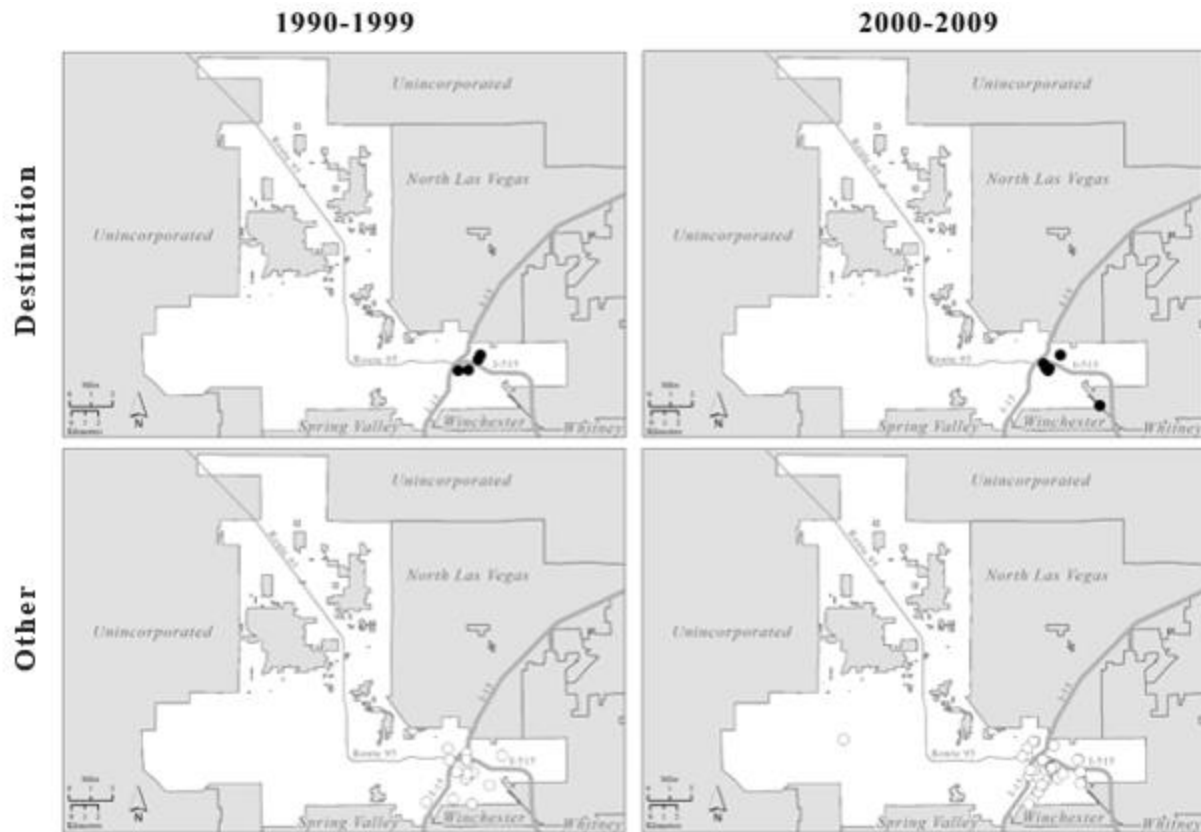


Figure 2 – Location of destination redevelopments (black circles) and other types of redevelopments (white circles) in Las Vegas completed between 1990 and 2010

### 1.3 METHODS

The novel local-level, GIS-based approach proposed in this research was designed as part of a five-step process. The first step involves data processing. The second step entails using a geographically weighted version of shift-share analysis, which was developed for the first time in this research. The third, fourth and fifth steps encompasses significance testing.

The first step transfers the data from census boundaries to only areas covered by residential land cover, such that the census data at the pixel level is calculated as:

$$P_{res} = \frac{P_{census}}{R_{census}} \quad (1)$$

where  $P_{res}$  is the estimated population (or population segment) at the residential pixel level,  $P_{census}$  is the population at the original census unit, and  $R_{census}$  is the number of residential pixels inside the original census unit. Due to the focus of this approach on local change, this step is taken to ensure that no data is being pulled from non-residential areas.

The second step will involve using the centroid of each residential cell to calculate the amount of statistical changes of a specific variable due to local factors, as calculated by a novel geographically weighted version of the local effect component of shift-share analysis (Arcelus, 1984). Conventional shift-share analysis is a commonly used method of allocating changes in regional employment into three separate components: national, industrial mix (or sectoral) and competitive (Isard, 1960; Dunn Jr., 1960):

$$E_{irt2} - E_{irt1} = N + M + C \quad (2)$$

where  $E_{irt2}$  is the employment in industry  $i$  in region  $r$  at time period 2,  $E_{irt1}$  is the employment in industry  $i$  in region  $r$  at time period 1,  $N$  is  $E_{irt1}$  times the national growth rate (%) in total employment,  $M$  is  $E_{irt1}$  times the national growth rate in total employment in sector  $i$  after subtracting the national growth rate, and  $C$  is  $(E_{irt2} - E_{irt1}) - (N + M)$ . The competitive effect  $C$  is the change in employment that can be attributed to conditions in region  $r$ , controlling for national and sectoral effects. Since its inception, shift-share analysis has undergone a number of extensions and improvements (Barff and Knight 1988; Firgo and Fritz, 2016). This technique also has been applied to numerous other applications beyond employment, such as demography (Franklin and Plane, 2004; Franklin, 2014) and tourism (Sirakaya et al., 2004). This present research will demonstrate that shift-share analysis can also be especially useful in urban studies focused on analyzing local demographic change.

Arcelus (1984) recommends disaggregating the competitive local effect component into two subcomponents: the regional effect ( $R$ ) and the regional industrial mix effect ( $RM$ ).  $R$  is the subcomponent identifying the portion of the competitive effect that due to the change in total population (i.e., employment in previous example) in place  $r$ .  $RM$  is the subcomponent identifying the portion of the competitive effect that due to the change in the population in cohort  $c$  (e.g., employment in a particular industry, formerly represented industry  $i$ ) in region  $r$ . The sum of the regional effect and the regional cohort mix effect components is equal to the competitive effect component. The regional effect and regional cohort mix effect are calculated as followed:

$$R_c^r = HP_c^r * (p^r - p^a) + (P_c^r - HP_c^r) * (p^r - p^a) \quad (3)$$

$$RM_c^r = HP_c^r * [(p_c^r - p^r) - (p_c^a - p^a)] + (P_c^r - HP_c^r) * [(p_c^r - p^r) - (p_c^a - p^a)] \quad (4)$$

where  $R_c^r$  is the regional effect for cohort  $c$  in region  $r$ ;  $HP_c^r$  is a homothetic population for cohort  $i$  in region  $r$  (i.e., the regional structure of a given variable if it were identical to the structure of the same variable at the reference area);  $p^r$  is the population change rate in region  $r$  between the two periods;  $p^a$  is the population change rate between the two periods at the reference area;  $P_c^r$  is the population change rate in cohort  $c$  in region  $r$  between the two periods;  $RM_c^r$  is the regional cohort mix effect for cohort  $c$  in region  $r$ ; and  $p_c^a$  is the population change rate in cohort  $c$  between the two periods at the reference area.  $HP_c^r$  is calculated as:

$$HP_c^r = \frac{P_1^r * P_{c1}^a}{P_1^a} \quad (5)$$

where  $P_1^r$  is the total population in the region  $r$  in time period 1;  $P_{c1}^a$  is the population in cohort  $c$  in the reference area  $a$  in time period 1; and  $P_1^a$  is the total population in the reference area  $a$  in time period 1. Equation 5 follows the same structure as Arcelus' (1984) equation 5, however, the notions are changed so that the interpretation is easier to understand with respect to demographic changes:  $P$  represents population  $P$ ,  $r$  represents region  $r$  (i.e., used instead of Arcelus' [1984] region  $j$  because the symbol  $j$  will be used to represent something different later in the analysis and  $r$  is easy to associate with the word "region"),  $c$  represents a cohort or population segment (i.e., used in place of Arcelus' [1984] sector  $i$  because the symbol  $i$  will be used to represent something different later in the analysis and  $c$  is easy to associate with the word "cohort"), and  $a$  represents the reference area.

$p^r$ , the population change rate in region  $r$  between the two periods, is calculated as:

$$p^r = \frac{P_2^r - P_1^r}{P_1^r} \quad (6)$$

where  $P_2^r$  is the total population in the region  $r$  in time period 2 and  $P_1^r$  is the total population in the region  $r$  in time period 1.

$p^a$ , the population change rate between the two periods at the reference area, is calculated as:

$$p^a = \frac{P_2^a - P_1^a}{P_1^a} \quad (7)$$

where  $P_2^a$  is the total population in the reference area  $a$  in time period 2 and  $P_1^a$  is the total population in the reference area  $a$  in time period 1.

$P_c^r$ , the population change rate in cohort  $c$  in region  $r$  between the two periods, is calculated as:

$$P_c^r = \frac{P_{c2}^r - P_{c1}^r}{P_{c1}^r} \quad (8)$$

where  $P_{c2}^r$  is the population in cohort  $c$  in the region  $r$  in time period 2 and  $P_{c1}^r$  is the population in cohort  $c$  in the region  $r$  in time period 1.

$p_c^a$ , the population change rate in cohort  $c$  between the two periods at the reference area, is calculated as:

$$P_c^a = \frac{P_{c2}^a - P_{c1}^a}{P_{c1}^a} \quad (9)$$

where  $P_{c2}^a$  is the population in cohort  $c$  in the reference area  $a$  in time period 2 and  $P_{c1}^a$  is the population in cohort  $c$  in the reference area  $a$  in time period 1.

Equations 3 and 4 can then be geographically weighted in order to incorporate neighborhood or other distance-related interactions amongst the units of observation. While the process of geographically weighting statistics has a long history in geography (e.g., most notably, geographically weighted regression [Fotheringham et al., 2002]), this geographically weighted version of shift-share analysis is a new application. In order to geographically weight equations 5 and 6, equations 7 can be redefined as:

$$GW\_HP_c^r = \sum_{j=1}^n w_{ij} P_{1j}^r * \frac{P_{c1}^a}{P_1^a} \quad (10)$$

$$GW\_p^r = \frac{\sum_{j=1}^n w_{ij} P_{2j}^r - \sum_{j=1}^n w_{ij} P_{1j}^r}{\sum_{j=1}^n w_{ij} P_{1j}^r} \quad (11)$$

$$GW\_P_c^r = \frac{\sum_{j=1}^n w_{ij} P_{c2j}^r - \sum_{j=1}^n w_{ij} P_{c1j}^r}{\sum_{j=1}^n w_{ij} P_{c1j}^r} \quad (12)$$

where  $w_{ij}$  is a standardized geographic weight,  $i$  is the areal unit of interest, and  $j$  is a neighboring areal unit. Given  $d_{ij}$  is the distance between the  $i$ th marked a-point and  $j$ th point as well as  $d_{ib}$  is the bandwidth distance for the  $i$ th marked a-point, the geographic weight is defined using a box kernel density function:

$$w_{ij} = 1 \text{ if } d_{ij} \leq d_{ib}, \text{ and } 0 \text{ otherwise} \quad (13)$$



Note  $i$  is included in any summation of  $j$ .  $P_1^r$  is redefined as  $GW\_P_1^r = \sum w_{ij}P_{1j}^r$  and  $P_2^r$  is redefined as  $GW\_P_2^r = \sum w_{ij}P_{2j}^r$ . Thus, Equations 3 and 4 are now redefined as:

$$GW\_R_c^r = GW\_HP_c^r * (GW\_p^r - p^a) + (GW\_P_c^r - GW\_HP_c^r) * (GW\_p^r - p^a) \quad (14)$$

$$GW\_RM_c^r = GW_{HP_c}^r * [(GW_{p_c}^r - GW_p^r) - (p_c^a - p^a)] + (GW\_P_c^r - GW\_HP_c^r) * [(GW\_p_c^r - GW\_p^r) - (p_c^a - p^a)] \quad (15)$$

For this research, the reference areas are Detroit and Las Vegas and the region is the examined bandwidth. The geographically weighted regional effect component ( $GW\_R_c^r$ ) is used to illustrate local socioeconomic change for the following variables: total population and housing units. The regional cohort mix effect component ( $GW\_RM_c^r$ ) is used for the remaining variables to illustrate local socioeconomic change.

The second step creates a surface of the geographically weighted local effect component of shift-share analysis (Figure 3).

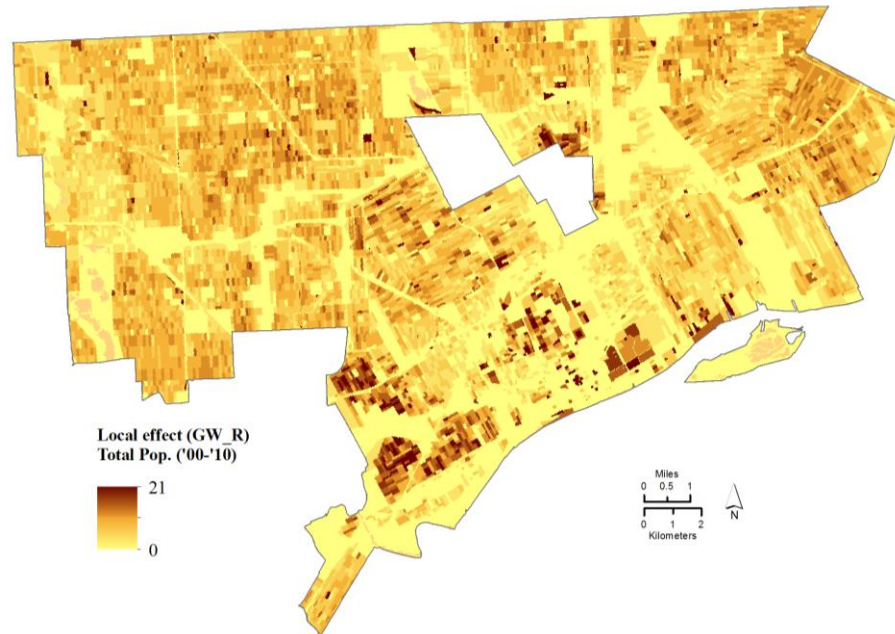


Figure 3 – An example geographically weighted local effect component of shift-share analysis surface ( $GW_R^r$ )<sup>1</sup> derived from artificial census data at the pixel level in Detroit using a box filter and half mile bandwidth.

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<sup>1</sup> As noted on the previous page, the geographically weighted regional effect component ( $GW_R^r$ ) is used to illustrate local socioeconomic change for the following variables: total population and housing units. The regional cohort mix effect component ( $GW_RM^r$ ) is used for the remaining variables to illustrate local socioeconomic change.

This “effect surface” is generated so that there is a value associated with each pixel centroid based on a given bandwidth (i.e., box filter). There are three different bandwidths used in this analysis: half mile, one mile and two miles. The half mile bandwidth is used to capture changes occurring within walking distance from the art, entertainment, and recreational redevelopments (Daniels and Mulley, 2013). The logic behind the decision to use a one-mile bandwidth is that this distance is small enough to examine the local circumstances in the immediate vicinity of the sites yet large enough to capture the changes affecting nearby residential areas even along primarily commercially-zoned streets. The two mile bandwidth is also chosen because it is a common bandwidth distance used in other local impact studies of similar types of redevelopments (Ahlfeldt and Maennig, 2010)

The third step develops a sampling distribution of the geographically weighted means of the local effect surface for a given sample size (Figure 4). This sampling distribution is computed by drawing repeated random samples of locations from the effect surface (i.e., Monte Carlo samples) and computing the mean value for each sample. Each sample will have the same sample size as the number of destination redevelopments being analyzed, so that the values for those number of destination redevelopments can later be used as a test sample. Random samples are drawn and the mean value of each sample is calculated more than 5,000 times.

The fourth step entails collecting the value on the effect surface for the pixel centroid nearest the points representing each destination redevelopment (Figure 5). This value is the test sample. It is used in the sixth step for significance testing.

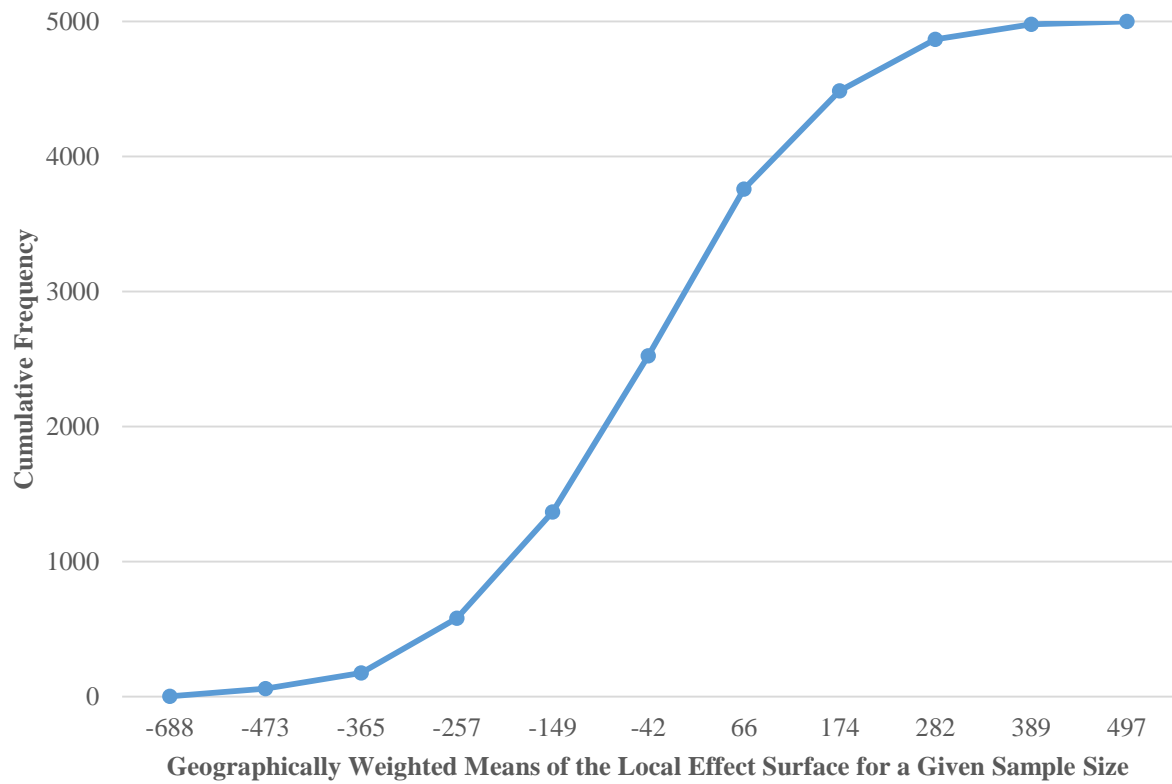


Figure 4 – A cumulative frequency graph depicting the sampling distribution of the geographically weighted means of a local effect surface ( $GW\_R_c^r$ ; same artificial data as Figure 3) for a given sample size in Detroit

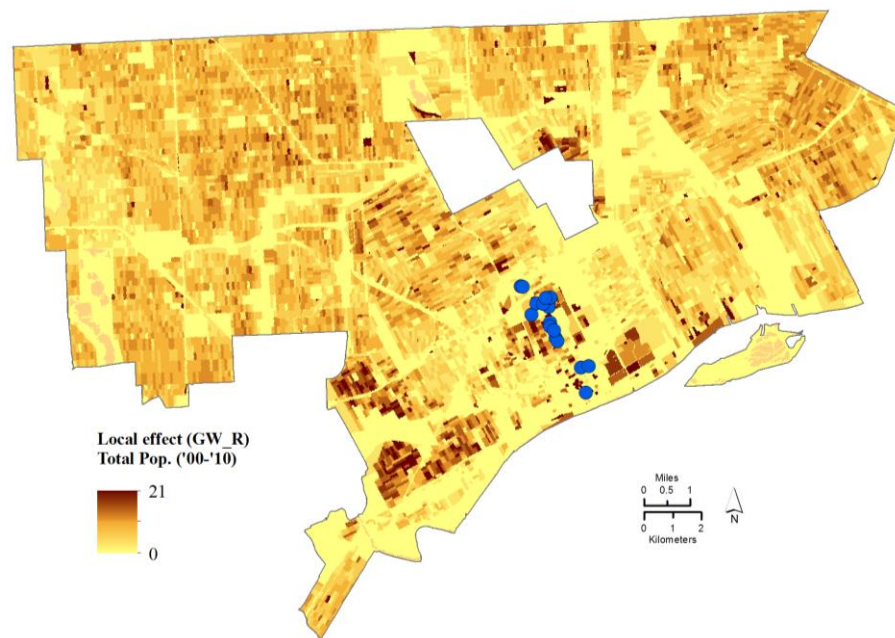


Figure 5 – An example of the values taken from the local effect surface (same artificial data as Figures 3 and 4) for the points representing the destination redevelopments (blue dots) that would be used to derive a test sample in Detroit

The fifth step will involve completing a test of significance against the sample distribution generated in the fourth step. Using a two-tail test at the 95% significance level, one can reject a null hypothesis that the mean value for the test sample (i.e., near destination redevelopments) is equal to the mean of the 5,000 random samples if the mean value for the test sample is lower than the 125<sup>th</sup> sampling value and higher than the 4875<sup>th</sup> sampling value. This test will verify that any changes near destination redevelopment are above or below what is due to chance.

## **CHAPTER 2 – LOCAL DEMOGRAPHIC IMPACT**

This chapter focuses on the local impact of destination redevelopments on the demographic characteristics of nearby areas in Detroit and Las Vegas between 1990 and 2010. The first subsection presents the results of the geographically weighted shift-share analysis. The second subsection discusses the interpretation of those findings.

### **2.1 RESULTS**

In this section, any references to statistically significant values have an alpha ( $\alpha$ ) of 0.05.

