Urban Revitalization in U.S. Cities and Neighborhoods, 1990 to 2010

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Executive Summary

The past several decades have been a period of change for cities in the U.S. and worldwide. Scholars and media alike have documented a "return to the city" movement that has revived urban neighborhoods, with residents of higher socioeconomic status remaining in or returning to city neighborhoods. During this same time, considerable economic and demographic changes have also been occurring, including continued immigration and internal migration, economic restructuring, and the Great Recession. Therefore, the trajectories of city and neighborhood well-being require a thorough examination to understand changes over time.

In this paper, I use data from the Census Bureau to estimate city and neighborhood vitality scores by combining five socioeconomic characteristics: median household income, total population, proportion of residents with a BA or greater, housing vacancy rate, and employment rate. These five characteristics capture a range of characteristics associated with a city or neighborhood's general well-being. I document how changes in neighborhood and city vitality correspond to changes in the industrial and occupational structure, racial composition and segregation, and immigration. I also examine differences across regions and explore whether city changes correspond to changes in neighborhoods in their metropolitan areas.

This paper documents changes in urban well-being among the 100 largest U.S. cities. Several cities are highlighted to demonstrate results, including Washington, DC, Jersey City, NJ, Oakland, CA, and Denver, CO. In addition, the paper includes neighborhood maps to explore variation within cities in Atlanta, GA, Oakland, CA, Baltimore, MD, Las Vegas, NV, Seattle, WA, Plano, TX, and Denver, CO.

Here, I briefly summarize key findings.

City-Level Results

- The cities with the greatest socioeconomic improvements from 1990 to 2010 are Norfolk, VA, Laredo, TX, Louisville, KY, San Francisco, CA, and Seattle, WA.
- The cities with the greatest socioeconomic declines from 1990 to 2010 are Detroit, MI, Garland, TX, Anaheim, CA, Arlington, TX, and, misleadingly, Plano, TX (Plano remains the 2nd most advantaged city in the U.S. in 2010; its advantage over other cities has shrunk slightly).
- With regard to industrial structure, cities that lost fewer manufacturing jobs experienced smaller declines or even improvements in socioeconomic well-being. Cities with larger growth in the service sector experienced greater socioeconomic decline, perhaps because service workers may have lower educational attainment or income. The construction industry tended to grow in improving cities, perhaps because these cities were undertaking large building projects.
- Cities that gained workers in managerial, technical, and professional jobs saw improvements in their socioeconomic wellbeing
- With regard to racial composition, cities where the proportion of minority (Hispanic and black) residents grew experienced socioeconomic declines in the 1990s and 2000s.

- Cities with growing racial segregation experienced declines in the 1990s but improvements in the 2000s, perhaps as Hispanic and Asian residents with higher incomes or educational attainment created ethnic enclaves (and thus contributed to segregation).
- The foreign-born population share has a complex relationship to city trajectories. Accounting for the change in the Hispanic population, which composes the majority of immigrant population in many cities, growth in the immigrant population was associated with city socioeconomic improvement in the 1990s but declines in the 2000s.
- City and suburban growth do not always go hand-in-hand. Among cities with improving socioeconomic profiles, about 56% of neighborhoods within cities improved compared to just under 50% in the surrounding suburbs of the cities' metropolitan area. Among declining cities, a greater proportion of neighborhoods outside the city improved compared to within the city limits (36 v. 32%). Therefore, many improving cities were surrounded by declining suburbs, and many declining cities were surrounded by improving suburbs.

Neighborhood-Level Results

- Consistent with city-level results, growing minority population is associated with neighborhood socioeconomic decline. Conversely, improving neighborhoods experienced declines in minority population. This is true in neighborhoods in both improving and declining cities.
- One concern with neighborhood revitalization is that black and Hispanic residents are being displaced. Both the total black and Hispanic population declined in a greater proportion of improving than declining neighborhoods, suggesting displacement may occur alongside socioeconomic improvements. The data used here cannot track individual families, so it is impossible to know whether individual families moved in or out.
- In both improving and declining cities, neighborhoods with a larger initial black population experienced socioeconomic decline. In declining cities, neighborhoods with a larger initial Hispanic population experienced larger socioeconomic improvements, but in improving cities, these neighborhoods experienced decline. Minority neighborhoods thus seem to be passed over in improving cities.
- In both declining and improving cities, neighborhoods with growing foreign-born populations experienced larger declines.
- However, comparing neighborhoods with similar changes in the Hispanic population, neighborhoods located in declining cities experienced growth if their immigrant population share increased more.

Scholars and media alike have noted a "return to the city" and the revitalization of many urban neighborhoods (Grogan and Proscio 2000; Lees, Slater, and Wyly 2008; Wyly and Hammel 1999). In previous work, I found that 15 to 20 percent of all metropolitan neighborhoods in the U.S. experienced socioeconomic ascent in each decade from the 1970s to the 2000s (Owens 2012). Less research examines change at the city level and whether city- and neighborhood-level changes correspond. Where has city socioeconomic improvement occurred, and what demographic and economic forces have accompanied urban transformation? To what degree have trends at the city- and neighborhood-level moved in tandem or in opposing directions across U.S. cities?

In this paper, I document the extent of socioeconomic improvements in the 100 largest American cities from 1990 to 2010, drawing on Census and American Community Survey data. I begin by investigating city-level changes and then move to exploring how neighborhoods have changed. I measure cities' and neighborhoods' well-being in terms of population, housing vacancy rates, employment rates, residents' education level, and median household income. In addition to documenting how cities and neighborhoods fared on these dimensions, my analyses consider several major forces that are associated with the well-being of urban areas: industrial and occupational reorganization; racial composition and segregation; migration and immigration; and suburban growth. I begin by briefly describing what we know about the role of these four factors in urban change before discussing the data and methods. Then I present and discuss the results for city- and neighborhood-level change over the period, offering a portrait of urban change in the U.S. from 1990 to 2010.

Industrial and Occupational Reorganization

Over the past 100 years, many cities have undergone substantial economic transformations. Beginning in the 1950s, Midwestern and Northeastern cities experienced a prolonged decline in their manufacturing sectors, which had previously contributed to their growth in the industrial economy, due to economic restructuring, global competition, industrial imports, and job automation (Sugrue 1996). Southern and Western cities typically did not have large manufacturing areas in urban centers, with key industries like military contractors located in more suburban and exurban areas as cities grew due to sprawl (Lloyd 2012). Overall, the relationship between manufacturing and city well-being in recent decades leads to the expectation that *cities with economies that are organized around the manufacturing sector are still not likely to experience improvements*, since this sector may not attract highly-educated or high-income residents.

Over the past several decades, one theory of city growth has been the rise of the creative class (Florida 2002), in the context of the larger move from an industry-based to an information-based economy. The creative class includes "super-creative" workers employed as scientists, engineers, professors, poets and novelists, artists, entertainers, actors, editors, cultural figures, researchers, analysts, and others employed in occupations responsible for creating new things. The creative class also includes creative professionals working in knowledge-based occupations in technology, financial services, legal, and health-care professions. The causal evidence on the role of the creative class in urban growth is mixed (Hoyman and Faricy 2009), but growth in these and other sectors with high requirements for human capital may coincide with, if not cause, socioeconomic urban improvement. Therefore, *cities with large or growing managerial, professional, and/or technical sectors and workers in other information technology occupations may experience socioeconomic improvement*. These jobs attract highly-educated residents looking for well-paying work.