#### **2.1.1 Total population**

The municipal population in Detroit declined between 1990 and 2010, losing 7.5% from 1,027,974 in 1990 to 951,270 in 2000 and then an additional 25% to 713,777 in 2010 (Table 3). However, the results of the geographically weighted shift-share analysis indicate that destination redevelopments instead spurred the opposite trend within all of the examined bandwidths. With one exception, these projects resulted in a statistically significant increase in total population for the aforementioned bandwidths (Tables 4 and 5). The one exception was the change in the total population between 2000 and 2010 within a 0.5 mile bandwidth of those Detroit destination redevelopments that were completed in the 1990s. Although the population increased within this bandwidth, the only reason that it is considered an exception is that the increase in total population was not statistically different than the random samples.

Table 3 – Change in selected demographic characteristics in Detroit between 1990 and 2010

	1990	2000 (change since 1990)	2010 (change since 2000)
Total population	1,027,974 (N/A)	951,270 (-7.5%)	713,777 (-25.0%)
Population under 18 y/o	209,206 (N/A)	219,477 (4.9%)	140,201 (-36.1%)
Population between 18 and 29 y/o	198,272 (N/A)	166,350 (-16.1%)	125,570 (-24.5%)
Population between 30 and 44 y/o	232,306 (N/A)	206,795 (-11.0%)	135,446 (-34.5%)
Population between 45 and 64 y/o	170,148 (N/A)	183,360 (7.8%)	180,489 (-1.6%)
Population over 64 y/o	124,933 (N/A)	99,056 (-20.7%)	81,925 (-17.3%)
Males	476,814 (N/A)	448,319 (-6.0%)	337,679 (-24.7%)
Females	551,160 (N/A)	502,951 (-8.7%)	376,098 (-25.2%)
Males under 18 y/o	152,656 (N/A)	150,043 (-1.7%)	96,525 (-35.7%)
Males between 18 and 29 y/o	91,776 (N/A)	79,921 (-12.9%)	61,306 (-23.3%)
Males between 30 and 44 y/o	105,690 (N/A)	96,050 (-9.1%)	63,860 (-33.5%)
Males between 45 and 64 y/o	76,803 (N/A)	83,315 (8.5%)	83,837 (0.6%)
Males over 64 y/o	49,889 (N/A)	38,990 (-21.8%)	32,151 (-17.5%)
Females under 18 y/o	149,659 (N/A)	145,666 (-2.7%)	93,822 (-35.6%)
Females between 18 and 29 y/o	106,677 (N/A)	86,429 (-19.0%)	64,264 (-25.6%)
Females between 30 and 44 y/o	126,616 (N/A)	110,745 (-12.5%)	71,586 (-35.4%)
Females between 45 and 64 y/o	93,312 (N/A)	100,045 (7.2%)	96,652 (-3.4%)
Females over 64 y/o	75,044 (N/A)	60,066 (-20.0%)	49,774 (-17.1%)
Non-Hispanic White population	212,278 (N/A)	99,921 (-52.9%)	55,604 (-44.4%)
Non-Hispanic Black population	774,529 (N/A)	771,966 (-0.3%)	586,573 (-24.0%)
Non-Hispanic Asian and Pacific Islander population	8,085 (N/A)	9,304 (15.1%)	7,518 (-19.2%)
Hispanic population	28,473 (N/A)	47,167 (65.7%)	48,679 (3.2%)
Native population	993,484 (N/A)	905,729 (-8.8%)	720,905 (-20.4%)
Foreign-born population	34,490 (N/A)	45,541 (32.0%)	38,435 (-15.6%)
Family households	244,327 (N/A)	218,483 (-10.6%)	162,924 (-25.4%)
Non-family households	129,730 (N/A)	117,945 (-9.1%)	106,521 (-9.7%)
Population previously living in the same residence	559,343 (N/A)	525,317 (-6.1%)	624,678 (18.9%)
Population previously living in a different residence in the same city	292,905 (N/A)	262,394 (-10.4%)	101,249 (-61.4%)
Population previously living in a different municipality in the same metro area	37,769 (N/A)	31,307 (-17.1%)	12,208 (-61.0%)
Population previously living in a different metro area but the same country	37,135 (N/A)	32,335 (-12.9%)	6,813 (-78.9%)
Population previously living in a foreign country	7,940 (N/A)	18,077 (127.7%)	2,615 (-85.5%)



Table 4 – Local impact of destination redevelopments completed in the 1990s on selected demographic characteristics in Detroit for two intercensal periods (1990 to 2000 and 2000 to 2010) based on results of geographically weighted shift-share analysis. Highlighted cells are statistically significant values ( $\alpha = 0.05$ ), where the cells in green are greater than the 4875th sampling value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is larger than the average of the 5,000 random samples) and the cells in red are less than the 125th sample value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is lower than the average of the 5,000 random samples).

	1990 to 2000			2000 to 2010		
	0.5 mi.	1 mi.	2 mi.	0.5 mi.	1 mi.	2 mi.
Total population	4,598	7,624	13,164	323	1,686	5,506
Population under 18 y/o	-480	-146	-851	-119	-513	-1,574
Population between 18 and 29 y/o	-67	614	4,881	6	71	332
Population between 30 and 44 y/o	199	109	459	-223	-597	-2,218
Population between 45 and 64 y/o	-31	440	1,760	3	-15	-852
Population over 64 y/o	-155	-1,006	-1,969	-101	-617	-2,523
Males	350	941	1,327	-288	-387	-1,386
Females	-353	-945	-1,333	253	108	243
Males under 18 y/o	-284	36	-482	-109	-434	-1,730
Males between 18 and 29 y/o	527	664	1,305	-116	-128	-870
Males between 30 and 44 y/o	11	271	521	-178	-496	-2,156
Males between 45 and 64 y/o	120	358	745	-76	-195	-1,425
Males over 64 y/o	-19	-347	-610	-74	-217	-1,071
Females under 18 y/o	-211	-49	-567	-119	-404	-1,719
Females between 18 and 29 y/o	-94	211	999	326	325	369
Females between 30 and 44 y/o	-80	-168	-77	-126	-693	-1,990
Females between 45 and 64 y/o	49	-247	-139	-0.2	-92	-986
Females over 64 y/o	-12	-660	-1,363	-57	-138	-1,366
Non-Hispanic White population	-198	-254	2,036	555	709	1,688
Non-Hispanic Black population	-21	160	-3,967	-476	-642	-1,331
Non-Hispanic Asian and Pacific Islander population	49	-88	357	1	5	-133
Hispanic population	20	-36	-729	5	7	-164
Native population	213	318	536	-92	-49	-260
Foreign-born population	-339	-921	-2,556	58	41	241
Family households	-34	87	-676	-111	-216	-1,142
Non-family households	10	-86	513	-73	-433	-967
Population previously living in the same residence	-38	-145	-1,740	1,022	2,343	5,102
Population previously living in a different residence in the same city	-742	-916	-30	538	355	305
Population previously living in a different municipality in the same metro area	144	219	574	10	24	32
Population previously living in a different metro area but the same country	492	644	1,186	-255	-382	-724
Population previously living in a foreign country	17	-184	-1,260	-77	-79	-185

Table 5 – Local impact of destination redevelopments completed in the 2000s on selected demographic characteristics in Detroit for one intercensal period (2000 to 2010) based on results of geographically weighted shift-share analysis. Highlighted cells are statistically significant values ( $\alpha = 0.05$ ), where the cells in green are greater than the 4875th sampling value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is larger than the average of the 5,000 random samples) and the cells in red are less than the 125th sample value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is lower than the average of the 5,000 random samples).

	2000 to 2010		
	0.5 mi.	1 mi.	2 mi.
Total population	963	2,696	3,188
Population under 18 y/o	-94	-357	-1,968
Population between 18 and 29 y/o	480	1,054	502
Population between 30 and 44 y/o	-327	-857	-2,687
Population between 45 and 64 y/o	-66	-91	-923
Population over 64 y/o	-361	-926	-3,286
Males	-144	-334	-1,059
Females	99	185	-310
Males under 18 y/o	-126	-572	-2,267
Males between 18 and 29 y/o	23	27	-1,042
Males between 30 and 44 y/o	-286	-861	-2,654
Males between 45 and 64 y/o	-113	-401	-1,881
Males over 64 y/o	-174	-426	-1,479
Females under 18 y/o	-158	-568	-2,257
Females between 18 and 29 y/o	397	709	13
Females between 30 and 44 y/o	-224	-794	-2,428
Females between 45 and 64 y/o	-87	-200	-1,559
Females over 64 y/o	-260	-651	-2,114
Non-Hispanic White population	409	937	1,558
Non-Hispanic Black population	-188	-448	-1,724
Non-Hispanic Asian and Pacific Islander population	-103	-217	-160
Hispanic population	-34	-74	-77
Native population	-102	-129	-202
Foreign-born population	99	190	339
Family households	-8	-223	-1,873
Non-family households	-132	-397	-1,403
Population previously living in the same residence	1,029	2,468	4,136
Population previously living in a different residence in the same city	56	-17	739
Population previously living in a different municipality in the same metro area	3	59	77
Population previously living in a different metro area but the same country	-142	-303	-594
Population previously living in a foreign country	-82	-146	-140

The municipal population in Las Vegas grew between 1990 and 2010, increasing by 85.2% from 258,295 in 1990 to 478,434 in 2000 and a further 22% to 583,756 in 2010 (Table 6). The findings of the geographically weighted shift-share analysis indicate that the destination redevelopments in Las Vegas resulted in a statistically significant decrease in the total population for almost all of the examined bandwidths (Tables 7 and 8). The exceptions were the changes in total population between 2000 and 2010 within a half mile and one mile of the destination redevelopments that were completed in the 1990s as well as the change in the total population between 2000 and 2010 within a half mile of the destination redevelopments that were completed in the 2000s. These exceptions still indicate that the population is declining near these projects, but these changes are not statistically significant.

## **2.1.2. Population by age**

### **2.1.2.1 Population under 18 years old**

The population under 18 in Detroit increased from 1990 to 2000 and then decreased from 2000 to 2010. Specifically, it increased by 4.9% from 209,206 in 1990 to 219,477 in 2000, and then decreased by 36.1% from 219,477 in 2000 to 140,201 in 2010. The population under 18 years old decreased within all the bandwidths of the destination redevelopments (Tables 4 and 5). There were only two circumstances where these changes were not statistically significant. These circumstances were the decrease in the cited population between 2000 and 2010 within half mile of these projects completed in both the 1990s and 2000s (Table 4). The population under 18 years old decreased between 1990 and 2000 within the one mile and two mile bandwidths of the destination redevelopments that were completed in the 1990s.

Table 6 – Change in selected demographic characteristics in Las Vegas between 1990 and 2010

	1990	2000 (change since 1990)	2010 (change since 2000)
Total population	258,295 (N/A)	478,434 (85.2%)	583,756 (22.0%)
Population under 18 y/o	64,461 (N/A)	124,055 (92.4%)	149,755 (20.7%)
Population between 18 and 29 y/o	51,865 (N/A)	79,375 (53.0%)	93,886 (18.3%)
Population between 30 and 44 y/o	64,813 (N/A)	115,915 (78.8%)	126,884 (9.5%)
Population between 45 and 64 y/o	50,776 (N/A)	103,792 (104.4%)	143,188 (38.0%)
Population over 64 y/o	26,532 (N/A)	55,297 (108.4%)	70,043 (26.7%)
Males	130,981 (N/A)	243,077 (85.6%)	294,100 (21.0%)
Females	127,314 (N/A)	235,357 (84.9%)	289,656 (23.1%)
Males under 18 y/o	32,909 (N/A)	63,714 (93.6%)	76,716 (20.4%)
Males between 18 and 29 y/o	26,602 (N/A)	41,555 (56.2%)	48,325 (16.3%)
Males between 30 and 44 y/o	33,762 (N/A)	60,679 (79.7%)	64,938 (7.0%)
Males between 45 and 64 y/o	25,607 (N/A)	51,464 (101.0%)	71,927 (39.8%)
Males over 64 y/o	12,101 (N/A)	25,665 (112.1%)	32,194 (25.4%)
Females under 18 y/o	31,552 (N/A)	60,341 (91.2%)	73,039 (21.0%)
Females between 18 and 29 y/o	25,263 (N/A)	37,820 (49.7%)	45,561 (20.5%)
Females between 30 and 44 y/o	31,051 (N/A)	55,236 (77.9%)	61,946 (12.1%)
Females between 45 and 64 y/o	25,169 (N/A)	52,328 (107.9%)	71,261 (36.2%)
Females over 64 y/o	14,431 (N/A)	29,632 (105.3%)	37,849 (27.7%)
Non-Hispanic White population	186,232 (N/A)	277,704 (49.1%)	279,703 (0.7%)
Non-Hispanic Black population	28,704 (N/A)	48,380 (68.5%)	62,008 (28.2%)
Non-Hispanic Asian and Pacific Islander population	8,735 (N/A)	24,346 (178.7%)	37,709 (54.9%)
Hispanic population	32,369 (N/A)	112,962 (249.0%)	183,859 (62.8%)
Native population	231,801 (N/A)	388,212 (67.5%)	450,419 (16.0%)
Foreign-born population	26,494 (N/A)	90,656 (242.2%)	129,367 (42.7%)
Family households	64,819 (N/A)	117,466 (81.2%)	138,668 (18.0%)
Non-family households	34,916 (N/A)	59,284 (69.8%)	73,021 (23.2%)
Population previously living in the same residence	79,221 (N/A)	157,176 (98.4%)	444,417 (182.8%)
Population previously living in a different residence in the same city	70,368 (N/A)	114,349 (62.5%)	67,366 (-41.1%)
Population previously living in a different municipality in the same metro area	8,452 (N/A)	30,410 (259.8%)	26,960 (-11.3%)
Population previously living in a different metro area but the same country	71,732 (N/A)	106,847 (49.0%)	27,583 (-74.2%)
Population previously living in a foreign country	7,238 (N/A)	21,742 (200.4%)	4,729 (-78.2%)

Table 7 – Local impact of destination redevelopments completed in the 1990s on selected demographic characteristics in Las Vegas for two intercensal periods (1990 to 2000 and 2000 to 2010) based on results of geographically weighted shift-share analysis. Highlighted cells are statistically significant values ( $\alpha = 0.05$ ), where the cells in green are greater than the 4875th sampling value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is larger than the average of the 5,000 random samples) and the cells in red are less than the 125th sample value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is lower than the average of the 5,000 random samples).

	1990 to 2000			2000 to 2010		
	0.5 mi.	1 mi.	2 mi.	0.5 mi.	1 mi.	2 mi.
Total population	-2,612	-10,630	-40,462	-883	-5,175	-22,063
Population under 18 y/o	154	654	2,173	-1	-220	-372
Population between 18 and 29 y/o	924	3,379	12,513	131	21	-377
Population between 30 and 44 y/o	176	490	1,442	-49	-13	705
Population between 45 and 64 y/o	-1,501	-6,281	-23,391	110	489	1,158
Population over 64 y/o	-409	-1,399	-3,639	-148	-240	-862
Males	38	367	1,579	149	431	723
Females	-42	-377	-1,592	-133	-388	-645
Males under 18 y/o	27	145	525	9	-109	-76
Males between 18 and 29 y/o	203	485	1,898	139	138	-146
Males between 30 and 44 y/o	96	326	1,169	14	103	436
Males between 45 and 64 y/o	-34	85	-409	103	346	749
Males over 64 y/o	-231	-686	-1,671	-86	-64	-143
Females under 18 y/o	-14	-206	-1,796	59	278	1,833
Females between 18 and 29 y/o	8	-288	-1,310	67	455	2,066
Females between 30 and 44 y/o	-45	-568	-2,799	61	530	2,842
Females between 45 and 64 y/o	-62	-384	-1,827	-0.4	116	359
Females over 64 y/o	-184	-725	-1,974	-60	-171	-715
Non-Hispanic White population	105	-348	-3,134	-123	256	182
Non-Hispanic Black population	-28	-253	-1,791	224	510	-680
Non-Hispanic Asian and Pacific Islander population	-179	-471	-1,801	-17	-28	-274
Hispanic population	-556	-1,705	-4,644	-326	-2,200	-7,475
Native population	312	185	-1,485	161	811	2,359
Foreign-born population	-799	-2,169	-6,124	-230	-1,314	4,948
Family households	8	-27	-213	-17	-66	150
Non-family households	-18	-244	-2,453	63	410	2,432
Population previously living in the same residence	219	229	-3,173	-1,551	-5,040	-12,950
Population previously living in a different residence in the same city	148	627	2,475	543	1,504	2,973
Population previously living in a different municipality in the same metro area	15	4	-331	568	198	-266
Population previously living in a different metro area but the same country	-156	-340	154	591	1,380	2,532
Population previously living in a foreign country	-369	-1,394	-3,388	256	75	502

Table 8 – Local impact of destination redevelopments completed in the 2000s on selected demographic characteristics in Las Vegas for one intercensal period (2000 to 2010) based on results of geographically weighted shift-share analysis. Highlighted cells are statistically significant values ( $\alpha = 0.05$ ), where the cells in green are greater than the 4875th sampling value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is larger than the average of the 5,000 random samples) and the cells in red are less than the 125th sample value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is lower than the average of the 5,000 random samples).

	2000 to 2010		
	0.5 mi.	1 mi.	2 mi.
Total population	-419	-5,163	-22,173
Population under 18 y/o	-40	-287	-181
Population between 18 and 29 y/o	304	113	-542
Population between 30 and 44 y/o	-121	-25	835
Population between 45 and 64 y/o	41	409	1,096
Population over 64 y/o	-134	-206	-960
Males	243	499	677
Females	-222	-458	-602
Males under 18 y/o	-16	-122	11
Males between 18 and 29 y/o	319	218	-262
Males between 30 and 44 y/o	12	112	461
Males between 45 and 64 y/o	51	305	736
Males over 64 y/o	-86	-47	-162
Females under 18 y/o	29	226	1,828
Females between 18 and 29 y/o	67	346	2,025
Females between 30 and 44 y/o	-29	390	2,891
Females between 45 and 64 y/o	-19	78	312
Females over 64 y/o	-45	-153	-795
Non-Hispanic White population	-160	451	-311
Non-Hispanic Black population	207	555	-522
Non-Hispanic Asian and Pacific Islander population	-2	-93	-353
Hispanic population	47	-2,000	-7845
Native population	216	880	2,302
Foreign-born population	-202	-1,233	-5,031
Family households	-48	-75	247
Non-family households	23	264	2,412
Population previously living in the same residence	-2,532	-4,354	-12,242
Population previously living in a different residence in the same city	863	1,211	2,787
Population previously living in a different municipality in the same metro area	840	240	-275
Population previously living in a different metro area but the same country	723	1,320	2,288
Population previously living in a foreign country	375	240	498

Although these decreases were statistically significant, they were less negative than the decreases occurring near the random samples. The changes at the other bandwidths and time periods were statistically significant and showed that these areas near destination redevelopments were more negative than the random samples. This includes the results for the half mile bandwidth of such projects that were completed in the 1990s for the changes occurring from 1990 to 2000, the one mile bandwidth of projects completed in the 1990s for the changes occurring from 2000 to 2010, the two mile bandwidth of these projects completed in the 1990s for the changes occurring from 2000 to 2010, the one mile bandwidth of these projects completed in the 2000s for the changes occurring from 2000 to 2010, and the two mile bandwidth of these projects completed in the 2000s for the changes occurring from 2000 to 2010.

The population under 18 in Las Vegas grew between 1990 and 2010, increasing by 92.4% from 64,461 in 1990 to 124,055 in 2000 and by 20.7% from 124,055 in 2000 to 149,755 in 2010 (Table 6). There were only two bandwidths with statistically significant relationships (Tables 7 and 8): the one mile bandwidth around such projects completed in the 1990s for the changes occurring from 1990 to 2000 and the two mile bandwidth around projects completed in the 1990s for the changes occurring from 1990 to 2000.

#### **2.1.2.2 Population between 18 and 29 years old**

The 18 to 29 year old population in Detroit declined between 1990 and 2010, losing 16.1% from 198,272 in 1990 to 166,350 in 2000 and by another 24.5% to 125,570 in 2010 (Table 3). For almost every examined bandwidth, the 18 to 29 year old population increases near destination redevelopments during both intercensal periods (Tables 4 and 5). The one exception to this trend is the decrease in that population group between 1990 and 2000 for the projects

completed in the 1990s, but which is not statistically significant. For the projects completed in the 1990s for the one and two mile bandwidths, the increase in the 18 to 29 year old population between 1990 and 2000 is statistically significant. However, these increases are lower than the increase occurring around the randomly sampled locations at the same bandwidths. For projects completed in the 1990s and 2000s for all three bandwidth, there is a statistically significant increase in that population segment between 2000 and 2010. This increase is higher than the changes occurring around the randomly sampled locations at the same bandwidths.

The 18 to 29 year old population in Las Vegas grew between 1990 and 2010, increasing by 53% from 51,865 in 1990 to 79,375 in 2000 and further by 18.3% to 93,886 in 2010 (Table 6). For all three bandwidths around the destination redevelopments completed in the 1990s, there is a statistically significant increase in this population segment between 1990 and 2000 (Table 7), though this trend does not continue around these projects during the next decade. For the half mile bandwidth around the destination redevelopments completed in the 2000s, there is also a statistically significant increase in the 18 to 29 year old population between 2000 and 2010 (Table 8). The same cannot be said, however, for the one and two mile bandwidths.

### **2.1.2.3 Population between 30 and 44 years old**

The 30 to 44 year old population in Detroit declined between 1990 and 2010, losing 11% from 232,306 in 1990 to 206,795 in 2000 and a further 34.5% to 135,446 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there are no statistically significant relationships with the change in the 30 to 44 year old population at the examined bandwidths (Table 4). For such projects completed in 2000s, there is a statistically significant



decline in this population segment between 2000 and 2010 at every examined bandwidth (Table 5).

The 30 to 44 year old population in Las Vegas grew between 1990 and 2010, increasing by 78.8% from 64,813 in 1990 to 115,915 in 2000 and by another 9.5% to 126,884 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant increase in the 30 to 44 year old population between 1990 and 2000 at every examined bandwidth (Table 7). For such redevelopments completed in Las Vegas during the 1990s, there is no statistically significant relationship with the 30 to 44 year old population between 2000 and 2010 at any of the examined bandwidth. For such redevelopments completed in Las Vegas during the 2000s, there is only one statistically significant relationship with the 30 to 44 year old population between 2000 and 2010 (Table 8); it is for the half mile bandwidth.

#### **2.1.2.4 Population between 45 and 64 years old**

The 45 to 64 year old population in Detroit increased between 1990 and 2000, growing by 7.8% from 170,148 in 1990 to 183,360 in 2000, and then declined between 2000 and 2010, decreasing by 1.6% from 183,360 in 2000 to 180,489 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there are no statistically significant relationships with the change in the 45 to 64 year old population between 1990 and 2000 for the examined bandwidths (Table 4). For those redevelopments completed in the 1990s, there is a statistically significant decline in this population group between 2000 and 2010 for all of the examined bandwidths. Although the 45 to 64 year old population is declining near these projects, it is not declining as much compared to the random samples. For such projects completed in 2000s, there is a statistically significant decline in this population group between 2000 and 2010

for the two mile bandwidth (Table 5). There are no statistically significant relationships for the results at the half and one mile bandwidths.

The 45 to 64 year old population in Las Vegas grew between 1990 and 2010, increasing by 104.4% from 50,776 in 1990 to 103,792 in 2000 and by 38% from 103,792 in 2000 to 143,188 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decline of the 45 to 64 year old population between 1990 and 2000 for all of the examined bandwidths (Table 7). For such redevelopments completed in Las Vegas during the 1990s, there is a statistically significant increase of the 45 to 64 year old population between 2000 and 2010 for the one and two mile bandwidths. There is no statistically significant relationship at the half mile bandwidth. For such redevelopments completed in Las Vegas during the 2000s, there is only one statistically significant relationship with 45 to 64 year old population between 2000 and 2010 (Table 8); that relationship only exists at the one mile bandwidth.

#### **2.1.2.5 Population over 64 years old**

The population over 64 years old in Detroit declined between 1990 and 2010, losing 20.7% from 124,933 in 1990 to 99,056 in 2000 and 17.3% from 99,056 in 2000 to 81,925 in 2010 (Table 3). For every examined bandwidth around the Detroit destination redevelopments completed in the 1990s and 2000s, there is a decline in the population over 64 years old (Tables 4 and 5). For such redevelopments completed in the 1990s, there is a statistically significant decrease in the population over 64 years old between 1990 and 2000 at the one and two mile bandwidths. There is no statistically significant relationship at the half mile bandwidth. For those redevelopments completed in the 1990s, there is no statistically significant relationship with this

population group between 2000 and 2010 at any of the examined bandwidths. For such redevelopments completed during the 2000s, there is a statistically significant decrease in the population over 64 years old between 2000 and 2010 at the one and two mile bandwidths.

The population over 64 years old in Las Vegas grew between 1990 and 2010, increasing by 108.4% from 26,532 in 1990 to 55,297 in 2000 and by another 26.7% to 70,043 in 2010 (Table 6). Like Detroit, however, there is a similar decline in the population over 64 years old for each bandwidth around the Las Vegas destination redevelopments completed in the 1990s and 2000s (Tables 7 and 8). For those redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decrease in the population over 64 years old between 1990 and 2000 at all of the examined bandwidths. For the destination redevelopments completed in Las Vegas during the 1990s and 2000s, there is a statistically significant decrease in the population over 64 years old between 2000 and 2010 only at the half mile bandwidth. The results at the one and two mile bandwidths are statistically insignificant.

### **2.1.3 Population by sex**

#### **2.1.3.1 Males**

The male population in Detroit declined between 1990 and 2010, losing 6% from 476,814 in 1990 to 448,319 in 2000 and by another 24.7% to 337,679 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, however, there is a statistically significant increase in terms of the male population between 1990 and 2000 for all of the examined bandwidths (Table 4). For such redevelopments completed in the 1990s, there is a statistically significant decrease in terms of the male population between 2000 and 2010 for all of the examined bandwidths. For such redevelopments completed in the 2000s, there is a

statistically significant decrease in terms of the male population between 2000 and 2010 for all of the examined bandwidths (Table 5).

The male population in Las Vegas grew between 1990 and 2010, increasing by 85.6% from 130,981 in 1990 to 243,077 in 2000 and by another 21% to 294,100 in 2010 (Table 6). There is an increase in the male population at every bandwidth and time period (Tables 7 and 8). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant increase in the male population between 1990 and 2000 for only the two mile bandwidth (i.e., no statistical significant relationship with the half and one mile bandwidths.) For such projects completed in the 1990s, there is a statistically significant increase in the male population between 2000 and 2010 at the one and two mile bandwidths. For those redevelopments completed in the 2000s, there is a statistically significant increase in the male population between 2000 and 2010 at the half and one mile bandwidths.

#### **2.1.3.2 Females**

The female population in Detroit declined between 1990 and 2010, losing 8.7% from 551,160 in 1990 to 502,951 in 2000 and by another 25.2% to 376,098 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decrease in the female population between 1990 and 2000 for all of the examined bandwidths (Table 4). For those redevelopments completed in Detroit during the 1990s, there is a statistically significant increase in terms of the female population between 2000 and 2010 for the half and two mile bandwidths. There is no statistically significant relationship at the one mile bandwidth. For the destination redevelopments completed in Detroit during the 2000s, there is a statistically significant increase in the female population between 2000 and 2010 at the half and

one mile bandwidths (Table 5). There is no statistically significant relationship at the two mile bandwidth.

The female population in Las Vegas grew between 1990 and 2010, increasing by 84.9% from 127,314 in 1990 to 235,357 in 2000 and by 23.1% from 235,357 in 2000 to 289,656 in 2010 (Table 6). There is an increase in the female population at every bandwidth and time period (Tables 7 and 8). However, only some of these increases are statistically significant. For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decrease in the female population between 1990 and 2000 at only the two mile bandwidth (Table 4). There are no statistically significant relationships at the half and one mile bandwidths. For such redevelopments completed in the 1990s and 2000s, there is a statistically significant increase in the female population between 2000 and 2010 for the half and one mile bandwidths; there is no statistically significant relationship at the two mile bandwidth.

#### **2.1.4. Population by sex by age**

##### **2.1.4.1 Male population under 18 years old**

The male population under 18 years old in Detroit declined between 1990 and 2010, losing 1.7% from 152,656 in 1990 to 150,043 in 2000 and 35.7% from 150,043 in 2000 to 96,525 in 2010 (Table 3). There is only one statistically significant trend for all the examined bandwidths and time periods (Tables 4 and 5). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decrease in the male population under 18 years old between 1990 and 2000 for only the half mile bandwidth.

The male population under 18 years old in Las Vegas grew between 1990 and 2010, increasing by 93.6% from 32,909 in 1990 to 63,714 in 2000 and by another 20.4% to 76,716 in

2010 (Table 6). There are no statistically significant relationship between the male population under 18 years old for all the examined bandwidths and time periods (Tables 7 and 8).

#### **2.1.4.2 Male population between 18 and 29 years old**

The 18 to 29 year old male population in Detroit declined between 1990 and 2010, losing 12.9% from 97,776 in 1990 to 79,921 in 2000 and by another 23.3% to 61,306 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant increase in the 18 to 29 year old male population between 1990 and 2000 at all of the examined bandwidths (Table 4). For those redevelopments completed in the 1990s, there are statistically significant changes in the 18 to 29 year old male population between 2000 and 2010 for all of the examined bandwidths (Figure 6). Although this population declined at all bandwidths, it did not decrease as much as the random samples at these same bandwidths. There is no statistically significant relationship at the one mile bandwidth. For the destination redevelopments completed in the 2000s, there are statistically significant changes in the 18 to 29 year old male population between 2000 and 2010 for all of the examined bandwidths (Table 5). For the half and one mile bandwidths, this population increased. For the two mile bandwidth, this population decreased but not as much as it did near the random samples.

The 18 to 29 year old male population in Las Vegas grew between 1990 and 2010, increasing by 56.2% from 26,602 in 1990 to 41,555 in 2000 and by another 16.3% to 48,325 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant increase in the 18 to 29 year old male population between 1990 and 2000 at all the examined bandwidths (Table 7; Figure 6).

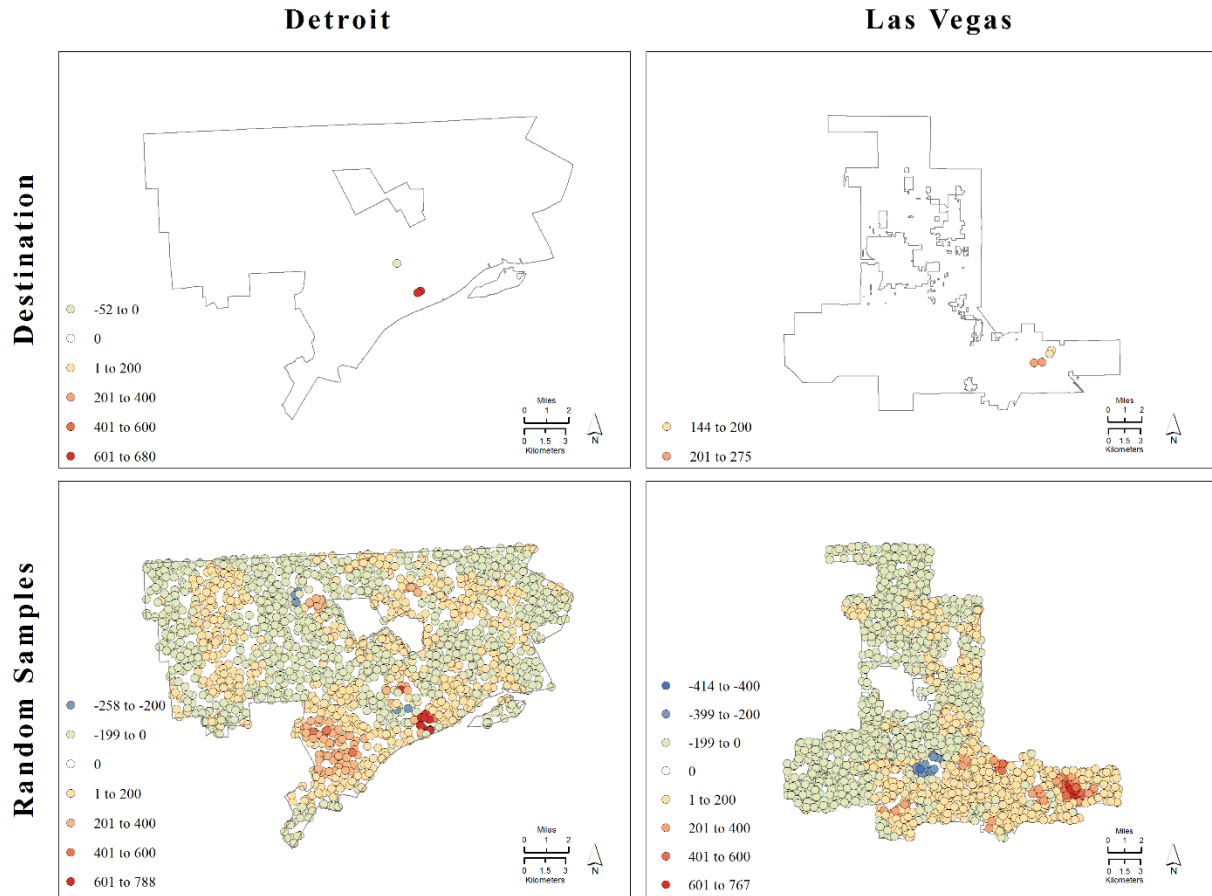


Figure 6 – Results of the geographically weighted shift-share analysis ( $GW\_RM_c^r$ ) for the change in the 18 to 29 male population between 1990 and 2000 at the half mile bandwidth for destination redevelopments completed in the 1990s (top) and the random samples (bottom) in Detroit (left) and Las Vegas (right)

For such redevelopments completed in the 1990s, there is a statistically significant increase in this population between 2000 and 2010 at the half mile bandwidth; there are no statistically significant relationships at the one and two mile bandwidths. For those redevelopments completed in the 2000s, there is a statistically significant increase in the 18 to 29 year old male population between 2000 and 2010 for the half and one mile bandwidths (Table 8); there is no statistically significant relationship at the two mile bandwidth.

#### **2.1.4.3 Male population between 30 and 44 years old**

The 30 to 44 year old male population in Detroit decreased between 1990 and 2010, losing 9.1% from 105,690 in 1990 to 96,050 in 2000 and another 33.5% to 63,860 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant increase in the 30 to 44 year old male population between 1990 and 2000 at the one mile bandwidth (Table 4); there are no statistically significant relationships at the other bandwidths. For these redevelopments completed in the 1990s, there are statistically significant changes to this population group between 2000 and 2010 at the one and two mile bandwidths. Although this population declined at these two bandwidths, it did not decrease as much as the random samples at these same bandwidths. There is no statistically significant relationship at the half mile bandwidth. For the destination redevelopments completed in Detroit during the 2000s, there are statistically significant changes in the 30 to 44 year old male population between 2000 and 2010 at the two mile bandwidth (Table 5). At the two mile bandwidth, this population decreased but not as much as it did near the random samples. There are no statistically significant relationships at the half and one mile bandwidths.



The 30 to 44 year old male population in Las Vegas grew between 1990 and 2010, increasing by 79.7% from 33,762 in 1990 to 60,679 in 2000 and by additional 7% to 64,938 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant increase in the 30 to 44 year old male population between 1990 and 2000 for all of the examined bandwidths (Table 7). For those same redevelopments, however, there are no statistically significant changes in this population between 2000 and 2010 across any of the examined bandwidths. For the destination redevelopments completed in Las Vegas during the 2000s, there is a statistically significant increase in the 30 to 44 year old male population between 2000 and 2010 at the one mile bandwidth (Table 8). There are no statistically significant relationships at the half and two mile bandwidths.

#### **2.1.4.4 Male population between 45 and 64 years old**

The 45 to 64 male population in Detroit increased between 1990 and 2010, gaining 8.5% from 76,803 in 1990 to 83,315 in 2000 and an additional 0.6% to 83,837 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant increase in the 45 to 64 year old male population between 1990 and 2000 for all of the examined bandwidths (Table 4). For the destination redevelopments completed in Detroit during the 1990s and 2000s, there are statistically significant changes in the 45 to 64 year old male population between 2000 and 2010 for all of the examined bandwidths (Tables 4 and 5). Although this population subset declined at these bandwidths, it did not decrease as much as that at the random samples.

The 45 to 64 male population in Las Vegas grew between 1990 and 2010, increasing by 101% from 25,607 in 1990 to 51,464 in 2000 and by an additional 39.8% to 71,926 in 2010

(Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there are no statistically significant changes in the 45 to 64 year old male population between 1990 and 2000 for all of the examined bandwidths (Table 7). For those redevelopments completed in Las Vegas during the 1990s and 2000s, there is a statistically significant increase in the 45 to 64 year old male population between 2000 and 2010 at the half and one mile bandwidths. There is no statistically significant relationship at the two mile bandwidth.

#### **2.1.4.5 Male population over 64 years old**

The male population over 64 years old in Detroit declined between 1990 and 2010, losing 21.8% from 49,889 in 1990 to 38,990 in 2000 and another 17.5% to 32,151 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decline in the male population over 64 years old between 1990 and 2000 at the one and two mile bandwidths (Table 4); there is no statistically significant relationship at the half mile bandwidth. For those redevelopments, there are statistically significant changes in the male population over 64 years old between 2000 and 2010 at the one and two mile bandwidths. Although this population declined at these two bandwidths, it did not decrease as much as the random samples at these same bandwidths. There is no statistically significant relationship at the half mile bandwidth. For the destination redevelopments completed in Detroit during the 2000s, there is a statistically significant change in the male population over 64 years old between 2000 and 2010 at the two mile bandwidth (Table 5). Although this population group is declining, it is not decreasing as much as it is near the random samples. There are no statistically significant relationships at the half and one mile bandwidths.

The male population over 64 years old in Las Vegas grew between 1990 and 2010, increasing by 112.1% from 12,101 in 1990 to 25,665 in 2000 and by 25.4% to 32,194 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decline in the male population over 64 years old between 1990 and 2000 for all of the examined bandwidths (Table 7). For these same redevelopments, there is a statistically significant decline in the male population over 64 years old between 2000 and 2010 at the one and two mile bandwidths; there is no statistically significant relationship at the half mile bandwidth. For the destination redevelopments completed in Las Vegas during the 2000s, there is a statistically significant decline in the male population over 64 years old between 2000 and 2010 at the half mile bandwidth; there are no statistically significant relationships at the one and two mile bandwidths.

#### **2.1.4.6 Female population under 18 years old**

The female population under 18 years old in Detroit declined between 1990 and 2010, losing 2.7% from 149,659 in 1990 to 145,666 in 2000 and by another 35.6% to 93,822 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decline in the female population under 18 years old between 1990 and 2000 at the half mile bandwidth (Table 4); there are no statistically significant relationships at the one and two mile bandwidths. For those redevelopments, there are no statistically significant relationships with the female population under 18 years old between 2000 and 2010 at any of the examined bandwidths. For the destination redevelopments completed in Detroit during the 2000s, there are no statistically significant relationships with the female population under 18 years old between 2000 and 2010 at any of the examined bandwidths (Table 5).

The female population under 18 years old in Las Vegas grew between 1990 and 2010, increasing by 91.2% from 31,552 in 1990 to 60,341 in 2000 and by an additional 21% to 73,039 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s and 2000s, there are no statistically significant relationships with the female population under 18 years old between 1990 and 2010 at any of the examined bandwidths (Tables 7 and 8).

#### **2.1.4.7 Female population between 18 and 29 years old**

The 18 to 29 year old female population in Detroit declined between 1990 and 2010, losing 19% from 106,677 in 1990 to 86,429 in 2000 and by a further 25.6% to 64,264 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decline in the 18 to 29 female population between 1990 and 2000 at the half mile bandwidth and a statistically significant increase in the 18 to 29 female population during this same time period at the one and two mile bandwidths (Table 4). For these redevelopments, there is a statistically significant increase in the 18 to 29 female population between 2000 and 2010 at all of the examined bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant increase in the 18 to 29 female population between 2000 and 2010 at all of the examined bandwidths (Table 5).

The municipal population in Las Vegas grew between 1990 and 2010, increasing by 19% from 106,677 in 1990 to 86,429 in 2000 and by another 25.6% to 64,264 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s and 2000s, there are no statistically significant relationships with the 18 to 29 year old female population between 1990 and 2010 at any of the examined bandwidths (Tables 7 and 8).

#### **2.1.4.8 Female population between 30 and 44 years old**

The 30 to 44 year old female population in Detroit declined between 1990 and 2010, losing 12.5% from 126,616 in 1990 to 110,745 in 2000 and by a further 35.4% to 71,586 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decline in the 30 to 44 female population between 1990 and 2000 at the half mile bandwidth (Table 4); there are no statistically significant relationships at the one and two mile bandwidths. For these redevelopments, there are statistically significant changes in this population group between 2000 and 2010 at the half and two mile bandwidths. Although these changes are negative, they are decreasing by a lower amount than near the random samples. There is no statistically significant relationship at the one mile bandwidth. For such redevelopments completed in the 2000s, there are statistically significant changes in the 30 to 44 female population between 2000 and 2010 at the two mile bandwidth (Table 5). Although these changes are negative, they are decreasing by a lower amount than near the random samples at same bandwidth. There are no statistically significant relationships at the half and one mile bandwidths.

The 30 to 44 year old female population in Las Vegas grew between 1990 and 2010, increasing by 77.9% from 31,051 in 1990 to 55,236 in 2000 and additionally by 12.1% to 61,946 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there are no statistically significant relationships with the 30 to 44 year old female population between 1990 and 2010 at any of the examined bandwidths (Tables 7 and 8). For such redevelopments completed in the 2000s, there is a statistically significant decline with the 30 to 44 year old female population between 2000 and 2010 at the half mile bandwidth and there is a

statistically significant increase with this population group between 2000 and 2010 at the two mile bandwidth. There is no statistically significant relationship at the one mile bandwidth.

#### **2.1.4.9 Female population between 45 and 64 years old**

The 45 to 64 year old female population in Detroit increased between 1990 and 2000, growing by 7.2% from 93,312 in 1990 to 100,045 in 2000, and then declined between 2000 and 2010, losing 3.4% to 713,777 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is no statistically significant relationship with the 45 to 64 female population between 1990 and 2000 for any of the examined bandwidths (Table 4). For those redevelopments, there are statistically significant changes in this population group between 2000 and 2010 at all of the examined bandwidths. Although these changes are negative, they are decreasing by a lower amount than near the random samples. For the destination redevelopments completed in Detroit during the 2000s, there are statistically significant changes in the 45 to 64 female population between 2000 and 2010 at all of the examined bandwidths (Table 5). Although these changes are negative, they are decreasing by a lower amount than near the random samples.

The 45 to 64 year old female population in Las Vegas grew between 1990 and 2010, increasing by 107.9% from 25,169 in 1990 to 52,328 in 2000 and by a further 36.2% to 71,261 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decline in the 45 to 64 year old female population between 1990 and 2000 at the two mile bandwidth (Table 7); there are no statistically significant relationships at the half and one mile bandwidths. For those redevelopments, there are no statistically significant relationships with this population group between 2000 and 2010 at any of the

examined bandwidths. For the destination redevelopments completed in Las Vegas during the 2000s, there are no statistically significant relationships with the 45 to 64 year old female population between 2000 and 2010 at any of the examined bandwidths (Table 8).

#### **2.1.4.10 Female population over 64 years old**

The female population over 64 years old in Detroit declined between 1990 and 2010, losing 20% from 75,044 in 1990 to 60,066 in 2000 and by an additional 17.1% to 49,774 in 2010 (Table 3). For those destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decline in the female population over 64 years old between 1990 and 2000 at the one and two mile bandwidths (Table 4). For those redevelopments, there are statistically significant changes in the female population over 64 years old between 2000 and 2010 at all of the examined bandwidths. Although these changes are negative, they are decreasing by a lower amount than near the random samples. For the destination redevelopments completed in Detroit during the 2000s, there is statistically significant change in this population group between 2000 and 2010 at the two mile bandwidth (Table 5). Although this change is negative, it is decreasing by a lower amount than near the random samples. There are no statistically significant relationships at the half and one mile bandwidths.