Racial Composition and Segregation

Cities' racial composition has historically been intertwined with their socioeconomic well-being. In the early 20th century, millions of blacks migrated from the South to Rust Belt cities seeking employment opportunities in manufacturing, contributing to cities' population growth (Lemann 1991). Shortly thereafter, in the mid-20th century, manufacturing jobs started to decline around the same time that white residents began migrating to the suburbs, leading to declines in cities' socioeconomic well-being and population (Sugrue 1996). Cities transitioned both demographically, from white to minority population, and economically, from manufacturing to administrative and information centers, leaving urban cores as clusters of minority residents, many of them without the skills to occupy the new employment positions (Kasarda 1985). Given the enduring relationships between race, income, and educational attainment, I anticipate that *cities and neighborhoods with growing white population share and declining minority (Hispanic and black) population share will experience improvements in measures of socioeconomic status.*

It may also be the case that *cities and, particularly, neighborhoods with larger initial white populations and smaller minority populations will experience greater improvements*. Past research shows that white residents, many of whom have high socioeconomic status (SES) and would contribute to a city's socioeconomic revitalization, prefer to live in majority white neighborhoods and avoid minority, particularly black, neighborhoods (Bader and Krysan 2015; Charles 2003). While some research on gentrification indicates that a subset of white residents is attracted to diverse urban areas (Brown-Saracino 2009; Ley 1996), a greater proportion of black and Latino than white renters would consider living in a redeveloped area (Bader 2011), suggesting that many whites still see barriers to moving to minority neighborhoods, even if they are revitalizing

neighborhoods. Past research indicates that neighborhoods with larger black and Hispanic populations experienced lesser neighborhood revitalization during the 1990s and 2000s in Chicago (Hwang and Sampson 2014).

In the past, residential racial segregation in metropolitan areas also contributed to the decline of cities because resources were disproportionately allocated to primarily white suburbs rather than minority inner cities (Massey and Denton 1993; Sugrue 1996; Wilson 1987). Lower or declining racial segregation may bring political and economic resources to more urban neighborhoods, facilitating revitalization. Therefore, I expect that *cities located in less and/or decreasingly racially segregated metropolitan areas will experience greater improvements.* This narrative largely applies to Northeastern and Midwestern cities; Western cities historically had lower levels of segregation and both Southern and Western cities had different economic organization. Segregation has also declined more in the South and West in recent decades than the Midwest or Northeast (Iceland, Sharp, and Timberlake 2013).

Regional Variation, Population Growth, and Immigration

The fastest growing metropolitan areas since the 1980s have been in Southern and Western states (Frey 2012). This population growth is due to both internal migration within the U.S. and immigration. Population is one of the components in the measurement of city socioeconomic well-being that I develop here, so I expect that *more cities in the West and South will experience improvements than in the Northeast or Midwest.* Of course, population growth does not necessarily mean socioeconomic improvements, so this expectation could prove incorrect.

Immigration is a complex factor in urban growth. On one hand, immigration represents population growth. Further, a growing immigrant population may correspond to (but not

necessarily cause) urban socioeconomic improvement because immigrants may move to revitalizing areas to pursue job opportunities in construction or other industries associated with city growth, especially in emerging immigrant destinations (Hall et al. 2011). On the other hand, immigrants often have low SES, so in many cases, they may not contribute to cities' socioeconomic well-being upon migration. During my period of study, the immigrant population grew fastest in the suburbs, rather than the city, so immigration may not contribute to city-level change (Wilson and Svajlenka 2014). At the neighborhood level, Hwang (2015) finds that many neighborhoods revitalized following, but not concurrent with, an influx of immigrants, particularly Asians. Immigrants seem to initially revive urban areas, but continued immigrant growth or the creation of some ethnic enclaves is negatively associated with gentrification. Instead, higher-SES whites may move into neighborhoods first settled by immigrants. Therefore, I expect that *areas with growing foreign-born populations are less likely to revitalize, but areas with higher initial levels of foreign-born residents may experience revitalization.*

Suburbanization

The period I examine, 1990 to 2010, is long after suburbs were established, but suburban growth continued to outpace city growth in the 1990s. During the 2000s, population growth actually slowed more in suburbs than cities, perhaps because the housing boom and bust disproportionately affected suburbs and exurbs (Frey 2012). In some metropolitan areas, city and suburban growth go hand in hand if the entire region is booming. In others, suburban growth can take resources from the central cities, as was the case historically in Midwestern and Northeastern cities when federal subsidies for highways, favorable home loan terms (for whites), an oversupply of housing on the perimeter of developed urban areas, and other federal incentives for

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homeownership led to an exodus of higher-income households from the cities to suburbs (Jackson 1985). A third scenario may be suburbs becoming poorer around booming cities. In recent decades, suburbs have become poorer and populated by a greater share of minority residents (Hanlon 2009). Since 2000, suburban communities experienced the greatest increases in poverty concentration, particularly in Southern and Western metropolitan areas, mainly due to the impacts of the Great Recession (Kneebone 2014). However, the growth of suburban poverty is mainly due to residents' transition into poverty rather than poor residents moving to the suburbs, so there is little support for the hypothesis that poor residents are being displaced from booming cities to suburbs. Overall, then, hypotheses about urban compared to suburban socioeconomic improvement are mixed or unclear.

Overview of Analyses

To track urban revitalization, I develop a measure of city well-being and document the changes from 1990 to 2010. Next, I consider how industrial and occupational changes, racial composition and racial segregation, and immigration and regional patterns map onto city change. My analyses do not attempt to identify a causal model of urban change; rather, I show what demographic and economic changes coincide with urban revitalization. I then turn to neighborhood-level analyses, considering whether neighborhoods in cities and suburbs follow similar or different paths and identifying how neighborhoods' racial/ethnic and immigrant populations are associated with neighborhood-level changes in well-being.

Data

Data on cities' economic and demographic characteristics are drawn from the Decennial Census and American Community Survey (ACS). To obtain data at the city level, I accessed place-level data from Social Explorer in 1990, 2000, and 2008-12 (the five year ACS aggregate estimates; I refer to these data as 2010, the midpoint year). Places are defined by administrative boundaries and reported to the Census Bureau as legally in existence under the laws of their respective state. Places are typically cities, towns, villages, or boroughs. I focus on the 100 most populous cities as of 2010 (see Appendix Table 1 for full list). Place boundaries may change over time, and these data use the administrative boundaries in place at the time of data collection. Therefore, changes in cities' characteristics could be due to boundary changes, but given that cities are governmental or administrative units, understanding the area and population they encompass at each point in time is important, and I thus do not develop consistent city boundaries over time.

I also examine metropolitan areas and neighborhoods during this time period. Metropolitan areas are based on the 2003 Office of Management and Budget definitions of Metropolitan Statistical Areas (MSAs) and divisions, and I link the 100 largest cities to the MSA or division within which they are located. I use census tracts as my definition of neighborhoods, and I link tracts to cities using the GeoCorr crosswalk (Missouri Census Data Center 2012), which indicates what proportion of the tract, based on population, lies within city boundaries. Some tracts were perfectly circumscribed within city boundaries, so 100% of each tract lay within the city. Other tracts were bisected by city limits. However, of tracts that were at least partially in one of the 100 largest cities, 87% were entirely within the boundaries, and in most cities, only a few tracts were bisected by the city boundaries. I counted a tract as being in the city if at least 90% of the population resided in tracts within city boundaries. Data on MSAs and neighborhood characteristics are also drawn from the 1990 and 2000 Decennial Census and the 2008-12 ACS. I accessed Census and

ACS data from the Longitudinal Tract Database (LTDB) to normalize neighborhood boundaries to those drawn in 2010 for comparison over time (Logan, Xu, and Stults 2012).

City Changes, 1990 to 2010

City Vitality Scores

To identify city trajectories, I created a City Vitality Score (CVS) in 1990, 2000, and 2010. CVS were created by conducting factor analysis on key measures of cities' social and economic well-being: median household income, total population, housing vacancy rate, proportion of residents over age 25 with at least a BA, and employment rate (the proportion of all residents over age 16 (including those not in the labor force) that are employed). These five variables loaded onto one principal factor, indicating that they capture a single underlying dimension of city socioeconomic well-being, with median household income, employment rate, and population share with at least a BA loading highest in each year (see Appendix Table 2). In 2010, vacancy rate also loaded highly onto the factor, reflecting the serious consequences of the housing crisis in shaping cities' well-being—vacancy rates were a strong indicator of city well-being. Population loaded negatively onto the factor, suggesting that larger cities were not uniformly places with higher SES.