The female population over 64 years old in Las Vegas grew between 1990 and 2010, increasing by 105.3% from 14,431 in 1990 to 29,632 in 2000 and by additional 27.7% to 37,849 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decline in the female population over 64 years old between 1990 and 2000 at all of the examined bandwidths (Table 7). For these redevelopments, there is a statistically significant decline in this population sector between 2000 and 2010 at the half mile

bandwidth. There are no statistically significant relationships at the one and two mile bandwidths. For the destination redevelopments completed in Las Vegas during the 2000s, there is a statistically significant decline in the female population over 64 years old between 2000 and 2010 at the half mile bandwidth (Table 8); there are no statistically significant relationships at the one and two mile bandwidths.

## **2.1.5. Population by Hispanic origin by race**

### **2.1.5.1 Non-Hispanic White population**

The non-Hispanic White population in Detroit declined between 1990 and 2010, losing 52.9% from 212,278 in 1990 to 99,921 in 2000 and another 44.4% to 55,604 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant increase in the non-Hispanic White population between 1990 and 2000 at the two mile bandwidth (Table 4). There are no statistically significant relationships at the half and one mile bandwidths. For these redevelopments, there is a statistically significant increase in this population segment between 2000 and 2010 at all of the examined bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant increase in the non-Hispanic White population between 2000 and 2010 at all of the examined bandwidths (Table 5; Figure 7).

The non-Hispanic White population in Las Vegas grew between 1990 and 2010, increasing by 49.1% from 186,232 in 1990 to 277,704 in 2000 and by an additional 0.7% to 279,703 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is no statistically significant relationships with the non-Hispanic White population between 1990 and 2010 at any of the examined bandwidths (Table 7).



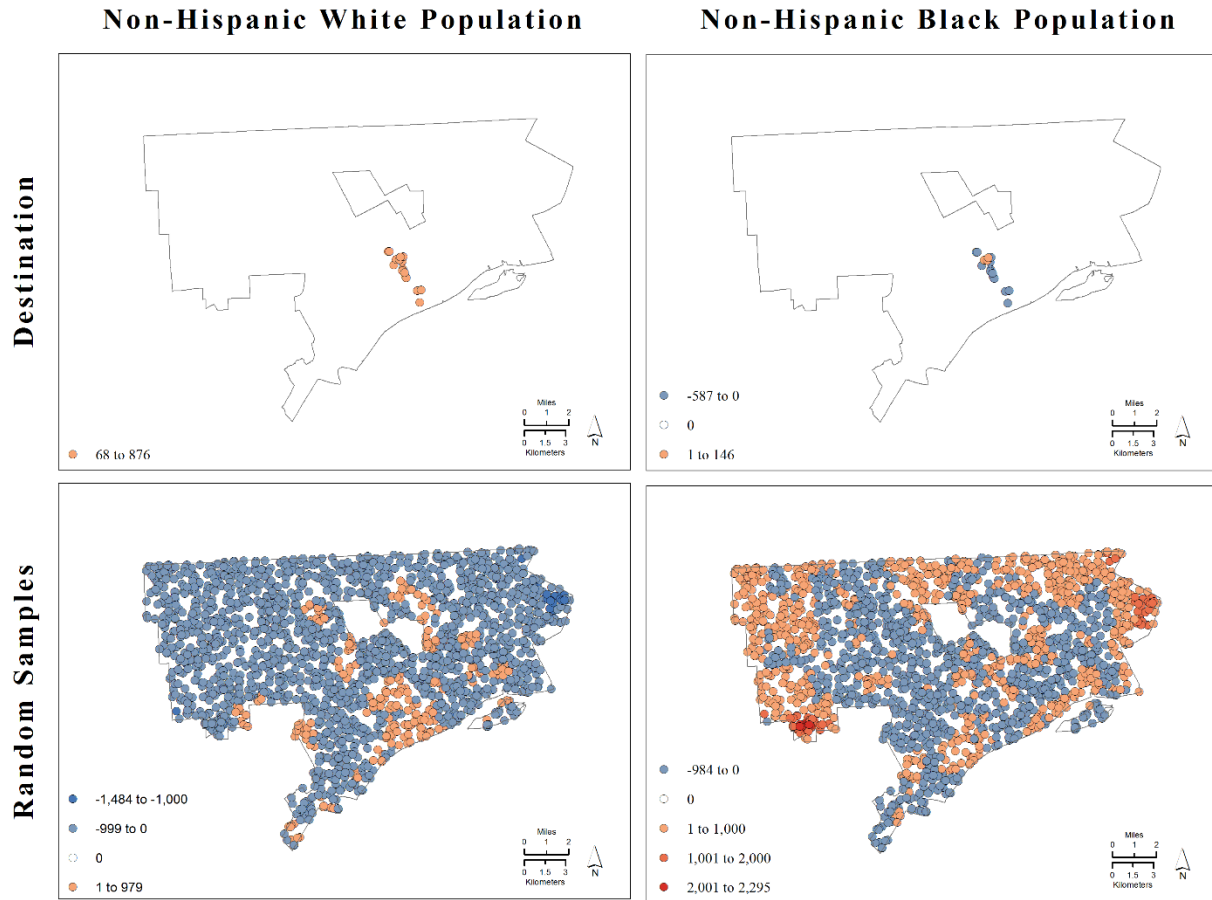


Figure 7 - Results of the geographically weighted shift-share analysis ( $GW\_RM_c^r$ ) for the change in the non-Hispanic White population (left) and non-Hispanic Black population (right) both during intercensal period of 2000 to 2010 at the half mile bandwidth for destination redevelopments completed in the 2000s (top) and the random samples (bottom) in Detroit

For such redevelopments completed in the 2000s, there is a statistically significant increase in this population segment between 2000 and 2010 at the one mile bandwidth (Table 8). There are no statistically significant relationships at the half and two mile bandwidths.

#### **2.1.5.2 Non-Hispanic Black population**

The non-Hispanic Black population in Detroit declined between 1990 and 2010, losing 0.3% from 774,529 in 1990 to 771,966 in 2000 and additional 24% to 586,573 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is no statistically significant relationship with the non-Hispanic Black population between 1990 and 2000 at any of the examined bandwidths (Table 4). For these redevelopments, there is a statistically significant decline in this population group between 2000 and 2010 at the half and one mile bandwidths. There is no statistically significant relationship at the two mile bandwidth. For such redevelopments completed in the 2000s, there is a statistically significant decrease in this population sector between 2000 and 2010 at all of the examined bandwidths (Table 5; Figure 7).

The non-Hispanic Black population in Las Vegas grew between 1990 and 2010, increasing by 68.5% from 28,704 in 1990 to 48,380 in 2000 and again by 28.2% to 62,008 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decrease in the non-Hispanic Black population between 1990 and 2000 at the two mile bandwidth (Table 7). There are no statistically significant relationships at the half and one mile bandwidths. For such redevelopments complete in the 1990s, there is a statistically significant increase in the non-Hispanic Black population between 2000 and 2010 at the half and one mile bandwidths. There is no statistically significant relationships at the two

mile bandwidth. For the destination redevelopments completed in Las Vegas during the 2000s, there is a statistically significant increase in the non-Hispanic Black population between 2000 and 2010 at the half and one mile bandwidths (Table 8). There is no statistically significant relationships at the two mile bandwidth.

### **2.1.5.3 Non-Hispanic Asian and Pacific Islander population**

The non-Hispanic Asian and Pacific Islander population in Detroit increased between 1990 and 2000, gaining 15.1% from 8,085 in 1990 to 9,304 in 2000, and this population subset decreased between 2000 and 2010, losing 19.2% from 9,304 in 2000 to 7,518 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant increase in the non-Hispanic Asian and Pacific Islander population between 1990 and 2000 at the two mile bandwidth (Table 4). There are no statistically significant relationships at the half and one mile bandwidths. For these redevelopments, there are no statistically significant relationships with this population sector between 2000 and 2010 at any of the examined bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant decrease in the non-Hispanic Asian and Pacific Islander population between 2000 and 2010 at the half and one mile bandwidths (Table 5).

The non-Hispanic Asian population in Las Vegas grew between 1990 and 2010, increasing by 178.7% from 8,735 in 1990 to 24,346 in 2000 and again by 54.9% to 37,709 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decrease in the non-Hispanic Asian and Pacific Islander population between 1990 and 2000 at all of the examined bandwidths (Table 7). For these redevelopments, there are no statistically significant relationships with this population subset

between 2000 and 2010 at any of the examined bandwidths. For the destination redevelopments completed in Las Vegas during the 2000s, there is a statistically significant decrease in the non-Hispanic Asian and Pacific Islander population between 2000 and 2010 at the one mile bandwidth (Table 8). There are no statistically significant relationships at the half and two mile bandwidths.

#### **2.1.5.4 Hispanic population**

The Hispanic population in Detroit increased between 1990 and 2010, gaining 65.7% from 28,473 in 1990 to 47,167 in 2000 and an additional 3.2% to 48,679 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decrease in the Hispanic population between 1990 and 2000 at the two mile bandwidth (Table 4). There are no statistically significant relationships at the half and one mile bandwidths. For these redevelopments, there are no statistically significant relationships with this population group between 2000 and 2010 at any of the examined bandwidths. For these redevelopments completed in the 2000s, there are no statistically significant relationships with the Hispanic population between 2000 and 2010 at any of the examined bandwidths (Table 5).

The Hispanic population in Las Vegas grew between 1990 and 2010, increasing by 249% from 32,369 in 1990 to 112,962 in 2000 and another by 62.8% to 183,859 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decrease in the Hispanic population between 1990 and 2000 at the one and two mile bandwidths (Table 7). There is no statistically significant relationship at the half mile bandwidth. For these redevelopments, there is a statistically significant decrease in the Hispanic population between 2000 and 2010 at the one mile bandwidth. There are no statistically significant

relationships at the half and two mile bandwidths. For the destination redevelopments completed in the 2000s, there is a statistically significant decrease in this cohort between 2000 and 2010 at the one mile bandwidth (Table 8). There are no statistically significant relationships at the half and two mile bandwidths.

## **2.1.6 Population by place of birth**

### **2.1.6.1 Native population**

The native population in Detroit declined between 1990 and 2010, losing 8.8% from 1,027,974 in 1990 to 951,270 in 2000 and a further 25% to 713,777 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant increase in the native population between 1990 and 2000 at the half mile bandwidth (Table 4). There are no statistically significant relationships at the one and two mile bandwidths. For these 1990s redevelopments, there are no statistically significant relationships with the native population between 2000 and 2010 at any of the examined bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant decrease in the native population between 2000 and 2010 at the half mile bandwidth (Table 4). There are no statistically significant relationships at the one and two mile bandwidths.

The native population in Las Vegas grew between 1990 and 2010, increasing by 67.5% from 231,801 in 1990 to 388,212 in 2000 and by another 16% to 450,419 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there are no statistically significant relationships with the native population between 1990 and 2000 at any of the examined bandwidths (Table 7). For these same redevelopments, there is a statistically significant increase in the native population between 2000 and 2010 at all of the examined

bandwidths. For such redevelopments in the 2000s, there is a statistically significant increase in the native population between 2000 and 2010 at the half and two mile bandwidths (Table 8).

There is no statistically significant relationship at the one mile bandwidth.

#### **2.1.6.2 Foreign-born population**

The foreign-born population in Detroit increased between 1990 and 2000, gaining 32% from 34,490 in 1990 to 45,541 in 2000, and declined between 2000 and 2010, decreasing by 15.6% to 38,435 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decrease in the foreign-born population between 1990 and 2000 at the half mile bandwidth (Table 4). There are no statistically significant relationships at the one and two mile bandwidths. For these redevelopments, there are no statistically significant relationships with this foreign-born population segment between 2000 and 2010 at any of the examined bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant increase in the foreign-born population between 2000 and 2010 at all of the examined bandwidths (Table 5).

The foreign-born population in Las Vegas grew between 1990 and 2010, increasing by 242.2% from 26,494 in 1990 to 90,656 in 2000 and an additional by 42.7% to 129,367 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decrease in the foreign-born population between 1990 and 2000 at the half and one mile bandwidths (Table 7). There is no statistically significant relationship at the two mile bandwidth. For these 1990s redevelopments, there is a statistically significant decrease in this cohort between 2000 and 2010 at the one mile bandwidth. For such redevelopments completed in the 2000s, there is a statistically significant decrease in the foreign-born population

between 1990 and 2000 at the half and one mile bandwidths (Table 8). There is no statistically significant relationship at the two mile bandwidth.

### **2.1.7. Households by household type**

#### **2.1.7.1 Family households**

The number of family households in Detroit declined between 1990 and 2010, losing 10.6% from 244,327 in 1990 to 218,483 in 2000 and an additional 25.4% to 162,924 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there are no statistically significant relationships with the number of family households between 1990 and 2000 at any of the examined bandwidths (Table 4). For these 1990s redevelopments, there is a statistically significant decrease in the number of family households between 2000 and 2010 at the two mile bandwidth. There are no statistically significant relationships at the half and one mile bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant decrease in the number of family households between 2000 and 2010 at the one and two mile bandwidths (Table 5). There is no statistically significant relationship at the half mile bandwidth.

The number of family households in Las Vegas grew between 1990 and 2010, increasing by 81.2% from 64,819 in 1990 to 117,466 in 2000 and by another 18% to 138,668 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there are no statistically significant relationships with the number of family households between 1990 and 2000 at any of the examined bandwidths (Table 4). For these same redevelopments, there is a statistically significant increase in the number of family households between 2000 and 2010 at the two mile bandwidth. There are no statistically significant relationships at the half and one

mile bandwidths. For the destination redevelopments completed in Las Vegas during the 2000s, there is a statistically significant increase in the number of family households between 2000 and 2010 at the two mile bandwidth (Table 5). There are no statistically significant relationships at the half and one mile bandwidths.

#### **2.1.7.2 Nonfamily households**

The number of nonfamily households in Detroit declined between 1990 and 2010, losing 9.1% from 129,730 in 1990 to 117,945 in 2000 and a further 9.7% to 106,521 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there are no statistically significant relationships with the number of nonfamily households between 1990 and 2000 at any of the examined bandwidths (Table 4). For these redevelopments completed in Detroit during the 1990s and 2000s, there are statistically significant changes in the number of nonfamily households between 2000 and 2010 at all of the examined bandwidths. Although the number of nonfamily households are declining near these projects, they are declining by a lower amount than near the random samples (Tables 4 and 5).

The number of nonfamily households in Las Vegas grew between 1990 and 2010, increasing by 69.8% from 34,916 in 1990 to 59,284 in 2000 and by an additional 23.2% to 73,021 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decline in the number of nonfamily households between 1990 and 2000 at the two mile bandwidth (Table 7). There are no statistically significant relationships at the half and one mile bandwidths. For these 1990s redevelopments, there are no statistically significant relationships with the number of nonfamily households between 2000 and 2010 at any of the examined bandwidths. For such redevelopments completed in the 2000s, there



is a statistically significant decline in the number of nonfamily households between 2000 and 2010 at the half mile bandwidth (Table 8). There are no statistically significant relationships at the one and two mile bandwidths.

## **2.1.8 Population by geographical mobility**

### **2.1.8.1 Population previously living in the same residence**

The population previously living in the same residence in Detroit declined between 1990 and 2000, losing 6.1% from 559,343 in 1990 to 525,317 in 2000, and then increased between 2000 and 2010, gaining 18.9% from 525,317 in 2000 to 614,678 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decrease in the population previously living in the same residence between 1990 and 2000 at the two mile bandwidth (Table 4). There are no statistically significant relationships at the half and one mile bandwidths. For these same redevelopments, there is a statistically significant increase in this population segment between 2000 and 2010 at all of the examined bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant increase in this population group between 2000 and 2010 at all of the examined bandwidths (Table 5).

The population previously living in the same residence in Las Vegas grew between 1990 and 2010, increasing by 98.4% from 79,221 in 1990 to 157,176 in 2000 and by a further 182.8% to 444,417 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there are no statistically significant relationships with the population previously living in the same residence between 1990 and 2000 at any of the examined bandwidths (Table 7). For these 1990s redevelopments, there is a statistically significant decline in this population segment

between 2000 and 2010 at the half mile bandwidth. There are no statistically significant relationships at the one and two mile bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant decline in this population group between 2000 and 2010 at the half mile bandwidth (Table 8). There are no statistically significant relationships at the one and two mile bandwidths.

#### **2.1.8.2 Population previously living in a different residence in the same city**

The population previously living in different residence in Detroit declined between 1990 and 2010, losing 10.4% from 292,905 in 1990 to 262,394 in 2000 and another 61.4% to 101,249 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decrease in the population previously living in different residence in Detroit between 1990 and 2000 at the half and one mile bandwidths (Table 4). There is no statistically significant relationship at the two mile bandwidth. For these 1990s redevelopments, there is a statistically significant increase in this population segment between 2000 and 2010 at the half mile bandwidth. There are no statistically significant relationships at the one and two mile bandwidth. For the destination redevelopments completed in the 2000s, there is a statistically significant increase in this population group between 2000 and 2010 at the two mile bandwidth (Table 5). There are no statistically significant relationships at the half and one mile bandwidth.

The population previously living in different residence in Las Vegas grew between 1990 and 2000, increasing by 62.5% from 70,368 in 1990 to 114,349 in 2000, and then declined between 2000 and 2010, decreasing by 41.1% to 67,366 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant

increase in the population previously living in the same residence between 1990 and 2000 at the one mile bandwidth (Table 7). There are no statistically significant relationships at the half and two mile bandwidths. For these 1990s redevelopments, there is a statistically significant increase in this cohort between 2000 and 2010 at the half and one mile bandwidths. There is no statistically significant relationship at the two mile bandwidth. For the destination redevelopments completed in the 2000s, there is a statistically significant increase in the population previously living in the same residence between 2000 and 2010 at the half and one mile bandwidths (Table 8). There is no statistically significant relationship at the two mile bandwidth.

#### **2.1.8.3 Population previously living in a different municipality in the same metro area**

The population previously living in a different municipality but in the same metro area as Detroit declined between 1990 and 2010, losing 17.1% from 37,769 in 1990 to 31,307 in 2000 and another 61% to 12,208 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant increase in this population sector between 1990 and 2000 at the half and one mile bandwidths (Table 4). There is no statistically significant relationship at the two mile bandwidth. For the destination redevelopments completed in the 1990s and 2000s, there are no statistically significant relationships in the population previously living in a different municipality but in the same metro area between 2000 and 2010 at any of the examined bandwidths (Tables 4 and 5).

The population previously living in a different municipality but in the same metro area as Las Vegas grew between 1990 and 2000, increasing by 259.8% from 8,452 in 1990 to 30,410 in

2000, and then decreased between 2000 and 2010, declining by 11.3% to 26,960 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there are no statistically significant relationships in the population previously living in a different municipality but in the same metro area between 2000 and 2010 at any of the examined bandwidths (Table 7). For the destination redevelopments completed in Las Vegas during the 1990s and 2000s, there is a statistically significant increase in this population sector between 2000 and 2010 at the half and one mile bandwidths (Table 8). There is no statistically significant relationship at the two mile bandwidth.

#### **2.1.8.4 Population previously living in a different metro area but the same country**

The Detroit population previously living in a different U.S. metro area declined between 1990 and 2010, losing 12.9% from 37,135 in 1990 to 32,335 in 2000 and 78.9% from 32,335 in 2000 to 6,813 in 2010 (Table 3). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant increase in the population previously living in a different U.S. metro area between 1990 and 2000 at all of the examined bandwidths (Table 4). For these same redevelopments, there is a statistically significant decrease in this cohort between 2000 and 2010 at all of the examined bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant decrease in the population previously living in a different U.S. metro area between 2000 and 2010 at all of the examined bandwidths (Table 5).

The Las Vegas population previously living in a different U.S. metro area grew between 1990 and 2000, increasing by 49% from 71,732 in 1990 to 106,847 in 2000, and then decreased between 2000 and 2010, declining by 74.2% from 106,847 in 2000 to 27,583 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there are no

statistically significant relationships in the population previously living in a different U.S. metro area between 1990 and 2000 at any of the examined bandwidths (Table 7). For these same redevelopments, there is a statistically significant increase in this population sector between 2000 and 2010 at the half and one mile bandwidths. There is no statistically significant relationship at the two mile bandwidth. For the destination redevelopments completed in Las Vegas during the 2000s, there is a statistically significant increase in the population previously living in a different U.S. metro area between 2000 and 2010 at all of the examined bandwidths (Table 8).

#### **2.1.8.5 Population previously living in a foreign country**

The Detroit population previously living in a foreign country grew between 1990 and 2000, increasing by 127.7% from 7,940 in 1990 to 18,077 in 2000, and then decreased between 2000 and 2010, declining by 85.5% to 2,615 in 2010 (Table 3). For the destination redevelopments completed during the 1990s, there is a statistically significant decrease in this population segment between 1990 and 2000 at the two mile bandwidth (Table 4). For these same 1990s redevelopments, there is a statistically significant decrease in the population previously living in a foreign country between 2000 and 2010 at the half mile bandwidth. For such redevelopments completed in the 2000s, there is a statistically significant decrease in this cohort between 2000 and 2010 at all of the examined bandwidths (Table 5).

The Las Vegas population previously living in a foreign country grew between 1990 and 2000, increasing by 49% from 71,732 in 1990 to 106,847 in 2000, and then decreased between 2000 and 2010, declining by 74.2% to 27,583 in 2010 (Table 6). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decrease in the population previously living in a foreign country between 1990 and 2000 at the

half and one mile bandwidths (Table 7). There is no statistically significant relationship at the two mile bandwidth. For these redevelopments, there are no statistically significant relationships in this population group between 2000 and 2010 at any of the examined bandwidths. For the destination redevelopments completed in the 2000s, there is a statistically significant increase in the population previously living in a foreign country between 2000 and 2010 at the one mile bandwidth (Table 8).

## **2.2 DISCUSSION**

### **2.2.1 Total population**

In Detroit, with one exception, the statistically significant increases in the total population for the examined bandwidths indicates that destination redevelopments have successfully attracted more people to live nearby these sites during the decade that the projects were completed and the subsequent decade. The exception to this trend is the fact that the increase in population between 2000 and 2010 within a half mile bandwidth of the destination redevelopments completed during the 2000s is statistically insignificant. Nonetheless, these results suggest that such redevelopments may provide officials some hope of revitalizing specific areas in the short and long term within shrinking cities.

Las Vegas has experienced the opposite trend with a few exceptions. Destination redevelopments cause the nearby total population to decline. The exceptions illustrated the same trends; however, the amount of change that occurred for these bandwidths are statistically not significant. This trend is the case for the changes that occurred between 2000 and 2010 for redevelopments that were completed in the 1990s. This suggests that the effect of art, entertainment and redevelopments might have an initial negative effect on the nearby

populations during the decade that they are completed and then no impact in the subsequent decades in Las Vegas and other growing cities. This impact might be negative for a number of reasons. It could be negative because these redevelopments are located along the northern portion of the Las Vegas Strip where many of these types of sites already exist. Thus, the construction of a new or renovation of an old art, entertainment or recreational redevelopment might not be enough of a special or unique attraction to keep current residents in the neighborhood. Likewise, it might also be due to the fact that the construction or renovation consists of expanding into areas once containing (more) residential properties.

## **2.2.2 Population by age**

### **2.2.2.1 Population under 18 years old**

In both Detroit and Las Vegas, there is no easily discernable pattern relating to the local impact of destination redevelopments on the population under 18 years old. The impact of these projects in Detroit seems to have little to no relationship with the population under 18 years old within a half mile of these sites. With respect to the one and two mile bandwidths, the projects completed in Detroit during the 1990s seemed to have more of a positive effect on the change in this population from 1990 to 2000, but more of a negative effect from 2000 to 2010 for both projects completed in the 1990s and 2000s. In Las Vegas, the only effect is a positive one that is evident for the projects completed in the 1990s from 1990 to 2000. The difference between the effect of the destination redevelopments completed in the 1990s in Detroit and Las Vegas is the population under 18 declined near the projects in Detroit and the increase in this population segment near the projects in Las Vegas. Due to these findings, if there are any local effects of destination effects on the nearby population under 18 years old, they will depend on when the

projects are completed, where they are completed, and whether one is looking at short or long term changes.

#### **2.2.2.2 Population between 18 and 29 years old**

With respect to the relationship between the 18 to 29 year old population and destination redevelopments, there is more of a clearly identifiable trend in Las Vegas than in Detroit. In Detroit, the local impact of these projects appears to be positive for all of the changes occurring between 2000 and 2010. For the changes in the 18 to 29 year old population between 1990 and 2000, the local impact is negative for the one and two mile bandwidths. In Las Vegas, the local impact of these projects appears to be positive for all of the examined bandwidths only during the decade that the projects were completed. Similar to the previous population segment, although there is a more easily identifiable trend in Las Vegas, the results of the geographically weighted shift-share analysis suggests that the relationship between the 18 to 29 year old population and destination redevelopments changes based on when the project is completed, where the project is completed and whether one is examining short- or long-term trends.

#### **2.2.2.3 Population between 30 and 44 years old**

Despite the fact that there are statistically significant relationships at a few of the bandwidths, there is no notable trends between the 30 to 44 year old population and the destination redevelopments in Detroit and Las Vegas at any of the examined bandwidths and time periods.

#### **2.2.2.4 Population between 45 and 64 years old**



Similar to the previous variable, although there are a few statistically significant relationships at some of the bandwidths, there are no clear trends in terms of relationship between the 45 to 64 year old population and the destination redevelopments in Detroit and Las Vegas at any of the examined bandwidths and time periods.

#### **2.2.2.5 Population over 64 years old**

There appears to be a general trend of the population over 64 years old decreasing near destination redevelopments in Detroit and Las Vegas, which is expected given the fact this population segment usually dislike the type of issues that are commonly associated with these sites (e.g., noise pollution; Judd and Feinstein, 1999). However, where and when this relationship exists differs in each city. Although the impact varies by bandwidth in Detroit, the negative trend appears to only be a short-term trend because it is only evident in the same decades that the projects were completed. In Las Vegas, the population over 64 years old consistently declines within a half mile bandwidth in the decade that the projects are completed and the following decade.

### **2.2.3 Population by sex**

#### **2.2.3.1 Males**

There appears to be a general positive relationship between destination redevelopments and the male population in Detroit and Las Vegas. However, the local impact of these projects on the male population depends on when the project is completed, where the project is completed, and whether one is examining short- or long-term changes. The only exception is the local

impact of these Detroit projects completed in the 1990s on the male population between 1990 and 2000 at all bandwidths.

#### **2.2.3.2 Females**

There appears to be a more easily recognizable relationship between the female population and destination redevelopments in Las Vegas than in Detroit. In Las Vegas, the female population generally declined near these projects. In Detroit, this population segment declines between 1990 and 2000 at all bandwidths for the projects completed in the 1990s but then increased during 2000 and 2010 for the projects completed in the 1990s and 2000s at two of the three bandwidths. However, despite these differences, the local impact of these projects on the female population in both cities depends on when and where the project is completed and whether one is examining short- or long-term changes.

### **2.2.4. Population by sex by age**

#### **2.2.4.1 Male population under 18 years old**

There appears to be no local impact of destination redevelopments on the male population under 18 years old in Detroit and Las Vegas.

#### **2.2.4.2 Male population between 18 and 29 years old**

In Detroit and Las Vegas, there is a positive relationship between the 18 to 29 year old male population and destination redevelopments. Particularly within a half mile from these sites, there is a consistent increase in the 18 to 29 year old male population (Figure 6). With one

exception, this trend is also evident at the one mile bandwidth. With two exceptions, this trend occurs at the two mile bandwidth as well. As such, the results of the geographically weighted shift-share analysis suggest that destination redevelopments have a positive impact, or attract, the 18 to 29 year old male demographic – especially within close proximity to these sites.

#### **2.2.4.3 Male population between 30 and 44 years old**

There is a general trend of the 30 to 44 year old population increasing near art, entertainment and recreation redevelopments in Detroit and Las Vegas. However, this trend varies in terms of the examined bandwidth and time period, especially in Detroit. In Las Vegas, there is more consistency in this relationship at the one mile bandwidth during the decade that the projects were completed. As such, the results of the geographically weighted shift-share analysis indicate that the local impact of these projects on the 30 to 44 male population generally varies when and where the project is completed and whether one is examining short- or long-term trends.

#### **2.2.4.4 Male population between 45 and 64 years old**

Art, entertainment and recreation redevelopments generally have a positive impact on the nearby 45 to 64 male population in Detroit and Las Vegas. However, this trend varies in terms the examined bandwidth and time period in Las Vegas.

#### **2.2.4.5 Male population over 64 years old**

There is no easily discernable relationship between the male population over 64 and the destination redevelopments in Detroit and Las Vegas at any of the examined bandwidths and time periods.

#### **2.2.4.6 Female population under 18 years old**

There appears to be no local impact of destination redevelopments on the female population under 18 years old in Detroit and Las Vegas.

#### **2.2.4.7 Female population between 18 and 29 years old**

There is a general positive trend regarding the local impact of destination redevelopments on the 18 to 29 year old female population in only Detroit. This trend is similar to the one observed in Detroit related to the 18 to 29 year old male population, suggesting that these projects have generally attracted 18 to 29 year old male and females to live nearby these projects in Detroit in the short- and long-term. In Las Vegas, however, this trend is only evident in the 18 to 29 year old male population. Although the sampling size is small, these results suggests that 18 to 29 year old males may be generally attracted to living near these sites in growing and shrinking cities – while 18 to 29 year old females may only be generally attracted to living near these sites in a shrinking city (i.e., or there is an gender related issue/s occurring at or near these sites in Las Vegas).

#### **2.2.4.8 Female population between 30 and 44 years old**

There is no noticeable relationship between the 30 to 44 year old female population and the destination redevelopments in Detroit and Las Vegas at any of the examined bandwidths and time periods.

#### **2.2.4.9 Female population between 45 and 64 years old**

In Detroit, the local impact of destination redevelopments on the 45 to 64 year old population appear to be more positive than negative – the population declines but not as much as it does near the random samples – and is only evident in the 2000s (i.e., regardless of whether the projects were completed in the 1990s or 2000s). In Las Vegas, there does not appear to be a relationship between this population subset and these projects beyond one statistically significant trend.

#### **2.2.4.10 Female population over 64 years old**

There is only an easily identifiable trend regarding the local impact of destination redevelopments on the female population over 64 years old in Las Vegas. In Las Vegas, the local impact of these projects seems to be negative. Initially, the negative impact is consistent at the half mile bandwidth and is only evident at the one and two mile bandwidths from 1990 to 2000. In Detroit, the local impact varies amongst bandwidths and time periods.

### **2.2.5. Population by Hispanic origin by race**

#### **2.2.5.1 Non-Hispanic White population**

There is only a consistent trend evident in Detroit in terms of the local impact of destination redevelopments on the non-Hispanic White population. In Detroit, these

redevelopments had a positive local impact on this cohort. Between 1990 and 2000, this relationship is only evident at the two mile bandwidth. Between 2000 and 2010, this relationship is apparent at all examined bandwidths for projects completed in the 1990s and 2000s (Figure 7). This trend suggests that the destination redevelopments in a shrinking city such as Detroit may initially attract non-Hispanic Whites to live near these sites, but not in the immediate vicinity of these facilities. However, in the following years, these sites attract non-Hispanic Whites to live nearby at of the all examined bandwidths. In Las Vegas, there is only one identifiable impact. It is a positive impact only evident at the one mile bandwidth for projects completed in the 2000s. This indicates that, if there is any local impact on this population segment in a growing city such as Las Vegas, it might depend on when the projects are complete and whether one is examining short- or long-term changes.

#### **2.2.5.2 Non-Hispanic Black population**

There is a more easily identifiable trend regarding the local impact of destination redevelopments on the non-Hispanic Black population in Detroit. Although there is no impact evident from 1990 to 2000, the projects completed in the 1990s and 2000s had a negative effect on this population group from 2000 to 2010 at the half and one mile bandwidths. Notably, this trend occurs at the same time period where these same projects had a positive local effect on the non-Hispanic White population in Detroit (Figure 7). These concurrent trends suggests that there may be a transfer or displacement of non-Hispanic Blacks for non-Hispanic Whites, in a similar manner as gentrification, nearby these sites in Detroit during the 2000s. In Las Vegas, the relationship between these projects and this population subset is less clear because the

relationship switches from a negative impact at some bandwidths in the 1990s to a positive impact at different bandwidths in the 2000s.

#### **2.2.5.3 Non-Hispanic Asian and Pacific Islander population**

There is only a notable trend regarding the local impact of destination redevelopments on the non-Hispanic Asian and Pacific Islander population in Las Vegas. In Las Vegas, these projects tend to have a more of a negative impact on the non-Hispanic Asian and Pacific Islander population from 2000 to 2010. However, this negative effects depends on when the project is completed and/or whether one is looking at short-term or long term changes. In Detroit, the local impact varies based on the examined bandwidth and time period.

#### **2.2.5.4 Hispanic population**

Destination redevelopments in Detroit do not appear to have much of a local impact on the Hispanic population. There is only one statistically significant trend, which is negative and only exists at one bandwidth. These projects seem to have a negative local impact on the Hispanic population in Las Vegas. At the one mile bandwidth, this trend is consistent. However, at the half and two mile bandwidth, the negative effect varies based on the examined time period and whether one is looking at short- or long-term changes.

The Hispanic population – the largest population by race and Hispanic origin outside of non-Hispanic Whites in Las Vegas – declined near these redevelopments in Las Vegas in a similar manner as the Detroit non-Hispanic Black population – the largest population by race and Hispanic origin outside of non-Hispanic Whites in Detroit (Tables 3 and 6). These trends suggests that these projects may have a detrimental effect on the largest population by race and

Hispanic origin outside of non-Hispanic Whites. As mentioned in the discussion section on the non-Hispanic Black population, these trends suggest that these projects may have triggered a decline of non-White population particularly between 2000 and 2010.

## **2.2.6 Population by place of birth**

### **2.2.6.1 Native population**

There appears to be a more easily discernable trend regarding the local impact of destination redevelopments on the native population in Las Vegas. In Las Vegas, there is a general trend of the native population increasing near these projects in the 2000s particularly at the half and two mile bandwidths. In Detroit, the impact on this population segment varies depending on when the project is completed and whether one is looking at short- or long-term changes.

### **2.2.6.2 Foreign-born population**

With respect to the local impact of destination redevelopments on the foreign-born population, there is a noticeable trend in Las Vegas and no discernable one in Detroit. In Las Vegas, these projects generally have a negative effect on the foreign-born population. This is particularly evident at the one mile bandwidth. In Detroit, the impacts varies based on the examined time period.

## **2.2.7. Households by household type**

### **2.2.7.1 Family households**



There is a trend that is only evident at the two mile bandwidth during the 2000s in both cities. The destination redevelopments in Detroit have a negative local effect on the number of family households living within two miles of these sites. In Las Vegas, these projects have a positive effect on the number family households living within two miles of these sites.

#### **2.2.7.2 Nonfamily households**

There are no notable trends in either Detroit or Las Vegas in terms of the local impact of destination redevelopments on the number of nonfamily households.

### **2.2.8 Population by geographical mobility**

#### **2.2.8.1 Population previously living in the same residence**

During the 2000s, there are two different trends evident in Detroit and Las Vegas. Although the population previously living in the same residence declined during the 1990s at the two mile bandwidth, the local impact of destination redevelopments on this population sector in Detroit appears to be positive for all of the examined bandwidths during the 2000s. This trend suggests that this population segment at these bandwidths during the 2000s desired to stay in their residences in part due to these redevelopments. In Las Vegas, the trend is the opposite only at the half mile bandwidth. In the half mile bandwidth, these projects in Las Vegas seem to have a negative effect on the population previously living in the same residence. This indicates that those living within half mile of these projects in Las Vegas during the 2000s did not desire (or perhaps were not able to continue) to stay in their previous residence.

#### **2.2.8.2 Population previously living in a different residence in the same city**

There is only a trend evident in Las Vegas. Destination redevelopments had a positive local impact on the population previously living in a different residence in Las Vegas at the one mile bandwidth for all time periods and at the half mile bandwidth during the 2000s. This suggests that these redevelopments have been successful at attracting people from other areas of the Las Vegas to relocate near these sites. In Detroit, the local impact of these projects varies depending on the examined bandwidth and time period.

#### **2.2.8.3 Population previously living in a different municipality in the same metro area**

In terms of the local impact of destination redevelopments on the population previously living in a different municipality in the same metro area, there is a positive local effect evident in both cities at the half and one mile bandwidths. In Detroit, this positive effect only occurs between 1990 and 2000. In Las Vegas, the positive effect is only evident between 2000 and 2010 for the projects completed in the 1990s and 2000s.

#### **2.2.8.4 Population previously living in a different metro area but the same country**

There is only an easily discernable trend in Las Vegas regarding the local impact of destination redevelopments on the population previously living in a different U.S. metro area. These Las Vegas redevelopments have had a positive impact at the half and one mile bandwidths between 2000 and 2010 for the projects completed in the 1990s and 2000s. In Detroit, the impact switches from positive between 1990 and 2000 to negative between 2000 and 2010. The Detroit projects that were completed in the 1990s follow this trend. The Detroit projects that were completed in the 2000s only appear to have had a negative impact on this population subset.

#### **2.2.8.5 Population previously living in a foreign country**

The local impact of the destination redevelopments on the population previously living in a foreign country only follows a trend in Detroit. In Detroit, these projects had a negative local impact on this population subset at the two mile bandwidth during the decade that they were completed and a negative local impact at the half mile bandwidth during the 2000s. In Las Vegas, the local impact varies depending on the examined bandwidth and time period.

#### **2.2.9 Summary of Findings**

The results of the geographically weighted shift-share analysis depicting the local demographic impact of destination redevelopments can be grouped into four categories: 1) variables that had scant (i.e., few or no) statistically significant trends; 2) variables that had statistically significant trends that varied based on where the project is completed, when the project is completed and/or whether one is looking at short- or long-term changes; 3) variables that had statistically significant impacts that are unique to Detroit or Las Vegas; and 4) variables that had statistically significant impacts that are evident in both Detroit and Las Vegas.

There are only two variables that fit into the first group (i.e., scant statistically significant trends). These variables include:

- Male population under 18 years old
- Female population under 18 years old

The destination redevelopments in Detroit and Las Vegas appeared to have an unremarkable effect on the changes in these variables occurring near these sites.

There are eleven variables that fit into the second group. These variables include:

- Population under 18 years old
- Population between 18 and 29 years old
- Population between 30 and 44 years old
- Population between 45 and 64 years old
- Male population
- Female population
- Male population between 30 and 44 years old
- Male population over 64 years old
- Female population between 30 and 44 years old
- Female population between 45 and 64 years old
- Nonfamily households

The local impact of destination redevelopments in Detroit and Las Vegas on these aforementioned variables in the second group varied based on where the project is completed, when the project is completed and/or whether one is looking at short- or long-term changes.

There are 18 variables that can be classified into the third group. These variables include:

- Total population
- Population over 64 years old

- Male population between 45 and 64
- Female population between 18 and 29 years old
- Female population between 45 and 64 years old
- Female population over 64 years old
- Non-Hispanic White population
- Non-Hispanic Black population
- Non-Hispanic Asian population
- Hispanic population
- Native population
- Foreign-born population
- Family households
- Population previously living in the same residence
- Population previously living in a difference residence in the same city
- Population previously living in a different municipality in the same metro area
- Population previously living in a different metro area but the same country

The aforementioned variables that fit into the third group were altered by destination redevelopments uniquely in Detroit and Las Vegas. These trends were unique to Detroit and Las Vegas, meaning that each city did not experience the same trend and one city might have experienced a trend while the other did not.

Detroit had both positive and negative unique trends in terms of the local demographic impact of destination redevelopments. These projects had a unique, positive effect on the following variables: total population, 45 to 64 year old male population, 18 to 29 year old female

population, 45 to 64 year old female population, non-Hispanic White population, population previously living in the same residence, population previously living in a different municipality in the same metro area and population previously living in a different metro area but the same country. Detroit destination redevelopments had a unique, negative effect on the following variables: population over 64 years old, non-Hispanic Black population, family households, and population previously living in a foreign country.

Many of these trends start to provide evidence to help answer previously unanswered questions regarding the local demographic impact of destination redevelopments in Detroit and shrinking cities (i.e., if Detroit is viewed as a proxy). There are quite a number of trends that suggest that these projects are in fact playing a role in spurring migration that is changing the identities of these communities. There are a number of encouraging patterns that suggest that such redevelopments help to attract people to live in nearby areas and perhaps contribute to the back-to-the-city movement (Hyra, 2014). For example, including the trend of 18 to 29 year old male population increasing nearby these projects that is evident in both Detroit and Las Vegas, the results of this analysis support the arguments that are used to justify these projects with respect to their ability to attract younger people (of both genders) to live in nearby areas (Ward, 1998; Florida, 2003; Grodach and Loukaitou-Sideris, 2007; Santos and Mildner, 2010; Rich, 2012; Lachman and Brett, 2015; Figure 6). If using age as a proxy for population per generation, these projects seem to attract both Millennials and Baby Boomers. Some of the trends, however, also supported a few of the criticisms of destination redevelopments. For instance, one of the more disconcerting findings is the simultaneous increase in non-Hispanic White population and decline in non-Hispanic Black population at the same bandwidths and time periods (Figure 7). This approach does not provide any additional information that would allow one to draw any

conclusions about whether this is related to the displacement of one group for the other.

However, given Mele's (2013) warnings about the potential racial inspiration behind some of these types of projects, this is a trend worth examining in further detail in Detroit and other shrinking cities in future research.

Like Detroit, Las Vegas had both positive and negative unique trends in terms of the local demographic impact of destination redevelopments. These projects had a unique, positive effect on the following variables: 45 to 64 year old male population, non-Hispanic Black population, native population, family households, population previously living in different residence in same city, population previously living in a different residence in the same city, population previously living in a different municipality in the same metro area, and population previously living in a different metro area but the same country. Las Vegas destination redevelopments had a unique, negative effect on the following variables: total population, population over 64 years old, female population over 64 years old, non-Hispanic Asian population, Hispanic population, foreign-born population, and population previously living in the same residence.

Similar to Detroit, these redevelopments appear to be contributing to the change in the identity of the nearby areas in Las Vegas. These sites seem to help attract population who previously lived in other areas of the city, state and country into these neighborhoods. However, they appear to have the opposite effect on the population already living in the area. Some aspects of these projects might be motivating the existing residents to move out of the neighborhood. Although the non-Hispanic Black population is increasing in Las Vegas, the local other non-Hispanic, non-White populations seem to be negatively impacted by these redevelopments. Similar to the influx of non-Hispanic White population and outflow of non-Hispanic Black population near these projects in Detroit, Las Vegas also might have a similar alarming trend

related to its native and foreign-born population that is also worth exploring moving forward in Las Vegas and other growing cities.

As previously mentioned, there is only one variable in the fourth and perhaps most important category. This variable is:

- Male population between 18 and 29 years old.

The local impact of destination redevelopments on this population subset is evident in both cities. Seeing how this relationship occurs in both cities at almost every bandwidth, it may also exist in other cities outside of Detroit and Las Vegas. As such, this relationship, in particular, is worth exploring in future research. Although this is a positive trend and the age component is expected based on previous literature, the sex/gender component is worth monitoring in future research to determine what aspects of these project attract this population subset to these areas and whether these features are affecting females (or LGBT communities) differently.



## **CHAPTER 3 – LOCAL ECONOMIC IMPACT**

This chapter focuses on the local impact of destination redevelopments on the economic characteristics of nearby areas in Detroit and Las Vegas between 1990 and 2010. The first subsection presents the results of the geographically weighted shift-share analysis. The second subsection discusses the interpretation of those findings.