In 2010, the five cities with the highest CVS were Irvine, CA, Plano, TX, Fremont, CA, Seattle, WA, and Madison, WI. The five cities with the lowest CVS were Detroit, MI, Cleveland, OH, Newark, NJ, Birmingham, AL, and Miami, FL. Table 1 presents the CVS component characteristics for each of the top and bottom five cities. Drastic differences emerge on median household income, employment rate, vacancy rate, and residents' educational attainment. Comparing Irvine and Detroit, the median household income is over three times higher,

employment is over 1.5 times higher, the proportion of residents with a BA is over five times higher, and the vacancy rate is a quarter as large in Irvine.

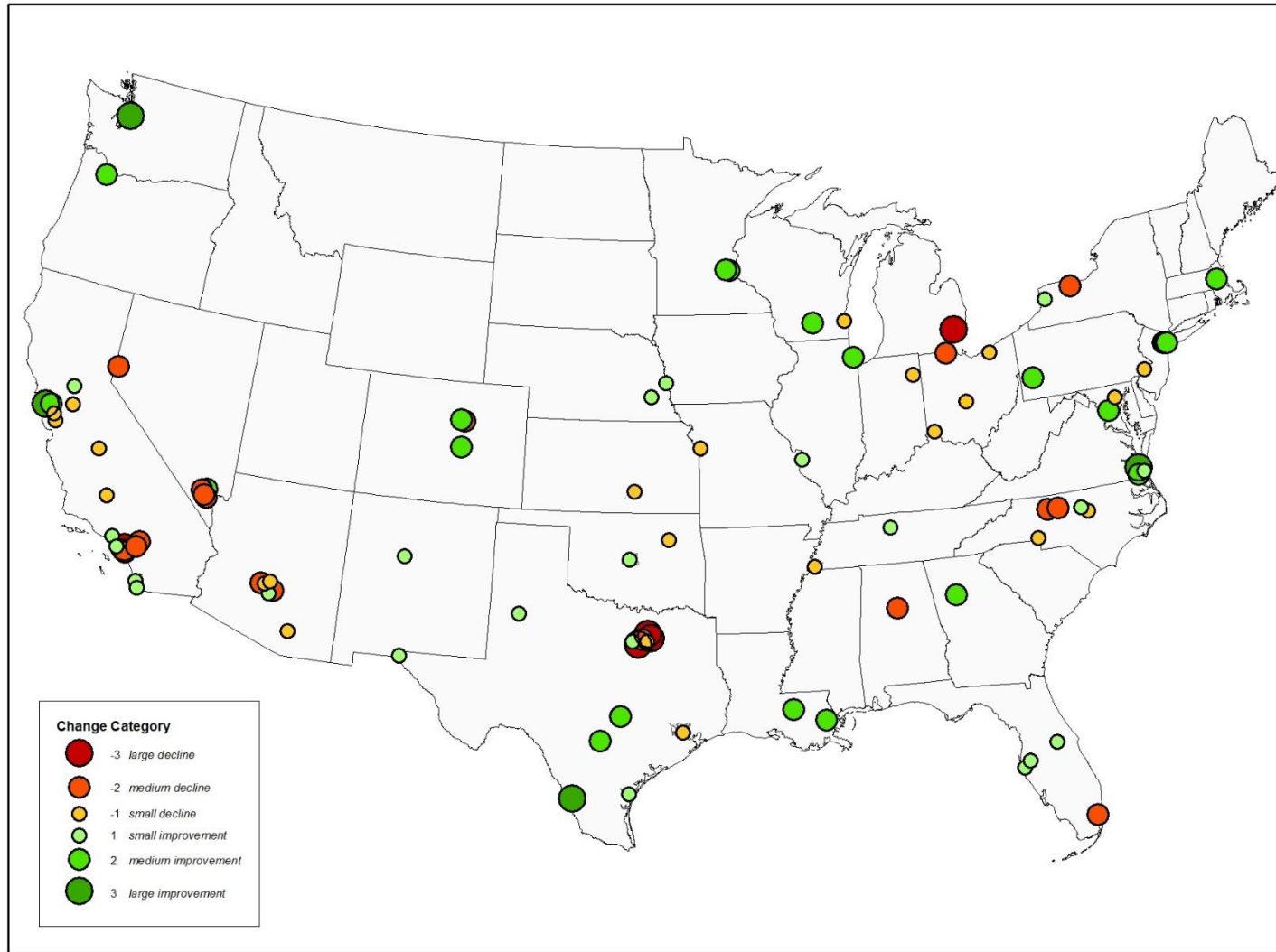**Table 1. City Vitality Score Components, Top and Bottom 5 Cities in 2010**

	Population	Median Household Income	Employment Rate	% of Residents over 25 with BA (or higher)	Housing Vacancy Rate
Top 5 CVS					
Irvine	213,880	$92,663	.615	.657	.060
Plano	263,122	$83,193	.680	.540	.055
Fremont	215,188	$99,169	.615	.495	.067
Seattle	612,916	$63,470	.677	.565	.069
Madison	234,586	$53,958	.687	.533	.057
Bottom 5 CVS					
Detroit	721,459	$26,955	.390	.123	.287
Cleveland	397,972	$26,556	.478	.140	.217
Newark	276,478	$34,387	.511	.125	.161
Birmingham	213,180	$31,467	.514	.215	.199
Miami	401,927	$29,762	.531	.230	.195

In each year, the mean CVS is 0. Changes in scores from year to year thus indicate whether the city has improved or declined in terms of its relative position to the mean city. The scores thus account for overall improvements in the U.S., indexing cities that are doing better or worse than the national trend. From 1990 to 2010, 52 cities experienced declining scores and 48 improved. The five cities with the greatest improvement were Norfolk, VA, Laredo, TX, Louisville, KY, San Francisco, CA, and Seattle, WA. Norfolk, Laredo, and Louisville were extremely disadvantaged in 1990—with the 3rd, 4th, and 12th lowest CVS, respectively. San Francisco and Seattle were fairly advantaged in 1990—ranked 18th and 19th highest of 100 cities. The five cities with the greatest decline were Detroit, MI, Garland, TX, Anaheim, CA, Arlington, TX, and, misleadingly, Plano, TX. Detroit was the most disadvantaged city in the U.S. in 1990 and also experienced the largest decline from 1990 to 2010. Garland, Anaheim, Arlington, and Plano were extremely advantaged— all top 10 cities in 1990—but these cities have become closer to the average city over time. Plano

remains very advantaged—the 2nd highest CVS score in 2010, while Garland, Anaheim, and Arlington have declined more substantially, though they remain in the top 35 cities in 2010. Cities' CVS tended to be fairly highly correlated over time (1990 to 2010 CVS are correlated at over .6). Figure 1 maps the location of positive and negative CVS changes from 1990 to 2010. Red circles correspond to cities with CVS declines; green circles correspond to cities with CVS increases. Circle size indexes the magnitude of CVS changes. Clusters of decline can be spotted in Sunbelt cities in the Las Vegas and Phoenix areas, places particularly hard hit by the Great Recession. The map also depicts clusters of cities, often in the same metropolitan areas, where one city has done well while others decline, perhaps indicating regional migration in population or a shift in economic resources. For example, in Texas, Fort Worth improved while Plano, Garland, Dallas, and Arlington (all in the larger Dallas-Fort Worth-Arlington metropolitan area) declined. Fort Worth was the fastest-growing large city in the U.S. in the first half of the 2000s, benefitting from new advances in drilling natural gas reserves. Appendix Table 1 presents the CVS in each year for the 100 largest cities.

In the following sections, I report how key factors—industrial and occupational composition; racial composition and segregation; and regional variation and immigration—correspond to cities' trajectories.