### **3.1 RESULTS**

In this section, any references to statistically significant values have an alpha ( $\alpha$ ) of 0.05.

#### **3.1.1 Population 16 years and over by employment status**

##### **3.1.1.1 Employed civilians**

The number of employed civilians in Detroit declined between 1990 and 2010, losing 1.2% from 335,462 in 1990 to 331,441 in 2000 and then by 28.9% to 235,799 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant increase in the number of employed civilians between 1990 and 2000 at the half mile bandwidth (Table 10). There are no statistically significant relationships at the one and two mile bandwidths. For these redevelopments, there is a statistically significant increase in the number of employed civilians between 2000 and 2010 at all of the examined bandwidths. For the destination redevelopments completed in Detroit during the 2000s, there is a statistically significant increase in the number of employed civilians between 2000 and 2010 at all of the examined bandwidths (Table 11).

Table 9 – Changes in selective economic characteristics of residents and housing in Detroit between 1990 and 2010

	1990	2000 (change since 1990)	2010 (change since 2000)
Employed civilians*	335,462 (N/A)	331,441 (-1.2%)	235,799 (-28.9%)
Unemployed civilians*	82,333 (N/A)	53,259 (-35.3%)	77,584 (45.7%)
Population with a bachelor's degree*	58,825 (N/A)	61,836 (5.1%)	54,808 (-11.4%)
Population without a bachelor's degree*	553,253 (N/A)	502,143 (-9.2%)	409,709 (-18.4%)
Households earning less than \$50,000*	322,580 (N/A)	241,344 (-25.2%)	197,789 (-18.0%)
Households earning between \$50,000 & \$100,000*	46,617 (N/A)	73,862 (58.4%)	55,570 (-24.8%)
Households earning more than \$100,000*	4,660 (N/A)	21,276 (356.6%)	17,691 (-16.8%)
Population employed in the art, entertainment and recreation industry*	3,887 (N/A)	7,074 (82.0%)	6,256 (-11.6%)
Population employed in white collar industries*	214,447 (N/A)	219,483 (2.3%)	170,816 (-22.2%)
Population employed in blue collar industries*	117,128 (N/A)	104,884 (-10.5%)	58,727 (-44.0%)
Employed population living less than 15 minutes from work*	64,277 (N/A)	53,857 (-16.2%)	40,833 (-24.2%)
Employed population living 15 minutes or more from work*	260,777 (N/A)	259,785 (-0.4%)	180,812 (-30.4%)
Employed population using a non-automated means of transportation to/from work*	17,306 (N/A)	18,098 (4.6%)	16,823 (-7.0%)
Employed population using an automated public means of transportation to/from work*	34,933 (N/A)	27,634 (-20.9%)	36,845 (33.3%)
Employed population using an automated private means of transportation to/from work*	272,815 (N/A)	273,717 (0.3%)	192,469 (-29.7%)
Housing units	410,027 (N/A)	375,096 (-8.5%)	349,170 (-6.9%)
Occupied housing units	374,057 (N/A)	336,428 (-10.1%)	269,445 (-19.9%)
Vacant housing units	35,970 (N/A)	38,668 (7.5%)	79,725 (106.2%)
Owner-occupied housing units	197,929 (N/A)	184,647 (-6.7%)	137,730 (-25.4%)
Renter-occupied housing units	176,128 (N/A)	151,781 (-13.8%)	131,715 (-13.2%)

\* 2006-2010 American Community Survey data are listed in the 2010 column

Table 10 – Local impact of destination redevelopments completed in the 1990s on selected economic characteristics in Detroit for two intercensal periods (1990 to 2000 and 2000 to 2010) based on results of geographically weighted shift-share analysis. Highlighted cells are statistically significant values ( $\alpha = 0.05$ ), where the cells in green are greater than the 4875th sampling value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is larger than the average of the 5,000 random samples) and the cells in red are less than the 125th sample value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is lower than the average of the 5,000 random samples).

	1990 to 2000			2000 to 2010		
	0.5 mi.	1 mi.	2 mi.	0.5 mi.	1 mi.	2 mi.
Employed civilians*	133	-137	-85	157	521	835
Unemployed civilians*	-106	155	196	-191	-768	-1,344
Population with a bachelor's degree*	-222	-1,121	-2,332	725	3,359	12,881
Population without a bachelor's degree*	11	5	-687	-322	-1,026	-4,957
Households earning less than \$50,000*	375	1,972	5,438	-1,321	-4,629	-14,850
Households earning between \$50,000 & \$100,000*	116	37	419	120	684	1,771
Households earning more than \$100,000*	-28	-426	-516	1,187	3,899	12,962
Population employed in the art, entertainment and recreation industry*	2	29	78	38	756	2,792
Population employed in white collar industries*	88	342	1,000	-2,753	-10,568	-34,628
Population employed in blue collar industries*	-119	-462	-1,346	2,662	9,627	31,278
Employed population living less than 15 minutes from work*	72	56	447	-250	-748	-2,489
Employed population living 15 minutes or more from work*	-42	77	-89	23	-68	-422
Employed population using a non-automated means of transportation to/from work*	-124	-51	-388	-127	-647	-1,432
Employed population using an automated public means of transportation to/from work*	-71	164	172	-233	-879	-2,542
Employed population using an automated private means of transportation to/from work*	207	-90	287	-154	-442	-699
Housing units	2,347	3,196	5,925	491	1,338	2,007
Occupied housing units	143	670	1,334	228	822	1,258
Vacant housing units	-225	-1,266	-2,171	-745	-1,473	-2,637
Owner-occupied housing units	183	-246	-4,829	76	128	-189
Renter-occupied housing units	-7	406	1,460	-286	-727	-2,235

\* 2006-2010 American Community Survey data are listed in the 2010 column

Table 11 – Local impact of destination redevelopments completed in the 2000s on selected economic characteristics in Detroit for one intercensal period (2000 to 2010) based on results of geographically weighted shift-share analysis. Highlighted cells are statistically significant values ( $\alpha = 0.05$ ), where the cells in green are greater than the 4875th sampling value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is larger than the average of the 5,000 random samples) and the cells in red are less than the 125th sample value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is lower than the average of the 5,000 random samples).

	2000 to 2010		
	0.5 mi.	1 mi.	2 mi.
Employed civilians*	190	483	1,025
Unemployed civilians*	-244	-768	-1,900
Population with a bachelor's degree*	71	2,739	20,353
Population without a bachelor's degree*	545	-788	-11,768
Households earning less than \$50,000*	-1,672	-6,344	-4,978
Households earning between \$50,000 & \$100,000*	238	1,206	2,919
Households earning more than \$100,000*	1,415	5,076	17,171
Population employed in the art, entertainment and recreation industry*	416	1,490	4,185
Population employed in white collar industries*	-4,042	-13,898	-44,283
Population employed in blue collar industries*	3,547	12,178	39,482
Employed population living less than 15 minutes from work*	-303	-900	-2,612
Employed population living 15 minutes or more from work*	-10	-78	-471
Employed population using a non-automated means of transportation to/from work*	-169	-566	-1,537
Employed population using an automated public means of transportation to/from work*	-364	-1,165	-3,139
Employed population using an automated private means of transportation to/from work*	-56	-165	-844
Housing units	363	580	1,398
Occupied housing units	183	732	1,344
Vacant housing units	-418	-1,071	-2,384
Owner-occupied housing units	32	40	-1,230
Renter-occupied housing units	-276	-849	-2,480

The number of employed civilians in Las Vegas grew between 1990 and 2010, increasing by 63.6% from 131,001 in 1990 to 214,301 in 2000 and by an additional 24.7% to 267,222 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decline in the number of employed civilians between 1990 and 2000 at all of the examined bandwidth (Table 13). For these same redevelopments, there are no statistically significant relationships with the number of employed civilians between 2000 and 2010 at any of the examined bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant increase in the number of employed civilians between 2000 and 2010 at the one and two mile bandwidths (Table 14). There is no statistically significant relationship at the half mile bandwidth.

#### **3.1.1.2 Unemployed civilians**

The number of unemployed civilians in Detroit declined between 1990 and 2000, losing 35.3% from 82,333 in 1990 to 53,259 in 2000, and then increased between 2000 and 2010, gaining 45.7% from 53,259 in 2000 to 77,584 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decline in the number of unemployed civilians between 1990 and 2000 at the half mile bandwidth (Table 10). There are no statistically significant relationships at the one and two mile bandwidths. For these 1990s redevelopments, there is a statistically significant decline in this cohort between 2000 and 2010 at all of the examined bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant declined in the number of unemployed civilians between 2000 and 2010 at all of the examined bandwidths (Table 11).

Table 12 – Changes in selective economic characteristics of residents and housing in Las Vegas between 1990 and 2010.

	1990	2000 (change since 1990)	2010 (change since 2000)
Employed civilians*	131,001 (N/A)	214,301 ( <b>63.6%</b> )	267,222 ( <b>24.7%</b> )
Unemployed civilians*	9,297 (N/A)	16,176 ( <b>74.0%</b> )	29,055 ( <b>79.6%</b> )
Population with a bachelor's degree*	22,564 (N/A)	56,989 ( <b>152.6%</b> )	79,787 ( <b>40.0%</b> )
Population without a bachelor's degree*	146,160 (N/A)	256,216 ( <b>75.3%</b> )	298,715 ( <b>16.6%</b> )
Households earning less than \$50,000*	77,235 (N/A)	99,526 ( <b>28.9%</b> )	96,938 ( <b>-2.6%</b> )
Households earning between \$50,000 & \$100,000*	19,248 (N/A)	56,325 ( <b>192.6%</b> )	71,036 ( <b>26.1%</b> )
Households earning more than \$100,000*	3,461 (N/A)	11,827 ( <b>241.7%</b> )	44,001 ( <b>272.0%</b> )
Population employed in the art, entertainment and recreation industry*	12,728 (N/A)	26,471 ( <b>108.0%</b> )	20,905 ( <b>-21.0%</b> )
Population employed in white collar industries*	85,135 (N/A)	144,023 ( <b>69.2%</b> )	193,316 ( <b>34.2%</b> )
Population employed in blue collar industries*	33,138 (N/A)	43,807 ( <b>32.2%</b> )	53,001 ( <b>21.0%</b> )
Employed population living less than 15 minutes from work*	35,124 (N/A)	40,485 ( <b>15.3%</b> )	48,100 ( <b>18.8%</b> )
Employed population living 15 minutes or more from work*	93,758 (N/A)	165,186 ( <b>76.2%</b> )	207,289 ( <b>25.5%</b> )
Employed population using a non-automated means of transportation to/from work*	8,592 (N/A)	12,677 ( <b>47.5%</b> )	17,146 ( <b>35.3%</b> )
Employed population using an automated public means of transportation to/from work*	3,713 (N/A)	10,069 ( <b>171.2%</b> )	23,186 ( <b>130.3%</b> )
Employed population using an automated private means of transportation to/from work*	116,577 (N/A)	188,060 ( <b>61.3%</b> )	234,191 ( <b>24.5%</b> )
Housing units	109,670 (N/A)	190,724 ( <b>73.9%</b> )	243,701 ( <b>27.8%</b> )
Occupied housing units	99,735 (N/A)	176,750 ( <b>77.2%</b> )	211,689 ( <b>19.8%</b> )
Vacant housing units	9,935 (N/A)	13,974 ( <b>40.7%</b> )	32,012 ( <b>129.1%</b> )
Owner-occupied housing units	50,246 (N/A)	104,481 ( <b>107.9%</b> )	119,550 ( <b>14.4%</b> )
Renter-occupied housing units	49,489 (N/A)	72,269 ( <b>46.0%</b> )	92,139 ( <b>27.5%</b> )

\* 2006-2010 American Community Survey data are listed in the 2010 column

Table 13 – Local impact of destination redevelopments completed in the 1990s on selected economic characteristics in Las Vegas for two intercensal periods (1990 to 2000 and 2000 to 2010) based on results of geographically weighted shift-share analysis. Highlighted cells are statistically significant values ( $\alpha = 0.05$ ), where the cells in green are greater than the 4875th sampling value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is larger than the average of the 5,000 random samples) and the cells in red are less than the 125th sample value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is lower than the average of the 5,000 random samples).

	1990 to 2000			2000 to 2010		
	0.5 mi.	1 mi.	2 mi.	0.5 mi.	1 mi.	2 mi.
Employed civilians*	-166	-406	-822	76	731	321
Unemployed civilians*	157	369	698	-224	-605	-1,455
Population with a bachelor's degree*	-77	-552	-3,139	2,984	10,998	39,115
Population without a bachelor's degree*	267	1,185	4,550	-2,877	-10,624	-37,957
Households earning less than \$50,000*	662	3,007	11,210	-2,106	-6,519	-16,792
Households earning between \$50,000 & \$100,000*	23	-4	-506	674	1,313	-359
Households earning more than \$100,000*	19	80	-121	1,795	6,527	20,450
Population employed in the art, entertainment and recreation industry*	-89	-191	268	-2,152	-8,607	-27,959
Population employed in white collar industries*	-13	-103	-475	-1,558	-6,686	-28,609
Population employed in blue collar industries*	-0.1	-62	-2,081	3,758	15,521	57,314
Employed population living less than 15 minutes from work*	-15	190	1,316	28	107	-105
Employed population living 15 minutes or more from work*	75	90	-380	-29	-101	158
Employed population using a non-automated means of transportation to/from work*	-56	-74	-108	-116	-467	-740
Employed population using an automated public means of transportation to/from work*	-35	28	-2,828	-200	-696	-1,847
Employed population using an automated private means of transportation to/from work*	-26	-291	-1,090	-8	51	-329
Housing units	-1,491	-6,020	-19,675	-553	-2,324	-8,155
Occupied housing units	-72	-299	-927	-76	-289	-818
Vacant housing units	15	-62	-492	33	388	1,459
Owner-occupied housing units	-49	-421	2,301	-40	-136	-71
Renter-occupied housing units	370	1,545	3,357	32	64	1,040

\* 2006-2010 American Community Survey data are listed in the 2010 column

Table 14 – Local impact of destination redevelopments completed in the 2000s on selected economic characteristics in Las Vegas for one intercensal period (2000 to 2010) based on results of geographically weighted shift-share analysis. Highlighted cells are statistically significant values ( $\alpha = 0.05$ ), where the cells in green are greater than the 4875th sampling value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is larger than the average of the 5,000 random samples) and the cells in red are less than the 125th sample value (i.e., the average result of the geographically weighted shift-share analysis for this group of destination redevelopments is lower than the average of the 5,000 random samples).

	2000 to 2010		
	0.5 mi.	1 mi.	2 mi.
Employed civilians*	22	133	267
Unemployed civilians*	-99	-500	-1,335
Population with a bachelor's degree*	2,590	10,169	38,293
Population without a bachelor's degree*	-2,482	-9,820	-37,171
Households earning less than \$50,000*	-2,331	-6,367	-16,189
Households earning between \$50,000 & \$100,000*	923	1,520	-642
Households earning more than \$100,000*	1,840	6,173	19,990
Population employed in the art, entertainment and recreation industry*	-2,578	-8,318	-27,552
Population employed in white collar industries*	-1,276	-5,772	-28,523
Population employed in blue collar industries*	3,909	14,313	56,809
Employed population living less than 15 minutes from work*	19	67	-236
Employed population living 15 minutes or more from work*	-17	-62	299
Employed population using a non-automated means of transportation to/from work*	-102	-459	-661
Employed population using an automated public means of transportation to/from work*	-328	-483	-1,667
Employed population using an automated private means of transportation to/from work*	-16	-157	-522
Housing units	-517	-2,420	-8,464
Occupied housing units	-141	-354	-704
Vacant housing units	31	377	1,205
Owner-occupied housing units	-32	-92	-40
Renter-occupied housing units	-21	-167	1,083



The number of unemployed civilians in Las Vegas grew between 1990 and 2010, increasing by 74% from 9,297 in 1990 to 16,176 in 2000 and by a further 79.6% to 29,055 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant increase in the number of unemployed civilians between 1990 and 2000 at all of the examined bandwidths (Table 13). For these 1990s redevelopments, there is a statistically significant decline in the number of unemployed civilians between 2000 and 2010 at all of the examined bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant decline in the number of unemployed civilians between 2000 and 2010 at all of the examined bandwidths (Table 14).

### **3.1.2 Population 25 years and older by educational attainment**

#### **3.1.2.1 Population with a bachelor's degree**

The population with a bachelor's degree in Detroit increased between 1990 and 2000, gaining 5.1% from 58,825 in 1990 to 61,836 in 2000, and then declined between 2000 and 2010, losing 11.4% to 54,808 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s and 2000s, there are no statistically significant relationships with the population with a bachelor's degree between 1990 and 2010 at any of the examined bandwidths (Tables 10 and 11).

The population with a bachelor's degree in Las Vegas grew between 1990 and 2010, increasing by 152.6% from 22,564 in 1990 to 56,989 in 2000 and by another 40% to 79,787 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decrease in the population with a bachelor's degree between 1990 and 2000 at the two mile bandwidth (Table 13). There are no statistically significant trends

at the half and one mile bandwidth. For these redevelopments completed in the 1990s, there is a statistically significant increase in this population segment between 2000 and 2010 at all of the examined bandwidths. For the destination redevelopments completed in Las Vegas during the 2000s, there is a statistically significant increase in the population with a bachelor's degree between 2000 and 2010 at all of the examined bandwidths (Table 14).

### **3.1.2.2 Population without a bachelor's degree**

The population without a bachelor's degree in Detroit decreased between 1990 and 2010, losing 9.2% from 553,253 in 1990 to 502,143 in 2000 and then by 18.4% to 409,709 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decline in the population without a bachelor's degree between 1990 and 2000 at the two mile bandwidth (Table 10). For these redevelopments, there are statistically significant changes in this cohort between 2000 and 2010 at all of the examined bandwidths. Although these changes are negative, they are less negative than the changes occurring near the random samples. For the destination redevelopments completed during the 2000s, there are statistically significant changes in this population segment between 2000 and 2010 at all of the examined bandwidths. For the half mile bandwidth, this change is an increase. For the one and two mile bandwidth, the change is negative but less negative than the changes occurring near the random samples.

The population without a bachelor's degree in Las Vegas grew between 1990 and 2010, increasing by 75.3% from 146,160 in 1990 to 256,216 in 2000 and by 16.6% from 256,216 in 2000 to 298,715 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant increase in this population group between

1990 and 2000 at all of the examined bandwidths (Table 13). For these same redevelopments, there is a statistically significant decline in this population sector between 2000 and 2010 at all of the examined bandwidths. For such redevelopments completed during the 2000s, there is a statistically significant decrease in the population without a bachelor's degree between 2000 and 2010 at all of the examined bandwidths (Table 14).

### **3.1.3 Households by household income**

#### **3.1.3.1 Households earning less than \$50,000 a year**

The households earning less than \$50,000 in Detroit decreased between 1990 and 2010, losing 25.2% from 322,580 in 1990 to 241,344 in 2000 and then by 18% to 197,789 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there are no statistically significant relationships between 1990 and 2010 at all of the examined bandwidths (Table 10). For such redevelopments completed in the 2000s, there is a statistically significant decline in the households earning less than \$50,000 between 2000 and 2010 at all of the examined bandwidths (Table 11).

The households earning less than \$50,000 in Las Vegas grew between 1990 and 2000, increasing by 28.9% from 77,235 in 1990 to 99,526 in 2000, and then decreased between 2000 and 2010, losing 2.6% to 96,938 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there are no statistically significant relationships between 1990 and 2000 at all of the examined bandwidths (Table 13). For these redevelopments, there is a statistically significant decrease in the households earning less than \$50,000 between 2000 and 2010 at all of the examined bandwidths. For such redevelopments completed during

the 2000s, there is a statistically significant decrease in this subset of households between 2000 and 2010 at all of the examined bandwidths (Table 14; Figure 8).

### **3.1.3.2 Households earning between \$50,000 and \$100,000 a year**

The households earning between \$50,000 and \$100,000 a year in Detroit increased between 1990 and 2000, gaining 58.4% from 46,617 in 1990 to 73,862 in 2000, and these households decreased between 2000 and 2010, losing 24.8% to 55,570 in 2010 (Table 9). For the destination redevelopments completed in the 1990s, there is a statistically significant increase in the households earning between \$50,000 and \$100,000 a year between 1990 and 2000 at the half mile bandwidth (Table 10). There are no statistically significant relationships at the one and two mile bandwidths. For the destination redevelopments completed in Detroit during the 1990s and 2000s, there is a statistically significant increase in the households earning between \$50,000 and \$100,000 a year between 2000 and 2010 at all of the examined bandwidths (Tables 10 and 11).

The households earning between \$50,000 and \$100,000 a year in Las Vegas grew between 1990 and 2000, gaining 192.6% from 19,248 in 1990 to 56,325 in 2000 and by a further 26.1% to 71,036 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there are no statistically significant relationships between 1990 and 2000 at all of the examined bandwidths (Table 13). For the destination redevelopments completed in Las Vegas during the 1990s and 2000s, there is a statistically significant increase in the households earning between \$50,000 and \$100,000 a year between 2000 and 2010 at the half and one mile bandwidths (Table 14; Figure 8). There is no statistically significant relationship at the two mile bandwidth.

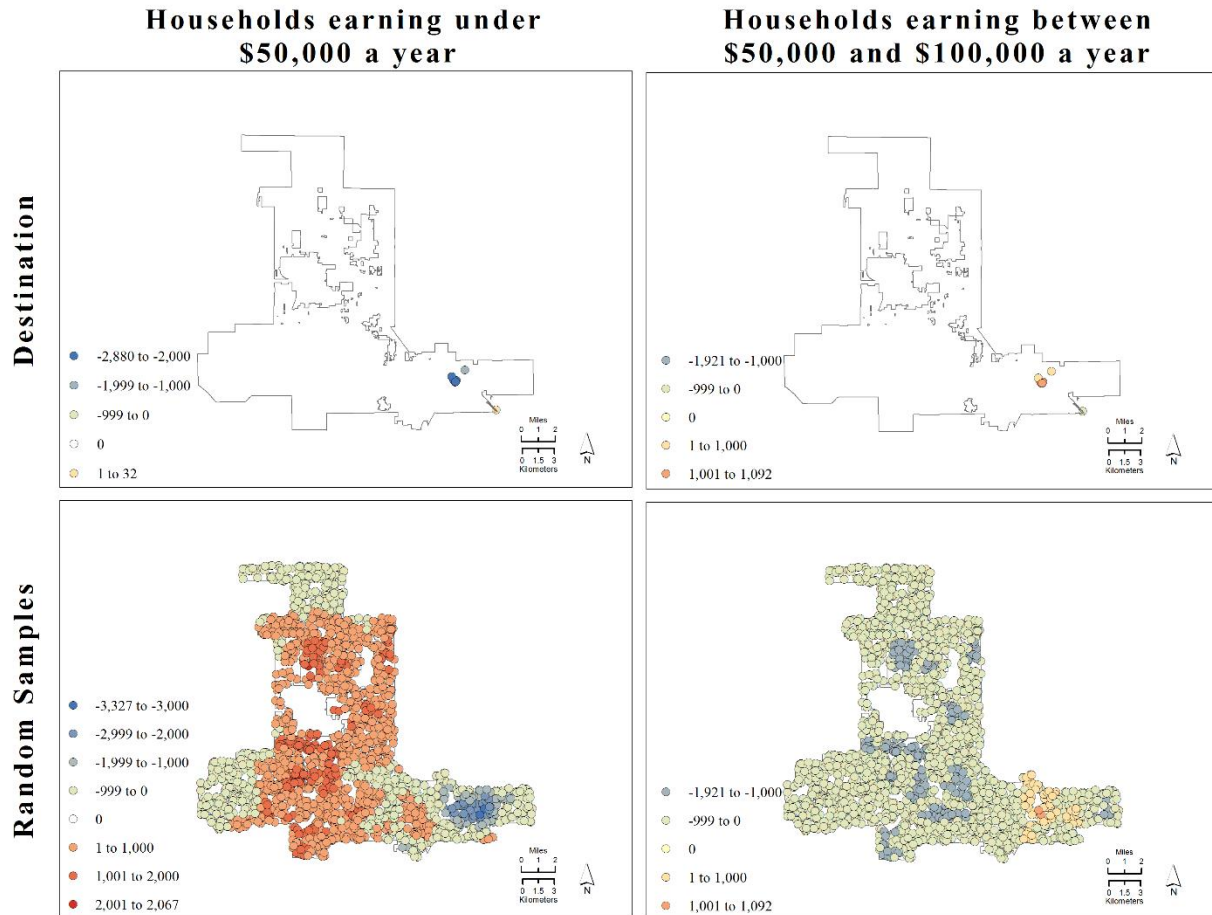


Figure 8 - Results of the geographically weighted shift-share analysis ( $GW\_RM_c^r$ ) for the change in the number of households earning under \$50,000 (left) and the number of households earning between \$50,000 and \$100,000 (right) both during intercensal period of 2000 to 2010 at the half mile bandwidth for destination redevelopments completed in the 2000s (top) and the random samples (bottom) in Las Vegas

### **3.1.3.3 Households earning over \$100,000 a year**

The households earning over \$100,000 a year in Detroit increased between 1990 and 2000, gaining 356.6% from 4,660 in 1990 to 21,276 in 2000, and these households decreased between 2000 and 2010, losing 16.8% to 17,691 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decrease in the households earning over \$100,000 a year between 1990 and 2000 at the one mile bandwidth (Table 10). There are no statistically significant relationships at the half and two mile bandwidths. For these 1990s redevelopments, there is a statistically significant decrease in this subset of households between 2000 and 2010 at the two mile bandwidth (Table 10). There are no statistically significant relationships at the half and one mile bandwidths. For such redevelopments completed in the 2000s, there are no statistically significant relationships with the households earning over \$100,000 a year between 2000 and 2010 at any of the examined bandwidths (Tables 10 and 11).

The households earning over \$100,000 a year in Las Vegas grew between 1990 and 2000, gaining 241.7% from 3,461 in 1990 to 11,827 in 2000 and by an additional 272% to 44,001 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there are no statistically significant relationships between 1990 and 2000 at all of the examined bandwidths (Table 13). For such redevelopments completed in the 1990s and 2000s, there is a statistically significant increase in this segment of households between 2000 and 2010 at all of the examined bandwidths (Table 14).

### **3.1.4 Employed population 16 years and over by industry**

#### **3.1.4.1 Employed population working in the art, entertainment and recreation industry**

The employees working in the destination industry in Detroit increased between 1990 and 2000, gaining 82% from 3,887 in 1990 to 7,074 in 2000, and these employees decreased between 2000 and 2010, losing 11.6% to 6,256 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there are no statistically significant relationships between 1990 and 2000 at any of the examined bandwidths (Table 10). For these same redevelopments, there are statistically significant changes in this population sector between 2000 and 2010 at all of the bandwidths (Table 10). Although these changes are positive, they are less positive than those changes occurring near the random samples. For such redevelopments completed in the 2000s, there are statistically significant changes in the employees working in the destination industry between 2000 and 2010 at the two mile bandwidth (Table 11). Although these changes are positive, they are lower than the increases near the random samples. There are no statistically significant relationships between the half and one mile bandwidths.

The employees working in the destination industry in Las Vegas grew between 1990 and 2000, gaining 108% from 12,728 in 1990 to 26,471 in 2000, and these employees declined between 2000 and 2010, losing 21% to 20,905 in 2010 (Table 12). For the destination redevelopments completed in the 1990s, there is a statistically significant decline between 1990 and 2000 at the half and one mile bandwidths (Table 13). There is no statistically significant relationship at the two mile bandwidth. For such redevelopments completed in Las Vegas during the 1990s and 2000s, there is a statistically significant decrease in this population sector between 2000 and 2010 at all of the examined bandwidths (Tables 13 and 14).

#### **3.1.4.2 Population employed in white collar industries**

The population employed in white collar industries in Detroit increased between 1990 and 2000, gaining 2.3% from 214,447 in 1990 to 219,483 in 2000, and then decreased between 2000 and 2010, losing 22.2% to 170,816 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there are statistically significant changes between 1990 and 2000 at the two mile bandwidth (Table 10). Although these changes are an increase, they are less than the increases occurring near the random samples. There are no statistically significant relationships at the half and one mile bandwidths. For these same redevelopments, there are no statistically significant relationships between 2000 and 2010 at any of the examined bandwidths. For the destination redevelopments completed in Detroit during the 2000s, there is a statistically significant decline in this cohort between 2000 and 2010 at the half mile bandwidth (Table 11). There are no statistically significant relationships at the one and two mile bandwidths.

The population employed in white collar industries in Las Vegas grew between 1990 and 2010, gaining 69.2% from 85,135 in 1990 to 144,023 in 2000 and 34.2% from 144,023 in 2000 to 193,316 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decline between 1990 and 2000 at the one mile bandwidth (Table 13). There are no statistically significant relationships at the half and two mile bandwidths. For such redevelopments completed during the 1990s and 2000s, there is a statistically significant decrease in this population sector between 2000 and 2010 at the two mile bandwidth. There are no statistically significant relationships at the half and one mile bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant decrease in this cohort between 2000 and 2010 at the two mile bandwidth (Table 14). There are no statistically significant relationships at the half and one mile bandwidths.



### **3.1.4.3 Population employed in blue collar industries**

The population employed in blue collar industries in Detroit declined between 1990 and 2010, losing 10.5% from 117,128 in 1990 to 104,884 in 2000 and by another 44% to 58,727 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there are no statistically significant relationships with the population employed in blue collar industries between 1990 and 2010 at any of the examined bandwidths (Table 10). For these redevelopments completed in the 2000s, there is a statistically significant increase in this population segment between 2000 and 2010 at the half mile bandwidth (Table 11). There are no statistically significant relationships at the one and two mile bandwidths.

The population employed in blue collar industries in Las Vegas grew between 1990 and 2010, increasing by 32.2% from 33,138 in 1990 to 43,807 in 2000 and by a further 21% to 53,001 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there are no statistically significant relationships with this population group between 1990 and 2000 at any of the examined bandwidths (Table 13). For the destination redevelopments completed in Las Vegas during the 1990s and 2000s, there are two statistically significant changes in the population employed in white collar industries between 2000 and 2010. At all bandwidths, this population subset increases. However, at the half and one mile bandwidths, these changes are higher than the ones occurring near the random samples. At the two mile bandwidth, these changes are lower than the ones near the random samples. For such redevelopments completed in the 2000s, there is a statistically significant increase in the population employed in white collar industries between 2000 and 2010 at all of the examined bandwidths (Table 14).

### **3.1.4 Employed population by travel time to work**

#### **3.1.4.1 Employed population living less than 15 minutes from work**

The employed population living less than 15 minutes from work in Detroit declined between 1990 and 2010, losing 16.2% from 64,277 in 1990 to 53,857 in 2000 and 24.2% from 53,857 in 2000 to 40,833 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there are no statistically significant relationships with the employed population living less than 15 minutes from work between 1990 and 2010 at any of the examined bandwidths (Table 10). For such redevelopments completed in the 2000s, there is a statistically significant decrease in this population segment between 2000 and 2010 at the half and one mile bandwidths (Table 11). There is no statistically significant relationship at the two mile bandwidth.

The employed population living less than 15 minutes from work in Las Vegas grew between 1990 and 2010, increasing by 15.3% from 35,124 in 1990 to 40,485 in 2000 and by another 18.8% to 48,100 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s and 2000s, there are no statistically significant relationships with the employed population living less than 15 minutes from work between 1990 and 2010 at any of the examined bandwidths (Tables 13 and 14).

#### **3.1.4.2 Employed population living 15 minutes or more from work**

The employed population living 15 minutes or more from work in Detroit declined between 1990 and 2010, losing 0.4% from 260,777 in 1990 to 259,785 in 2000 and another 30.4% to 180,812 in 2010 (Table 9). For the destination redevelopments completed in Detroit

during the 1990s, there are no statistically significant relationships with the employed population living 15 minutes or more from work between 1990 and 2000 at any of the examined bandwidths (Table 10). For these redevelopments, there is a statistically significant decrease in this population segment between 2000 and 2010 at the two mile bandwidth. There are statistically significant relationships at the half and one mile bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant decrease in this population group between 2000 and 2010 at the one and two mile bandwidths (Table 11). There is no statistically significant relationship at the half mile bandwidth.

The employed population living 15 minutes or more from work in Las Vegas grew between 1990 and 2010, increasing by 76.2% from 93,758 in 1990 to 165,186 in 2000 and by an additional 25.5% to 207,289 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there is statistically significant increase in the employed population living 15 minutes or more from work between 1990 and 2000 at the half and one mile bandwidths (Table 13). There is no statistically significant relationship at the two mile bandwidth. For these same 1990s redevelopments, there are no statistically significant relationships with the employed population living 15 minutes or more from work between 2000 and 2010 at any of the examined bandwidths. For such redevelopments completed during the 2000s, there is a statistically significant decrease in this population sector between 2000 and 2010 at the two mile bandwidth (Table 14). There are no statistically significant relationships at the half and one mile bandwidths.

### **3.1.5 Employed population by means of transportation to work**

### **3.1.5.1 Employed population using a non-automated means of transportation to/from work**

The employed population using a non-automated means of transportation to/from work in Detroit increased between 1990 and 2000, gaining 4.6% from 17,306 in 1990 to 18,098 in 2000, and then declined between 2000 and 2010, losing 7% to 16,823 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decrease in the employed population using a non-automated means of transportation to/from work between 1990 and 2000 at the half and two mile bandwidths (Table 10). There is no statistically significant relationship at the one mile bandwidth. For these 1990s redevelopments, there is a statistically significant decrease in this cohort between 2000 and 2010 at the one mile bandwidth. There are statistically significant relationships at the half and two mile bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant decrease in this population segment between 2000 and 2010 at all of the examined bandwidths (Table 11).

The employed population using a non-automated means of transportation to/from work in Las Vegas grew between 1990 and 2010, increasing by 47.5% from 8,592 in 1990 to 12,677 in 2000 and by 35.3% from 12,677 in 2000 to 17,146 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decrease in the employed population using a non-automated means of transportation to/from work between 1990 and 2000 at the half and two mile bandwidths (Table 13). There is no statistically significant relationship at the one mile bandwidth. For these redevelopments, there is a statistically significant decrease in the employed population using a non-automated means of transportation to/from work between 2000 and 2010 at all of the examined bandwidths. For the

destination redevelopments completed in Las Vegas during the 2000s, there is a statistically significant decrease in this population sector between 2000 and 2010 at all of the examined bandwidths (Table 14).

### **3.1.5.2 Employed population using an automated public means of transportation to/from work**

The employed population using an automated public means of transportation to/from work in Detroit declined between 1990 and 2000, losing 20.9% from 34,933 in 1990 to 27,634 in 2000, and then increased between 2000 and 2010, gaining 33.3% from 27,634 in 2000 to 36,845 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there are statistically significant changes in this cohort between 1990 and 2000 at all of the examined bandwidths (Table 10). There is a statistically significant decline at the half mile bandwidth and a statistically significant increase at the one and two mile bandwidths. For these same redevelopments, there is a statistically significant decrease in the employed population using an automated public means of transportation to/from work between 2000 and 2010 at the one mile bandwidth. There are no statistically significant relationships at the half and two mile bandwidths. For such redevelopments completed in the 2000s, there is a statistically significant decrease in this population segment between 2000 and 2010 at all of the examined bandwidths (Table 11).

The employed population using an automated public means of transportation to/from work in Las Vegas grew between 1990 and 2010, increasing by 171.2% from 10,069 in 1990 to 10,069 in 2000 and by an additional 130.3% to 23,186 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there are no statistically significant

relationships with this cohort between 1990 and 2000 at any of the examined bandwidths (Table 13). For these 1990s redevelopments, there is a statistically significant decrease in the employed population using an automated public means of transportation to/from work between 2000 and 2010 at the half and one mile bandwidth. There is no statistically significant relationship at the two mile bandwidth. For such redevelopments completed during the 2000s, there is a statistically significant decrease in this population sector between 2000 and 2010 at the half and one mile bandwidth (Table 14). There is no statistically significant relationship at the two mile bandwidth.

#### **3.1.5.3 Employed population using an automated private means of transportation to/from work**

The employed population using an automated private means of transportation to/from work in Detroit grew between 1990 and 2000, gaining 0.3% from 272,815 in 1990 to 273,717 in 2000 and, and then declined between 2000 and 2010, losing 29.7% to 192,469 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there are statistically significant increase in the employed population using an automated private means of transportation to/from work between 1990 and 2000 at the half mile bandwidth (Table 10). There are no statistically significant relationships at the one and two mile bandwidths. For these same redevelopments, there is a statistically significant decrease in the employed population using an automated private means of transportation to/from work between 2000 and 2010 at all of the examined bandwidths. For such redevelopments completed during the 2000s, there is a statistically significant decrease in this population group between 2000 and 2010 at all of the examined bandwidths (Table 11).

The employed population using an automated private means of transportation to/from work in Las Vegas grew between 1990 and 2010, increasing by 61.3% from 116,577 in 1990 to 188,060 in 2000 and by another 24.5% to 234,191 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant decrease in the employed population using an automated private means of transportation to/from work between 1990 and 2000 at the one mile bandwidth (Table 10). There are no statistically significant relationships at the other bandwidths. For such redevelopments completed in Las Vegas during the 1990s and 2000s, there are no statistically significant relationships with this cohort between 2000 and 2010 at any of the examined bandwidths.

### **3.1.6 Housing units**

The number of housing units in Detroit declined between 1990 and 2010, losing 8.5% from 410,027 in 1990 to 375,096 in 2000 and then another 6.9% to 349,170 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s and 2000s, there is a statistically significant increase in the number of housing units between 1990 and 2010 at all of examined bandwidths (Tables 10 and 11).

The number of housing units in Las Vegas grew between 1990 and 2010, increasing by 73.9% from 109,670 in 1990 to 190,724 in 2000 and an additional by 27.8% to 243,701 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s and 2000s, there is a statistically significant decrease in the number of housing units between 1990 and 2010 at all of examined bandwidths (Tables 10 and 11).

### **3.1.7 Housing units by occupancy status**

#### **3.1.7.1 Occupied housing units**

The number of occupied housing units in Detroit declined between 1990 and 2010, losing 10.1% from 374,057 in 1990 to 336,428 in 2000 and a further 19.9% to 269,445 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s and 2000s, there is a statistically significant increase in the number of occupied housing units between 1990 and 2010 at all of examined bandwidths (Tables 10 and 11).

The number of occupied housing units in Las Vegas grew between 1990 and 2010, increasing by 77.2% from 99,735 in 1990 to 176,750 in 2000 and another 19.8% to 211,689 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s and 2000s, there is a statistically significant decrease in the number of occupied housing units between 1990 and 2010 at all of examined bandwidths with only one exception (Tables 10 and 11). The exception is the decline between 2000 and 2010 at the one mile bandwidth for the projects completed in 2000.

#### **3.1.7.2 Vacant housing units**

The number of vacant housing units in Detroit grew between 1990 and 2010, gaining 7.5% from 35,970 in 1990 to 38,668 in 2000 and then another 106.2% to 79,725 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s and 2000s, there is a statistically significant decrease in the number of vacant housing units between 1990 and 2010 at all of examined bandwidths (Tables 10 and 11).

The number of vacant housing units in Las Vegas grew between 1990 and 2010, increasing by 40.7% from 9,935 in 1990 to 13,974 in 2000 and by an additional 129.1% to 32,012 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during



the 1990s, there are no statistically significant relationships with the number of vacant housing units between 1990 and 2000 at all of examined bandwidths with only one exception (Table 10). For these same redevelopments, there is a statistically significant increase in the number of vacant housing units between 2000 and 2010 at the one and two mile bandwidths. There is no statistically significant relationship at the half mile bandwidth. For such redevelopments completed in the 2000s, there are statistically significant changes in the number of vacant housing units between 2000 and 2010 at the two mile bandwidth (Table 11). Although the number of vacant housing units were decreasing, they are not decreasing as much as they were near the random samples. There is no statistically significant relationship at the half and one mile bandwidths.

### **3.1.8 Occupied housing units by tenure**

#### **3.1.8.1 Owner-occupied housing units**

The number of owner-occupied housing units in Detroit declined between 1990 and 2010, losing 6.7% from 197,929 in 1990 to 184,647 in 2000 and another 25.4% to 137,730 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant decrease in the number of owner-occupied housing units between 1990 and 2000 at the one and two mile bandwidths (Table 10). There is no statistically significant relationship at the half mile bandwidth. For these 1990s redevelopments, there are no statistically significant relationships with the number of owner-occupied housing units between 2000 and 2010 at any of the examined bandwidths. For such redevelopments completed in the 2000s, there are statistically significant changes in the number of owner-occupied housing units between 2000 and 2010 at all of the examined bandwidths (Table 11). There is a statistically

significant increase at the half and one mile bandwidths. There is a statistically significant decline at the two mile bandwidth.

The number of owner-occupied housing units in Las Vegas grew between 1990 and 2010, increasing by 107.9% from 50,246 in 1990 to 104,481 in 2000 and by a further 14.4% to 119,550 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there are no statistically significant relationships with the number of owner-occupied housing units between 1990 and 2000 at any of the examined bandwidths (Table 13). For these redevelopments, there is a statistically significant change in the number of owner-occupied housing units between 2000 and 2010 at the two mile bandwidth. There are no statistically significant relationships at the half and one mile bandwidths. For such redevelopments completed during the 2000s, there are statistically significant changes in the number of owner-occupied housing units between 2000 and 2010 at the two mile bandwidth (Table 14). Although the number of owner-occupied housing units is decreasing at this bandwidth, it is not decreasing as much as it is near the random samples. There are no statistically significant relationships at the half and one mile bandwidths.

### **3.1.8.2 Renter-occupied housing units**

The number of renter-occupied housing units in Detroit declined between 1990 and 2010, losing 13.8% from 176,128 in 1990 to 151,781 in 2000 and then another 13.2% to 131,715 in 2010 (Table 9). For the destination redevelopments completed in Detroit during the 1990s, there is a statistically significant increase in the number of renter-occupied housing units between 1990 and 2000 at the one and two mile bandwidths (Table 10). There is no statistically significant relationship at the half mile bandwidth. For these 1990s redevelopments, there are no

statistically significant relationships with the number of renter-occupied housing units between 2000 and 2010 at any of the examined bandwidths. For the destination redevelopments completed in Detroit during the 2000s, there is a statistically significant decrease in the number of renter-occupied housing units between 2000 and 2010 at the half mile bandwidth (Table 11). There are no statistically significant relationships at the one and two mile bandwidths.

The number of renter-occupied housing units in Las Vegas grew between 1990 and 2010, increasing by 46% from 49,489 in 1990 to 72,269 in 2000 and by a further 27.5% to 92,139 in 2010 (Table 12). For the destination redevelopments completed in Las Vegas during the 1990s, there is a statistically significant increase in the number of renter-occupied housing units at all of the examined bandwidths (Table 13). For these same redevelopments, there are no statistically significant relationships with the number of renter-occupied housing units between 2000 and 2010 at any of the examined bandwidths. For such redevelopments completed during the 2000s, there is a statistically significant decrease in the number of renter-occupied housing units between 2000 and 2010 at the half and one mile bandwidths (Table 14). There is no statistically significant relationship at the two mile bandwidth.

## **3.2 DISCUSSION**

### **3.2.1 Population 16 years and over by employment status**

#### **3.2.1.1 Employed civilians**

In term of the local impact of destination redevelopments on the number of employed civilians, there is a more consistent trend in Detroit than in Las Vegas. In Detroit, these projects have a positive impact at the half mile bandwidth at all the examined time periods and then also a positive impact at the one and two mile bandwidths during the 2000s. This is especially

important in light of the fact that this population subset is declining across the city between 1990 and 2010 (Table 9). In Las Vegas, the local impact varies depending on the examined time period and whether one is considering short- or long-term changes.