Figure 1. City Vitality Score Changes, 1990 to 2010

Change Category

- -3 large decline
- -2 medium decline
- -1 small decline
- 1 small improvement
- 2 medium improvement
- 3 large improvement

Changes in Industrial and Occupational Composition

What does the economy look like in changing cities? The Census categorizes both the occupation type and industry of residents, though not all categories are consistent from 1990 to 2010. I examine two occupation types of interest: the proportion of residents employed in managerial, professional, and technical (MPT) jobs, indexing some "creative class" occupations; and the proportion of residents employed in service jobs (consistent categories only available from 2000 to 2010).[1] Table 2 presents results from regression analyses predicting CVS changes in the 1990s and 2000s from the initial share and change over time of MPT and service workers.[2]

As Table 2 indicates, in both the 1990s and 2000s, cities that experienced a greater growth in the proportion of MPT workers experienced greater improvement. The table presents standardized coefficients, so a one standard deviation increase (about 2.5 percentage points) in MPT share corresponds to a 25 to 50% standard deviation increase in city vitality score, depending on the decade. Cities with a larger share of MPT workers to start with also experienced greater CVS increases. In the 2000s, growing employment in the service sector was negatively associated with city vitality scores: cities with greater and increasing share of service

> **Washington, DC,** has experienced revitalization, particularly in the 2000s, alongside economic transformation. The proportion of residents employed in MPT jobs rose from 39% in 1990 to 51% in 2000 to 59% in 2010, far outpacing the average increase of 8 percentage points. The proportion of service workers has stayed steady at about 9%. Washington's small manufacturing sector shrunk during this time. Washington also underwent racial transition: the African American population share shrunk by 15 points while the white population share increased by 7 points.

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[1] In 1990, MPT includes residents employed in, "managerial and professional specialty occupations." It excludes the category "technical, sales, and administrative support occupations" because this encompasses a broad range of occupations and the majority of residents; in 2000 and 2010, MPT includes residents employed in: "management, business, and financial operations occupations" and "professional and related occupations."
In 2000 and 2010, service occupations are defined as "healthcare support occupations," "food preparation and serving related occupations," and "personal care and service occupations."
[2] I control for cities' initial CVS to account for the fact that cities with higher CVS generally improve less and initial CVS is associated with many economic and demographic characteristics.

workers experienced declines in CVS. Service workers may have lower education than workers in other industries and residents' education is one component of CVS.

Table 2. City Occupational Composition predicting Change in CVS, 1990 to 2010

	1990 to 2000	2000 to 2010	
Initial CVS	-.585***	-.530***	-.432***
Initial % MPT	.348**	.428**	
Change in % MPT	.451***	.258***	
Initial % Service			-.308**
Change % Service			-.484***

All coefficients are standardized. Two-tailed significance tests: ^p≤0.1; *p≤0.05; **p≤0.01; ***p≤0.001

I then investigated the role of three industries in cities' trajectories: manufacturing; finance, insurance, and real estate (FIRE); and construction. Results from models predicting CVS changes in the 1990s and 2000s from initial industrial composition as well as changes over time are presented in Table 3. In the 1990s, growth in the manufacturing industry is positively associated with city improvements. All but two cities experienced declines in the manufacturing sector during this time, so this result indicates that places where the manufacturing sector declined less saw smaller declines in city vitality. In other words, cities did better if their manufacturing sector did not entirely collapse. From 2000 to 2010, the change in manufacturing is not associated with CVS change. The predominance of the FIRE industries is not strongly associated with cities' trajectories, though some cities with increasing shares of FIRE employment experienced greater improvement in the 1990s. Cities with a higher proportion of residents initially employed in construction experienced declines in CVS, but cities where the construction industry grew experienced greater increases in the 1990s, likely because more building is occurring in these revitalizing places, necessitating a larger construction sector.

Table 3. City Industrial Composition predicting Change in CVS, 1990 to 2010

	1990 to 2000			2000 to 2010		
Initial CVS	-.180^	-.201^	-.176^	-.169^	-.211^	-.198*
Initial % Manufacturing	-.054			-.290		
Change % Manufacturing	0.292*			-.004		
Initial % FIRE		.140			-.023	
Change in % FIRE		.192^			.049	
Initial % Construction			-.298**			-.120
Change % Construction			.187*			.114

All coefficients are standardized. Two-tailed significance tests: ^$p \leq 0.1$; *$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$

Racial Composition and Segregation

How are racial composition and racial segregation associated with city revitalization or decline? I hypothesized that growing minority populations would be negatively associated with improvements in city's socioeconomic well-being. Table 4 presents results from regression analyses predicting CVS changes in the 1990s, 2000s, and from 1990 to 2010 overall from the change in the black population share and the change in the Hispanic population share. In each time period, cities where the minority population increased experienced worsening CVS.[3] Table 4 presents standardized coefficients, so the negative coefficients in the model for 1990 to 2010 indicate that for every one standard deviation increase in proportion black (about 5 percentage points) or proportion Hispanic (about 6 percentage points), the CVS declines by nearly one-half standard deviation.

Table 4. City Racial Composition Predicting Change in CVS, 1990 to 2010

	1990 to 2000	2000 to 2010	1990 to 2010
Initial CVS	-.141	-.082	-.159*
Change in % Black	-.178^	-.477***	-.440***
Change in % Hispanic	-.339***	-.231**	-.440***

All coefficients are standardized. Two-tailed significance tests: ^$p \leq 0.1$; *$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$

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[3] I do not include proportion white in the model due to collinearity with proportion black and Hispanic.

Jersey City, NJ, revitalized following the redevelopment of the industrial waterfront in the 1980s. Jersey City experienced the third highest CVS improvement from 2000 to 2010, moving from a rank of 57 to 25 of top 100 cities. Jersey City exemplifies how racial composition is associated with city transformation. Jersey City's population was comprised of a larger proportion of Hispanic (28%) and a smaller proportion of white residents (24%) than average in 2000, and it lost more black and Hispanic population share than the average large city in the 2000s (the average city *gained* Hispanic population share during this time). Jersey City also retained more white residents than the average large city in the 2000s (a 2 compared to 6 point loss). Black-white and multiracial segregation in Jersey City declined slightly less than the average among large cities. Jersey City remains a remarkably diverse city, but its revitalization has been accompanied by a shoring up of the white population share and a decline in the minority population share, more than the average large city.

Cities' initial racial composition predicted CVS trajectories in some cases, but it did so in different ways in the 1990s and 2000s (analyses not shown). Initial black population share was not significantly associated with future CVS trajectory. Cities with larger white and smaller Hispanic population share in 1990 experienced greater improvements in the 1990s. In contrast, cities experienced more improvement in the 2000s if they initially had smaller white and larger Hispanic population shares in 2000. Even though cities with greater Hispanic populations experienced greater improvements in the 2000s, Hispanic population increases were not associated with city improvement, as Table 4 shows. Due to these contrasting results, the racial composition of the city in 1990 did not predict overall CVS change from 1990 to 2010.

Analyses of the role of metropolitan area racial segregation in cities' trajectories also indicate differences in the 1990s and 2000s. I hypothesized that racial segregation was negatively associated with cities' well-being. I measure racial segregation in two ways. First, the black-white dissimilarity index is a common measure of how evenly black and white residents are distributed across neighborhoods, and it can be interpreted as indicated the proportion of black residents that would need to move to achieve an even distribution. Second, the multiracial

information theory index, *H,* compares the composition of white, black, Hispanic, and Asian residents in neighborhoods to the composition of the entire metropolitan area. I measure racial segregation between neighborhoods within metropolitan areas to capture the wider context within which the city exists, as segregation between cities and suburbs is often high.[4]

Table 5. Metropolitan Area Racial Segregation Predicting Change in CVS, 1990 to 2010

	1990 to 2000		2000 to 2010		1990 to 2010	
Initial CVS	-.178^	-.076	-.216*	-.329**	-.125*	-.278*
Change in Black-White Dissimilarity	-.197*		.166^		-.151	
Change in Multiracial Segregation		-.232*		.339***		.056

All coefficients are standardized. Two-tailed significance tests: ^p≤0.1; *p≤0.05; **p≤0.01; ***p≤0.001

Table 5 indicates that, in the 1990s, increases in both black-white and multiracial segregation led to declines in city well-being. However, in the 2000s, increasing segregation was associated with CVS improvements, contrary to my hypothesis. This is particularly true for changes in multiracial segregation, indicating that Asian or Hispanic enclaves may be located in improving cities. Metropolitan areas' initial levels of both black-white and multiracial segregation at the start of each decade did not predict changes in CVS (analyses not shown).