### **3.2.1.2 Unemployed civilians**

The local impact of destination redevelopments on the number of unemployed civilians follows a relatively consistent trend in Detroit and the same pattern in Detroit and Las Vegas during the 2000s. Detroit and Las Vegas differ in the trend that occurs in the 1990s. In Detroit, these projects have a negative effect (i.e., the number of unemployed civilians declines) at the half mile bandwidth at all the examined time periods and then also a negative effect at the one and two mile bandwidths during the 2000s. This is the opposite trend that occurs in Detroit as the number of employed civilians at the same bandwidths and time periods. In both Detroit and Las Vegas, there is a negative effect evident at all of the examined bandwidths during the 2000s. These projects have different effects in Detroit and Las Vegas during the 1990s. Although Detroit only has a negative local impact at the half mile bandwidth, Las Vegas has a positive effect (i.e., the number of unemployed civilians increases) at all bandwidths.

## **3.2.2 Population 25 years and older by educational attainment**

### **3.2.2.1 Population with a bachelor's degree**

There is no local impact of destination redevelopments on the population with a bachelor's degree in Detroit. However, in Las Vegas, there is a positive effect of these projects at all of the examined bandwidths during the 2000s. During the 1990s, there is actually a negative

impact at one bandwidth and no relationship at the others. Thus, the local impact varies depending on the examined time period.

### **3.2.2.2 Population without a bachelor's degree**

There is a more easily discernable trend in Las Vegas regarding the local impact of destination redevelopments on the population without a bachelor's degree. In Las Vegas, the local impact shifts from a positive effect between 1990 and 2000 to a negative effect between 2000 and 2010 (i.e., for projects completed in the 1990s and 2000s). In Detroit, the impact varies based on the examined bandwidth and time periods.

## **3.2.3 Households by household income**

### **3.2.3.1 Households earning less than \$50,000 a year**

In Detroit and Las Vegas, there is a common negative trend in terms of the local impact of destination redevelopments completed in the 2000s on the number of households earning less than \$50,000 a year at all the examined bandwidths. In Detroit, there is no impact on these households for any of the projects completed in the 1990s, regardless of whether one is examining short- or long-term changes. In Las Vegas, there is a negative effect evident between 2000 and 2010 for the projects completed in the 1990s and 2000s (Figure 8).

### **3.2.3.2 Households earning between \$50,000 and \$100,000 a year**

In both cities, there is a notable trend in terms of the local impact of destination redevelopments on the number of households earning between \$50,000 and \$100,000 a year. These projects in both cities had a positive effect on the aforementioned households at the half

and one mile bandwidths between 2000 and 2010. These bandwidths are also the same ones where there is a decline in the number of households earning less than \$50,000 a year (Figure 8).

There are two additional trends occurring in Detroit only. The first additional trend is that the aforementioned positive effect exists for all projects and examined time periods at the half mile bandwidth, not just between 2000 and 2010. The second additional trend is that the positive effect also exists for all of these projects in Detroit when considering the two mile bandwidth between 2000 and 2010.

### **3.2.3.3 Households earning over \$100,000 a year**

The local impact of destination redevelopments on households earning over \$100,000 a year only follows a consistent trend in Las Vegas. These Las Vegas redevelopments have a positive effect on these households between 2000 and 2010 for both the projects completed in the 1990s and 2000s. In Detroit, the impact varies depending on the examined bandwidth and time period.

## **3.2.4 Employed population 16 years and over by industry**

### **3.2.4.1 Employed population working in the art, entertainment and recreation industry**

Although the local effect of destination redevelopments on the employees working in this industry is generally negative in Detroit and Las Vegas (i.e., particularly during the 2000s), the magnitude and direction (+/-) of the changes occurring varies depending on the examined bandwidths and time periods. In Detroit, the employees working in the destination industries tend to increase near these redevelopments but not as much as the random samples. As such,

these Detroit projects have a negative local effect on the employees in this industry. In Las Vegas, these redevelopments have a negative effect on these employees at the one mile bandwidths for all the examined time periods and at all of the examined bandwidths between 2000 and 2010.

#### **3.2.4.2 Population employed in white collar industries**

While destination redevelopments appear to have a general negative impact on the population employed in white collar industries, these effects vary depending on where the project is located, when the project is completed and whether one is considering short- or long-term changes. The effects vary more in Detroit than Las Vegas. In Las Vegas, there is at least a consistent negative trend at the two mile bandwidth during the 2000s.

#### **3.2.4.3 Population employed in blue collar industries**

There is a more easily discernable trend regarding the local impact of destination redevelopments on the population employed in blue collar industries in Las Vegas. In Las Vegas, these redevelopments had a positive impact of this population subset between 2000 and 2010 at the half and one mile bandwidth. In Detroit, these projects have no impact with only one exception.

### **3.2.4 Employed population by travel time to work**

#### **3.2.4.1 Employed population living less than 15 minutes from work**

There is only a trend in Detroit, not Las Vegas, related to the local impact of destination redevelopments on the employed population living less than 15 minutes from work. In Detroit,

such projects completed in the 2000s had a negative effect on this population subset between 2000 and 2010. In Las Vegas, these redevelopments have no impact on the employed population living less than 15 minutes from work.

#### **3.2.4.2 Employed population living 15 minutes or more from work**

There is only a trend evident in Detroit as it pertains to the local impact of destination redevelopments on the employed population living 15 minutes or more from work. In Detroit, these projects have a negative effect between 2000 and 2010 at the two mile bandwidth. In Las Vegas, the impact of these projects varies with the examined bandwidth and examined time period.

### **3.2.5 Employed population by means of transportation to work**

#### **3.2.5.1 Employed population using a non-automated means of transportation to/from work**

There is an overall negative local impact of destination redevelopments on the employed population using a non-automated means of transportation to/from work in Detroit and Las Vegas. There are two particular trends common in both cities. The first trend is the negative effect of these projects on this population subset at the one mile bandwidth between 1990 and 2000. The second trend is the negative effects of these projects on this population subset at the half and two mile bandwidths between 2000 and 2010. In Las Vegas, there is actually a negative effect at the half and one mile bandwidths for all the time periods and the projects completed during the 1990s and 2000s.



### **3.2.5.2 Employed population using an automated public means of transportation to/from work**

With respect to the local impact of destination redevelopments on the employed population using an automated public means of transportation to/from work, Detroit and Las Vegas share negative effects at the half and one mile bandwidths. At the half mile bandwidth, the negative effect is evident only for projects completed in the 1990s. At the one mile bandwidth, the negative effect is evident between 2000 and 2010. There are other positive and negative effects in Detroit but these vary depending on the examined bandwidth and time period.

### **3.2.5.3 Employed population using an automated private means of transportation to/from work**

Regarding the local impact of destination redevelopments on the employed population using an automated private means of transportation to/from work, there is only a trend evident in Detroit. In Detroit, these projects have a negative effect between 2000 and 2010 on this population subset at all bandwidths.

### **3.2.6 Housing units**

There are two opposite trends occurring across all of the examined bandwidths related to the local impact of destination redevelopments on the number of housing units. In Detroit, these projects have a positive effect on the number of housing units. In Las Vegas, these projects have a negative effect on the number of housing units. These trends match the ones identified related to the local impact on the total population in both cities.

### **3.2.7 Housing units by occupancy status**

#### **3.2.7.1 Occupied housing units**

There are two opposite trends occurring across all of the examined bandwidths related to the local impact of destination redevelopments on occupied housing units. In Detroit, these projects have a positive effect on the number of occupied housing units. In Las Vegas, these projects have a negative effect on the number of occupied housing units. These trends match the ones identified related to the local impact on the total population and the number of housing units.

#### **3.2.7.2 Vacant housing units**

The local impact of destination redevelopments on vacant housing units only follows an easily discernable pattern in Detroit. In Detroit, these projects have a negative effect on vacant housing units at all of the examined bandwidths (i.e., the decrease in the number of vacant housing units). In Las Vegas, the local impact varies based on the examined bandwidths and time periods.

### **3.2.8 Occupied housing units by tenure**

#### **3.2.8.1 Owner-occupied housing units**

Detroit and Las Vegas each have a different trend related to the local impact of destination redevelopments on owner-occupied housing units evident at the two mile bandwidth. In Detroit, these redevelopments have a negative effect at the two mile bandwidth during the same decade that they were completed. There are other trends related to these housing units in Detroit, but they vary based on the examined bandwidth and time period. In Las Vegas, there is

only a trend at the two mile bandwidth. Although the number of owner-occupied housing units decrease between 2000 and 2010 near these redevelopments at this bandwidth, they decrease by a lower amount than other areas in the city.

### **3.2.8.2 Renter-occupied housing units**

Detroit and Las Vegas share two rather unremarkable trends related to the local impact of destination redevelopments on renter-occupied housing units. All projects completed in the 1990s have a positive effect between 1990 and 2000 on the renter-occupied housing units at the one and two mile bandwidths. All projects completed in the 2000s have a positive effect between 2000 and 2010 on the renter-occupied housing units at the half mile bandwidth.

### **3.2.9 Summary of Findings**

The results of the geographically weighted shift-share analysis depicting the local economic impact of destination redevelopments can be grouped into four categories: 1) variables that had statistically significant trends that varied based on where the project is completed, when the project is completed and/or whether one is looking at short- or long-term changes; 2) variables that had statistically significant impacts that are unique to Detroit or Las Vegas; and 3) variables that had statistically significant impacts that are evident in both Detroit and Las Vegas. (Unlike the demographic analysis from chapter 2, there were no economic characteristics that had scant statistically significant trends.)

There are only two variables that fit into the first group. These variables include:

- Population employed in white collar industries

The local impact of destination redevelopments in Detroit and Las Vegas on these aforementioned variables in the first group varied depending on the examined bandwidth and time period.

There are fourteen variables that fit into the second group. These variables include:

- Employed civilians
- Unemployed civilians
- Population with a bachelor's degree
- Population without a bachelor's degree
- Households earning over \$100,000 a year
- Employed population working in the art, entertainment and recreation industry
- Population employed in blue collar industries
- Employed population living less than 15 minutes from work
- Employed population living 15 minutes or more from work
- Employed population using an automated private means of transportation to/from work
- Housing units
- Occupied housing units
- Vacant housing units
- Owner-occupied housing units

The aforementioned variables that fit into the second group were altered by destination redevelopments uniquely in Detroit and Las Vegas. These trends were unique to Detroit and Las

Vegas, meaning that each city did not experience the same trend and one city might have experienced a trend while the other did not.

Detroit had both positive and negative unique trends in terms of the local economic impact of destination redevelopments. These projects had a unique, positive effect on the following variables: employed civilians, housing units, and occupied housing units. Detroit destination redevelopments had a unique, negative effect on the following variables: unemployed civilians; population employed in art, entertainment and recreational industries; employed population living less than 15 minutes from work, employed population using an automated private means of transportation to/from work, vacant housing units, and owner-occupied housing units.

Although there are no variables that directly measure employment or real estate development, there are a number of trends that support the arguments that tout benefits of the local spillover effect of destination redevelopments (Chapin, 2004). For instance, there are no variables that measure local employment but these projects seem to have a positive effect on the number of employed civilians and a negative effect on the number of unemployed civilians that live nearby these sites. However, these projects appear to have a negative effect on those working in the destination industries. This indicates that these projects are not attractive (or accessible) to those who work in these industries but may be to other industries. These redevelopments might attract subcategories of the white and blue collar industries examined in this analysis, including those who might not work in the same areas but do not need (or cannot afford to use) private automobiles to get to work. This could include members of the creative class; however, there is not enough evidence from this research to confirm this finding either way. Similar to the trends regarding employment, despite the lack of data regarding real estate

investments, the Detroit destination redevelopments have a positive effect on both the number of local housing units and occupied housing units. This suggests that these areas in Detroit became more attractive due to these redevelopments. Both of these findings – what type of employees are attracted to these areas and changes in housing units – are worth examining in further detail in Detroit and other shrinking cities given their troubling economic predicaments.

Las Vegas also had both positive and negative unique trends in terms of the local economic impact of destination redevelopments. These projects had a unique, positive effect on the following variables: unemployed civilians, population with a bachelor's degree, households earning over \$100,000 a year, population employed in blue collar industries and owner-occupied housing units. Las Vegas destination redevelopments had a unique, negative effect on the following variables: population without a bachelor's degree; population employed in art, entertainment and recreational industries; housing units, and occupied housing units.

The neighborhoods near Las Vegas destination redevelopments seem to be attractive places for the (highly desirable) well-educated and rich urban population, which is potentially a benefit in terms of (sales and/or property) tax revenue for the city. Although these projects negatively affect the number of housing units and occupied housing units, they have the opposite effect on owner-occupied housing units. The increase in owner-occupied housing units could translate into more aesthetically pleasing neighborhoods because owner-occupied housing units tend to be better maintained than renter-occupied housing units. In turn, this could translate into other benefits in Las Vegas and other growing cities, such as less crime (*vis-à-vis* the broken windows theory). If one considers the trends common amongst Las Vegas and Detroit, the decrease in households earning under \$50,000 and increase in households earning \$50,000 or more is disconcerting (Figure 8). These trends echo the findings of previous research criticizing

the redevelopments such as those related to destination industries regarding the positive effects on middle/upper income households at the consequence of hurt/displacing lower income households (Judd and Fainstein, 1999; Davis, 2006).

There are five variables in the third and perhaps most important category. These variables are:

- Households earning less than \$50,000 a year
- Households earning between \$50,000 and \$100,000 a year
- Employed population using a non-automated means of transportation to/from work
- Employed population using an automated public means of transportation to/from work
- Renter-occupied housing units

The local impact of destination redevelopments on this population subset is evident in both cities. As previously mentioned, the local impact on the renter-occupied housing units seems to be an unremarkable trend since it primarily only pertains to the two mile bandwidth for selected time periods. However, the local impact on the first four variables in this third group seems to be more noteworthy. The trends affecting the first two variables are worth more attention because the households earning less than \$50,000 a year decrease at the same bandwidths and time periods as the households earning between \$50,000 and \$100,000 increase (Figure 8). As previously mentioned, future research should further explore these simultaneous trends. If additional information is provided detailing the population by income by tenure, one could determine if displacement might be occurring at the aforementioned bandwidths (e.g., the lower income households are outpriced in a similar fashion to what happens with gentrification). The

latter two variables related to the means of transportation to work are noteworthy due to current interests in these modes of transportation (e.g., related to the New Urbanism movement). Future research could examine why these types of redevelopments are affecting these population subsets and how these projects might be altered in the future to better attract the type of people who desire and/or have the ability to use non-automated or public transportation to get to work in order to better reduce urban traffic congestion and other issues related to private automobiles in cities.



## **CONCLUDING REMARKS**

This research completed two objectives. First, it developed a novel geographically-weighted version of the local component of shift-share GIS analysis for intra-urban impact studies, thus controlling for broader municipal trends that might otherwise mask local impacts. Second, it applied this technique to explore and compare the local socioeconomic impact of destination redevelopments in Detroit and Las Vegas between 1990 and 2010. Detroit and Las Vegas were chosen as study sites because public and private organizations in each place have made substantial investments into these redevelopments during this time period, namely, as a means of escaping insolvency in Detroit and, in the case of Las Vegas, for bolstering the global competitiveness as well as combating the decline of its downtown and older neighborhoods. The research tested the hypothesis that these types of projects have had a positive impact on the local demographic composition and economic characteristics of nearby areas during the aforementioned time period.

The present research made three key differentiating contributions to the urban change literature related to destination redevelopments. First, this research presented one of the first analyses of the local impact of these types of projects on demographic changes, as opposed for example to that focused solely on real estate values. Second, unlike previous studies, it focused on the local impact of the entire collective category of destination redevelopments rather than specific subcategories so as to be applicable to a much broader base of cities that might not necessarily have every representative subcategory. Third, it introduced the aforementioned analytical GIS technique (i.e., geographically weighted shift-share analysis) that enables the assessment of the local impact of redevelopments projects on demographic changes, as opposed to the more commonly used approaches that are either limited in applicability to demographic

change (e.g., hedonic regression analysis), possess specification constraints (e.g., different-in-difference technique), or lack the ability to isolate local effects (e.g., raw data trends).

The results of the geographically weighted version of shift-share analysis suggest that destination redevelopments have a number of notable local effects. The findings present evidence that these projects spur some types of local socioeconomic changes that are common amongst these two rather disparate subject cities and others that are unique to only one of the two places. There are positive trends that illustrate that these sites live up to some of their touted positive reputations, but also ones that are a cause for concern and echo the criticisms put forth by detractors of these redevelopment projects.

The trends that are common to both Detroit and Las Vegas are grouped in hopes that it lays the groundwork for establishing a list of local socioeconomic impacts that are more generally applicable to any of the destination redevelopment subcategories, as opposed to the effects of just specific project types to a small subset of cities. In Detroit and Las Vegas, there were five variables that were notably impacted by these redevelopments; one was demographic, and the other four were economic.

The sole demographic variable that was common to both cities was the 18 to 29 year old males. At almost every bandwidth distance in both cities (i.e., within a half, one and two mile radius of a site) and across all examined time periods, these redevelopments had a local positive effect on this population segment. The local positive effect of these projects on this population subset is noteworthy because it would appear to validate one of the expected benefits of these facilities (i.e., attracting young people into nearby areas). However, it also raises questions about its effect on females (i.e., perhaps as well LGBT communities), which are worth exploring in future research. For example, what aspects of these projects make them attractive to males in this

age bracket? What makes this question interesting for these two subject sites is that the 18 to 29 year old female category is also positively affected by these projects in Detroit, but not in Las Vegas. Which is the anomaly?

Art, entertainment and recreation redevelopments commonly affected four economic variables in Detroit and Las Vegas. These projects positively affected one variable, namely households earning between \$50,000 and \$100,000 a year. They negatively affected the other three: households earning less than \$50,000 a year, the employed population using a non-automated means of transportation to/from work and the employed population using an automated public means of transportation to/from work. While the relationship with the employed population using a non-automated means of transportation to/from work is evident at almost all examined bandwidths and time periods, the aforementioned association with the employed population using an automated public means of transportation to/from work primarily occurs closest to the development sites (i.e. half mile bandwidth), and similarly for the case for the ones related to income during the 2000 to 2010 time period (i.e. mostly the half and one mile bandwidths). The common economic impacts of these development projects, either positive or negative, for the most part do not thus appear to extend well beyond the immediate vicinity of these development projects.

In combination, the above mentioned economic trends are concerning. Not only are these redevelopments contributing to the reduction in the number of people using non-automated and public means of transportation to work, but the findings of this research also provides evidence that these redevelopments may indeed live up to the criticism from detractors that these projects help attract middle/upper income households at the cost of hurting/displacing those from lower income households. Although there are no available statistics from the U.S. Census or American

Community Survey related to the number of households by income and tenure during the 2000 to 2010 time period, these cited trends help bridge the gap with respect to some of this missing data. That is, the four variables that were negatively affected by destination redevelopments are generally related to lower income households, their means of transportation and types of housing units. Future research should continue to monitor this relationship in the coming years not just in Detroit and Las Vegas but other cities as well in order to examine the generalizability of this concerning trend.

In addition to shared patterns, there were some positive trends that were unique to each of the two otherwise distinct subject cities. In Detroit, for instance, the results suggest that the destination redevelopments may have indeed helped contribute to a back-to-the-city movement at the local scale, despite the overall environment of decline. These sites have had a positive local effect in Detroit with respect to the total population, the 18 to 29 year old male population (i.e., a trend common in Las Vegas as previously mentioned), the 45 to 64 year old male population, the 18 to 29 year old female population, the 45 to 64 year old female population, the non-Hispanic White population, employed civilians, housing units and occupied housing units. Additionally, they have helped retain the existing population and reduce the number of vacant housing units. These trends are prime examples of local changes that likely would otherwise have been masked using other approaches that do not separate municipal and local changes. Moreover, these positive impacts can be found at all or almost all of the examined bandwidths with only two exceptions (i.e., non-Hispanic White population and employed population during the 1990 to 2000 time period). If using Detroit as a proxy for other shrinking cities, such findings are very encouraging not only because the trends have favorable implications but also that most

of these positive local impacts are not merely restricted to the immediate vicinity of these redevelopments.

Las Vegas destination redevelopments also had unique positive effects. One of the more impressive findings was the fact that these projects appear to play a major role in attracting people from other areas of the city, as well as other municipalities both inside and outside the Las Vegas – Paradise metro area, to live nearby these projects. On the one hand, this trend might not be that surprising since this type of redevelopment is what established the reputation of Las Vegas. On the other hand, it is remarkable that the renovation of an old or construction of a new art, entertainment or recreational site can still spur such local socioeconomic change given the fact that the city already possesses such a high concentration of such facilities. Similar to many of the other trends in Las Vegas, the aforementioned relationships tended to occur closest to the sites (i.e., only a few extended out to the 2 mile radius).

Although the cited population segments were different, Detroit and Las Vegas also exhibited a disconcerting relationship during the 2000 to 2010 time period in the areas nearest to these redevelopments (i.e., primarily at the half and one mile bandwidths) that might be worth monitoring moving forward concerning how the migration associated with destination redevelopments affects the racial composition and identity of nearby areas. In Detroit, results showed that these sites had a positive effect on the non-Hispanic White population at many of the same bandwidths and time periods where they had a negative effect on the non-Hispanic Black population (i.e., Detroit's largest non-White population by race and Hispanic Origin). In Las Vegas, although these projects had a positive effect on the non-Hispanic Black population and did not affect the non-Hispanic White population, they did negatively affect almost all other non-White populations by race and Hispanic origin (i.e., most particularly, the Hispanic

population, the largest non-White population by race and Hispanic origin). Charting this relationship in other cities and examining whether displacement is occurring with respect to the largest non-White populations near these projects would be an important step toward a better understanding this relationship in the future.

Destination redevelopments appear to have had an overall local positive effect in Detroit and Las Vegas between 1990 and 2010. Most notably, these facilities appear to have the potential to attract young populations, particularly the male demographic of this population segment, and in the neighborhoods that extend well beyond the immediate vicinity of these developments. The gender component of this relationship, however, should be examined in further detail moving forward. Additionally, there are a few troubling trends (i.e., displacement based on income and race) over the last decade that have appeared in the areas closest to these sites. Due to their serious implications, they are also worth examining in more detail in future follow-up research.

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