Overall, these results indicate that racial transition from minority to white may occur alongside city revitalization. Since 2000, cities with larger Hispanic populations have experienced more revitalization, but city improvement has not corresponded with growth in the Hispanic or black population shares. Black and Hispanic urban residents, then, may not experience the benefits of city revitalization. Of the 48 cities that experienced CVS improvements from 1990 to 2010, 20 experienced increases in the black population share. Baton Rouge, Minneapolis, St. Paul, Madison, and Norfolk experienced the greatest improvement

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[4] I also considered metropolitan area rather than city racial composition in the previous set of analyses; results are substantively identical to those presented in Table 2.

alongside substantial increases in the black population share. The growth of the black population in Minneapolis and St. Paul occurred in the 1990s and is largely due to a growing Somalian immigrant population. Somewhat troubling, in the 2000s, cities located in metropolitan areas that became more racially segregated experienced greater CVS improvements. In some of these cities, racial segregation between cities and suburbs may be increasing, relegating lower-income minorities to poorer inner-ring suburbs. For example, St.

> **Oakland, CA,** illustrates city revitalization alongside substantial racial transition. Oakland's CVS ranking improved from 1990 to 2010 following concerted downtown housing and commercial development efforts in the 1990s. In both the 1990s and 2000s, Oakland experienced considerable decline in the black population share (15 percentage points overall, much greater than the average among large cities), though it experienced an increase in the Hispanic population share (11 points, slightly above average among large cities). Oakland's white population was relatively stable—a decline from 1990 to 2010 of only 2 points compared to the average decline of 15 points. In the 2000s, the share of white residents in Oakland actually increased by about 2 points. Black-white segregation in Oakland's metropolitan area declined more than the average from 1990 to 2010, perhaps as whites moved into the city.

Louis, notoriously surrounded by poor inner-ring cities and towns like Ferguson and East St. Louis, experienced considerable CVS improvement from 2000 to 2010 alongside smaller declines in black-white segregation than the average among large cities.

Regional Differences, Population, and Immigration

How does metropolitan area population shape cities' trajectories? City population is a component of the CVS, but I investigated whether the initial size of the metropolitan area shapes city trajectories to get a sense of the larger regional context of city change. Analyses (not shown) indicate that initial metropolitan area population matters, but the relationship changed over time. From 1990 to 2000, cities located in metropolitan areas with larger populations declined, while

from 2000 to 2010, cities located in metropolitan areas with larger populations experienced improvements.

One particular type of population change is the growth of the immigrant population. I hypothesized that cities with higher initial levels of foreign-born population may experience revitalization while areas with growing foreign-born population shares may not experience improvement. I find that the role of immigration in cities' trajectories changed over time. As Table 6 indicates, cities with larger foreign-born populations in 1990 experienced declines in the 1990s, while cities with larger foreign-born populations in 2000 experienced improvements in the 2000s. Changes in the immigrant population was not strongly associated with CVS trajectory.

Table 6. City Foreign-Born Composition and Change in CVS, 1990 to 2010

	1990 to 2000		2000 to 2010		1990 to 2010	
Initial CVS	-.225*	-.266*	-.169^	-.150	-.114	-.177
Initial % Foreign-born	-.433***		0.263**		-.037	
Change in % Foreign-born	.116	.314*	-.167	-.178^	-.237^	-.009
Change in % Hispanic		-.428***		-.265**		-.401***

All coefficients are standardized. Two-tailed significance tests: ^$p \leq 0.1$; *$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$

Since Mexicans comprised the largest immigrant group in 1990, 2000, and 2010, I controlled for change in Hispanic population to better isolate the role of foreign-born residents in urban change. As Table 6 indicates in the second column for each decade, change in the foreign-born population share is positively associated with CVS in the 1990s but negatively associated with cities' trajectories in the 2000s, among places with similar changes in the Hispanic population. In the 2000s, cities with the fastest growing immigrant population included places in Arizona, Florida, and Nevada, where the economic recession and housing crisis had some of its strongest effects, perhaps accounting for this negative association.

Metropolitan areas' history, population, and demographics vary considerably by region. From 1990 to 2000, cities located in the Midwest experienced the largest CVS improvements. Fortunes changed in the 2000s, with Midwestern cities faring worst and Northeastern cities experienced the greatest improvements. Zooming in to finer-grained definitions of region, cities in West North Central states (Omaha, St. Louis, Kansas City, Lincoln, Wichita, St. Paul, Minneapolis) experienced the greatest average improvements from 1990 to 2000, as Table 7 indicates. In the 2000s, Mid-Atlantic cities fared best (New England had the greatest improvement, but there is only one city in the sample, Boston). Improvements in the Mid-Atlantic region were driven primarily by large improvements in Jersey City, New York City, and Pittsburgh—Rochester declined, and Philadelphia, Buffalo, and Newark experienced smaller improvements. Because the sample is limited to the 100 largest cities, some of the newly booming areas of the West are not included. Considering the proportion of cities that improved, rather than the mean change, in the 2000s, over 75% of cities in the Mid Atlantic and Pacific regions (of the 100 largest cities) improved, compared to 20% or fewer in the East North Central, East South Central, and Mountain regions.

> **Denver, CO,** is an advantaged Western city (CVS was 19th highest in 2010) that experienced improvements as it became a re-emerging immigrant destination. High immigration in the early 20th century waned but then resurged. Denver had a comparatively small immigrant population share in 1990, considerable growth in the immigrant population in the 1990s, and a stable but above average immigrant population in the 2000s. Mexican immigrants are the predominant group. Poverty rates are higher among foreign-born than native-born residents, so it is not the case that immigrant populations spur revitalization because they represent improving residential SES or a growing tax or consumer base. Instead, immigrants may have flocked to Denver in the 1990s for jobs as the city undertook a development plan to rebuild downtown and transit.

Table 7. Mean Change in CVS by Region

	1990 to 2000	2000 to 2010	1990 to 2010
New England	.108	.393	.502
Mid Atlantic	-.177	.305	.129
East North Central	.171	-.393	-.222
West North Central	.207	.054	.261
South Atlantic	.015	.047	.062
East South Central	.123	-.006	.117
West South Central	.012	.019	.031
Mountain	.057	-.232	.175
Pacific	-.189	.162	-.027

Neighborhood Change in Declining and Improving Cities, 1990 to 2010

City-level changes are not equally borne across all neighborhoods within cities and are not necessarily consistent with changes in the city's larger metropolitan area. How have neighborhoods fared in declining and improving cities, and what neighborhood demographic characteristics are associated with change? I created Neighborhood Vitality Scores (NVS) in 1990, 2000, and 2010 using Census and ACS data following the same procedure as for cities' CVS scores. I performed factor analysis of neighborhoods' population, vacancy rates, proportion of residents with at least a college education, median household income, and proportion of employed residents, which all loaded onto one factor. Then I created an NVS for every tract based on regression loadings on the factor. The NVS is normed with a mean of 0 and a standard deviation of 1 in each year. I consider increases in NVS over time to indicate neighborhood improvement and decreases to indicate decline.[5]

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[5] The NVS, like the CVS, is normed within each year, so the change is relative to the national level of neighborhood well-being in each year, indicating how much higher or lower the neighborhood is compared to the national mean. I also percentile-ranked neighborhoods within metropolitan areas from 1 to 100 based on their NVS and measured improvement/decline based on an increase or decrease within the metropolitan area as a robustness check; the two change scores are significantly correlated at over .85.

Suburban and City Growth

First, I examined the rate of neighborhood decline and improvement, based on change in NVS score, among neighborhoods in the metropolitan areas surrounding the 100 largest cities, comparing rates of change within the city and within the entire metropolitan area.

Table 8. Neighborhood Improvement in Cities and Surrounding Areas by City Trajectory, 1990 to 2010

	In City	In Surrounding Metro Area
Improving Cities	.569	.498
Declining Cities	.321	.363

Table 8 shows the percent of neighborhoods where the NVS increased from 1990 to 2010 among neighborhoods within city limits and among all other neighborhoods in the surrounding metropolitan area among improving and declining cities. For declining cities, a smaller proportion of city neighborhoods than non-city neighborhoods experienced NVS increases, indicating that city decline may occur amidst suburban improvement and unequal resource sharing within the metropolitan areas. Among improving cities, a greater proportion of city tracts improved than tracts in the larger metropolitan area, suggesting that improving cities may revitalize despite changes in their larger region (and perhaps cities can spur future revitalization in the surrounding metropolitan area).

Neighborhood Racial Composition in Improving and Declining Cities

The city-level results suggest that cities with growing black and Hispanic population shares experienced declines. Is this also the case at the neighborhood level, and does this relationship vary according to whether cities are improving or declining? Table 9 presents results from models

predicting the 1990 to 2010 NVS change from the initial 1990 NVS, the change in neighborhood proportion black and Hispanic from 1990 to 2010, and the initial black and Hispanic population share in 1990. (Results are substantively identical examining each decade separately and considering initial and change in neighborhood racial composition in the same model.)

Table 9. Neighborhood Racial Composition and Change in NVS Score, 1990 to 2010

	Declining Cities		Improving Cities	
NVS 1990	-.164***	-.225***	-.163***	-.214***
	(.006)	(.008)	(.005)	(.008)
Change in % Black	-1.168***		-1.127***	
	(.038)		(.037)	
Change in % Hispanic	-1.178***		-1.398***	
	(.039)		(.036)	
% Black, 1990		-.266***		-.204***
		(.024)		(.021)
% Hispanic, 1990		.099**		-.068**
		(.036)		(.026)

First, Table 9 shows that in both declining and improving cities (based on changes in CVS from 1990 to 2010), neighborhoods with growing black and Hispanic population shares experienced declines in well-being. This suggests that neighborhood racial stratification in the U.S. is not decreasing and that black and Hispanic residents may not be enjoying the benefits of urban revitalization. A 10 percentage point increase in black or Hispanic share corresponds to about 1/10 of a standard deviation decline in neighborhood vitality. Black or Hispanic population share can change because these groups become more or less populous and/or because the total population of the neighborhood changes around them. One concern with neighborhood revitalization is that black and Hispanic residents are being displaced. Looking at the total population, rather than population share, of these groups, I find that the Hispanic population declined in 20% of improving neighborhoods and 10% of declining neighborhoods. The black population declined in about 40% of improving neighborhoods and 29% of declining neighborhoods. Therefore, in the majority of

improving neighborhoods, the total black and Hispanic population did not decline; their population share declined as other residents moved in. However, the black and Hispanic populations did decrease in a greater number of improving than declining neighborhoods. Tract-level Census data does not track individual families so conclusions about the displacement of particular households are not possible. It may also be the case that low-income minority residents are leaving improving neighborhoods and higher-income minority residents are moving in, masking displacement within the total black and Hispanic population.

Zooming in on individual cities illustrates the relationship between neighborhood-level racial composition and NVS changes. As described above, Oakland, CA, experienced improvements at the city level while the black population share declined. Mapping Oakland neighborhood improvement confirms the racial composition findings in Table 9 for neighborhoods in improving cities. Figure 2 presents a map of the tracts in Oakland, with neighborhoods experiencing declines in the black population shaded deeper shades of blue according to the degree of black population decline. The orange areas indicate neighborhoods where the black population share increased. A star indicates a neighborhood where the NVS increased from 1990 to 2010. As the map illustrates, in Oakland, the majority of neighborhoods have experienced declines in the black population (shaded blue), and nearly all neighborhoods with the largest declines in black population (deepest blue) experienced improvements. Four of 11 neighborhoods with increasing black populations experienced improvements; these are surrounded by neighborhoods where the black population declined.

Figure 2. Changes in Share of Black Residents and Neighborhood Vitality Scores in Oakland, CA, 1990 to 2010
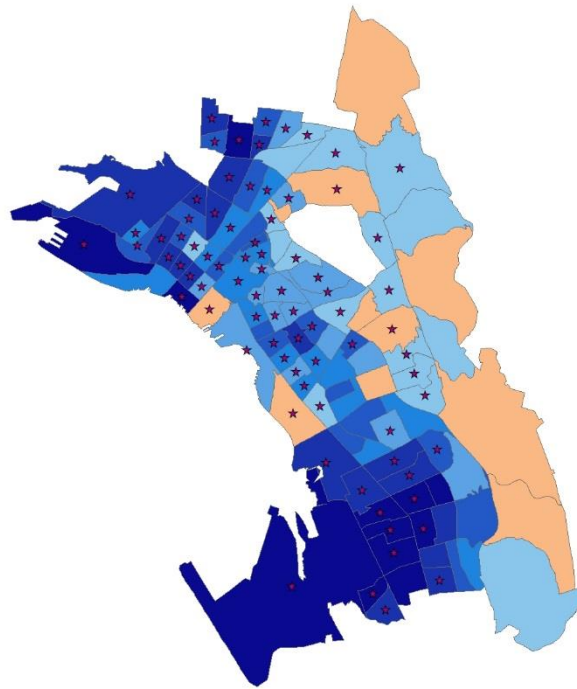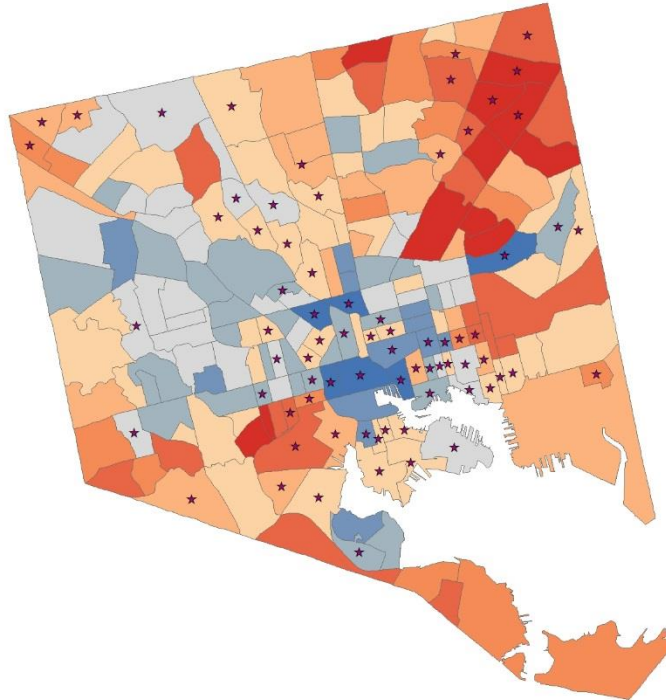

Notes: Deeper shades of orange/red indicate greater increases in proportion black. Deeper shades of blue indicate greater declines in proportion black. Delineation of degree of increase or decline is defined by the range in Oakland. Stars identify neighborhoods where Neighborhood Vitality Scores increased from 1990 to 2010

Results are similar in declining cities. At the city level, Baltimore declined modestly from 1990 to 2010, with a large decline in the 1990s and a smaller improvement in the 2000s. Analyzing only Baltimore tracts produces the same regression results as in Table 9 for declining cities: neighborhoods where the black population increased experienced smaller improvements. Figure 3 illustrates this point—many improving neighborhoods, marked with stars, experienced declining black population shares (shaded blue). There is some neighborhood improvement in neighborhoods where the black population share increased, especially around the downtown/Inner Harbor areas, which are geographically proximate to areas losing minority population. Of course, the regression does not represent a one-to-one relationship between racial composition and

neighborhood improvement. A section of northeast Baltimore experienced improvement and an increasing black population share.

Figure 3. Changes in Share of Black Residents and Neighborhood Vitality Scores in Baltimore, MD, 1990 to 2010
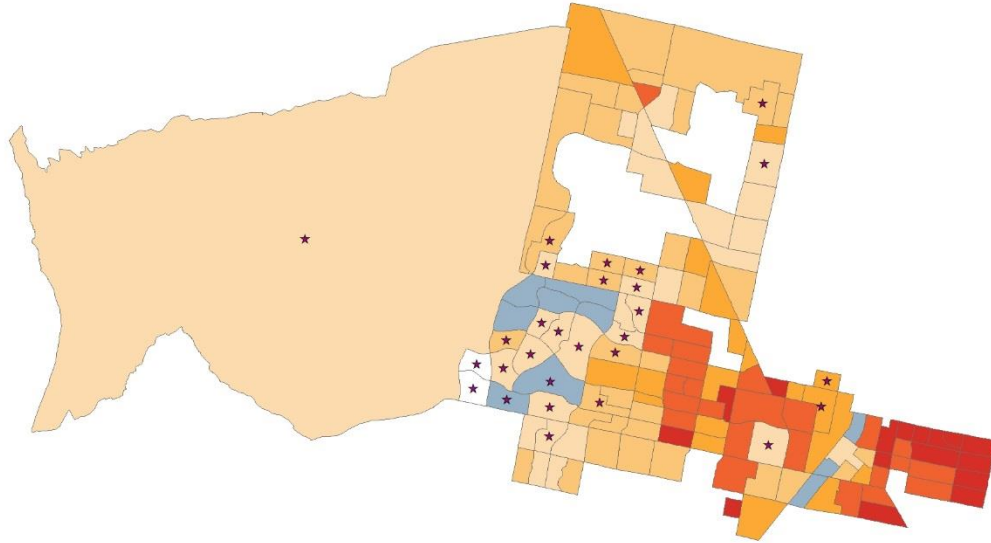

Notes: Deeper shades of orange/red indicate greater increases in proportion black. Deeper shades of blue indicate greater declines in proportion black. Delineation of degree of increase or decline is defined by the range in Baltimore. Stars identify neighborhoods where Neighborhood Vitality Scores increased from 1990 to 2010.

Las Vegas experienced substantial CVS decline, the 10th largest, from 1990 to 2010. The Hispanic population increased in nearly all its neighborhoods during this time. While Las Vegas experienced city-level decline, some neighborhoods within Las Vegas improved, as Figure 4 indicates. These neighborhoods generally experienced the smallest increases in the proportion of residents who are Hispanic (shaded the lightest shades of orange/red). Improving neighborhoods are also geographically clustered in large part around areas where the Hispanic population declined. Again, the relationship varies—some neighborhoods losing Hispanic population (shaded

blue) did not experience NVS improvements. Las Vegas was hit particularly hard by the Great

Recession, and some of these neighborhoods include developing areas.

Figure 4. Changes in Share of Hispanic Residents and Neighborhood Vitality Scores in Las Vegas, NV, 1990 to 2010
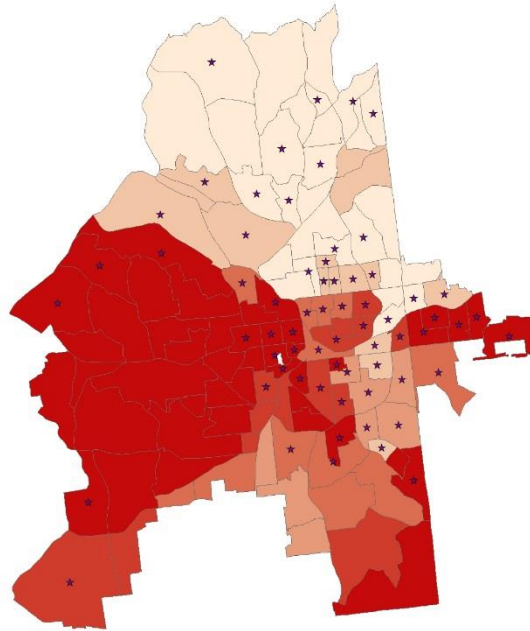

Notes: Deeper shades of orange/red indicate greater increases in proportion Hispanic. Deeper shades of blue indicate greater declines in proportion Hispanic. Delineation of degree of increase or decline is defined by the range in Las Vegas. Stars identify neighborhoods where Neighborhood Vitality Scores increased.

I also analyzed neighborhoods' initial racial composition, rather than changes, as presented in Table 9. In both declining and improving cities, neighborhood minority composition is generally inversely related to change in NVS. Neighborhoods with a greater initial black population experienced declines in their vitality scores. Results for initial Hispanic composition are more ambiguous, with a positive association with change in NVS in declining cities and a negative relationship in improving cities. In models excluding 1990 NVS score, neighborhoods with greater initial black and Hispanic population share improved more, since these neighborhoods have lower initial NVS scores and low-status neighborhoods improved more than higher-status ones.

However, comparing similarly disadvantaged neighborhoods, neighborhoods with more black residents and, in improving cities, Hispanic residents experienced smaller improvements or greater declines in NVS, consistent with past research (Hwang and Sampson 2014). At the city level, initial minority population share was not a robust predictor of city-level change, suggesting that initial neighborhood racial composition plays a greater role in population dynamics and thus neighborhood well-being than city racial composition does for city-level well-being. Residents likely consider racial composition of a neighborhood when deciding where to live, whereas city residential choice may be based on other factors like holding jobs in the region.

Figure 5 maps neighborhoods in Atlanta, GA. Neighborhoods are shaded from lightest to darkest red according to their 1990 black population share. Stars identify neighborhoods that experienced improvements in NVS. Many of the neighborhoods with smaller black population shares (lighter shades of red) improved from 1990 to 2010. Many of the neighborhoods with higher initial black population shares that improved (shaded dark red and containing stars) are adjacent to neighborhoods with fewer black residents. Examining these neighborhoods according to whether or not the black population increased from 1990 to 2010 (analyses not shown) reveals that the improving neighborhoods shaded red on the east side of the city experienced the largest declines in black population share. A large swath of neighborhoods on the city's west side have large and stable black populations and did not improve.

Figure 5. 1990 Black Population Share and 1990 to 2010 Neighborhood Vitality Scores in Atlanta, GA

Notes: Deeper shades of orange/red indicate greater proportion black in 1990. Delineation of degree of increase or decline is defined by the range in Atlanta. Stars identify neighborhoods where Neighborhood Vitality Scores increased from 1990 to 2010

Neighborhood Immigrant Composition and Neighborhood Change

Do neighborhoods with greater and growing shares of foreign-born residents experience different socioeconomic trajectories? Table 10 presents results from regression analyses predicting neighborhood vitality scores from 1990 to 2010 from foreign-born share in 1990 as well as the change in foreign-born share during this time. As in city analyses, I also included a model controlling for proportion Hispanic and change in proportion Hispanic to better isolate the association between immigrant population and neighborhood vitality.

In declining cities, increasing foreign-born population share was initially negatively associated with socioeconomic improvements, but in models that control for change in the Hispanic population, declining cities with increasing foreign-born population share experienced socioeconomic improvements.

Table 10. Neighborhood Foreign-born Composition and Change in NVS Score, 1990 to 2010

	Declining Cities		Improving Cities	
NVS 1990	-.171***	-.178***	-.181***	-.188***
	(.007)	(.007)	(.006)	(.006)
Change, % Foreign-born	-.615***	.646***	-.688***	-.042
	(.065)	(.081)	(.054)	(.055)
% Foreign-born, 1990	.334***	-.110	-.047	-.082*
	(.046)	(.076)	(.032)	(.035)
Change, % Hispanic		-1.403***		-1.268***
		(.054)		(.040)
% Hispanic, 1990		.476***		.020
		(.054)		(.026)

In improving cities, however, change in foreign-born population was not significantly associated with neighborhood vitality score once change in Hispanic population share was controlled and negatively associated without controlling for change in Hispanic population. Turning to initial foreign-born population share, in both improving and declining cities, once initial Hispanic population was controlled, neighborhoods with greater foreign-born population shares experienced smaller NVS improvements. (The relationship is only significant among improving cities). Overall, among improving cities, the growth of immigrant populations is not associated with neighborhood revitalization, while in declining cities, growing immigrant population may coincide with neighborhood improvement.

Seattle experienced widespread improvements from 1990 to 2010. Of its 132 tracts, 110 had higher NVS in 2010 than 1990. However, some neighborhoods experienced greater improvements than others. Seattle demonstrates the finding that in improving cities, neighborhoods with a greater foreign-born share in 1990 did not experience the greatest NVS increases. Figure 6 shows that many of the largest improvements (largest stars) occurred in neighborhoods with lower 1990 foreign-born populations (lighter red). However, some immigrant enclaves did improve substantially, particularly those adjacent to other improving areas. Beacon

Hill, represented by the dark red swath of neighborhoods on the south side of the city, is majority

Asian and includes amenities such as green space, public transportation, and local civic

engagement that attracts higher-income families.

Figure 6. 1990 Foreign-born Population Share and 1990 to 2010 Neighborhood Vitality Scores in Seattle, WA
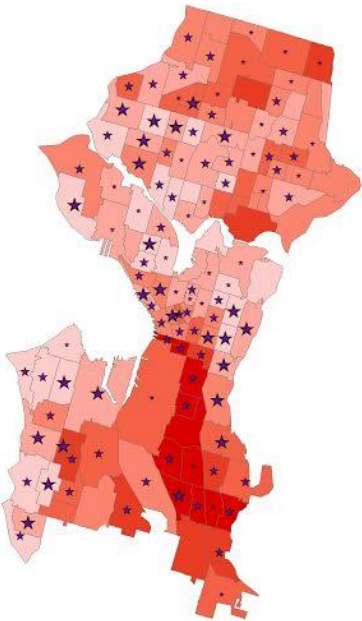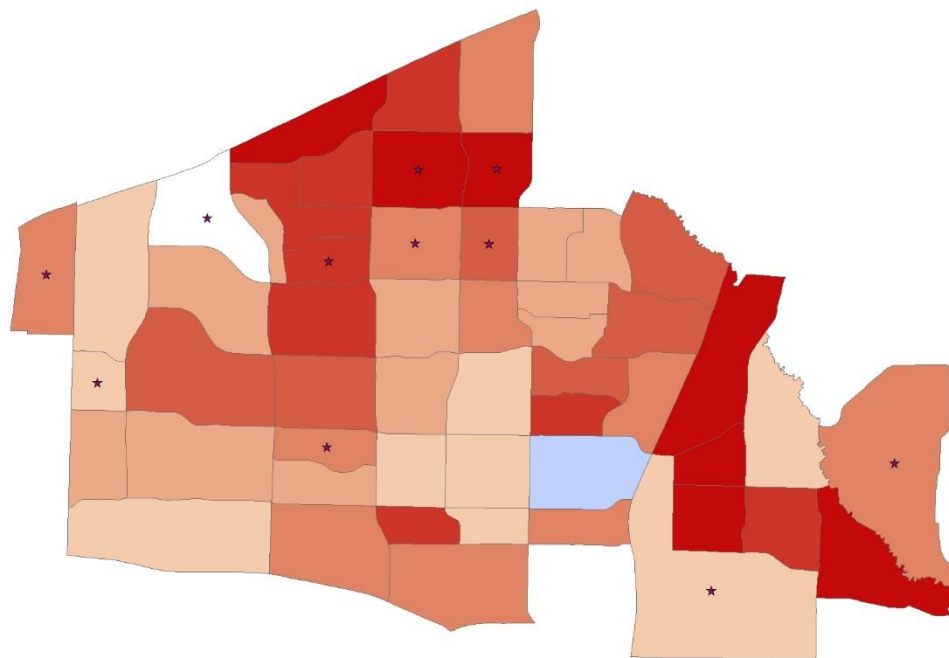

Notes: Deeper shades of orange/red indicate higher foreign-born population share in 1990. Stars identify neighborhoods where Neighborhood Vitality Scores increased; larger stars correspond to greater improvements.

Plano, TX, is an advantaged city: it "declined" from the best CVS ranking to the second

best from 1990 to 2010. Mapping Plano neighborhoods illustrates that within some cities,

particularly declining ones (though obviously Plano is not substantially declining), neighborhoods

with growing foreign-born populations experienced improvement, as the model controlling for

Hispanic population share indicates. Figure 7 shows that the foreign-born population increased in

all tracts except one in Plano from 1990 to 2010. Most of the neighborhoods that experienced NVS

increases had a high increase in the share of foreign-born residents (darker red areas), including a

cluster in the northern part of Plano that is over 40% Asian, according to the 2010 Census. Plano

is home to the 6th largest Chinese population share among large cities, and the Chinese immigrant

population grew in the 1990s and 2000s, illustrating that foreign-born population may be most

strongly linked to neighborhood well-being when the foreign-born group is not Hispanic, as the

models controlling for Hispanic population in Table 10 illustrate.

Figure 7. Changes in Share of Foreign-born Residents and Neighborhood Vitality Scores in Plano, TX, 1990 to 2010

Notes: Deeper shades of orange/red indicate greater increases in proportion foreign-born. Deeper shades of blue indicate greater declines in proportion foreign-born. Delineation of degree of increase or decline is defined by the range in Plano. Stars identify neighborhoods where Neighborhood Vitality Scores increased.

Turning to an improving city, mapping Denver illustrates the complex relationship between

growing foreign-born population share and neighborhood vitality score change. Figure 8 shows

that most neighborhoods improved in Denver—the majority are presented with stars. All but one

neighborhood with declining foreign-born population share (shaded in blue) experienced

increasing neighborhood improvement scores. But the relationship between immigrant population

share change and neighborhood vitality scores is non-significant in improving cities, once Hispanic

population share is taken into account, so the relationship is somewhat ambiguous. As Denver

illustrates, several areas where the foreign-born share grew (shaded orange/red) experienced

improvements, particularly in southwest Denver. Most of these neighborhoods are heavily

Hispanic, though the dark red tract surrounded by blue tracts contains the greatest Asian population

share in Denver. Some neighborhood clusters in the southwest and southeast of the city that

experienced rising immigrant population shares (shaded orange) did not experience improvement.

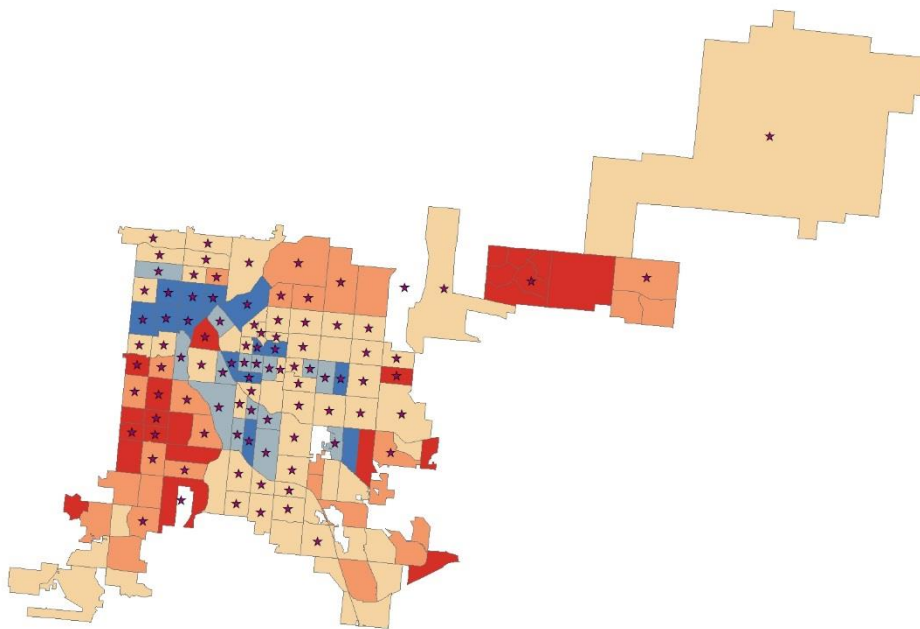**Figure 8. Change in Foreign-born Population Share and Neighborhood Vitality Scores in Denver, CO, 1990 to 2010**

Notes: Deeper shades of red indicate greater increases in proportion foreign-born. Deeper shades of blue indicate greater declines in proportion foreign-born. Delineation of degree of increase or decline is defined by the range in Denver. Stars identify neighborhoods where Neighborhood Vitality Scores increased.

Conclusion: Urban Revitalization in the U.S., 1990 to 2010

Over the past several decades, U.S. cities and urban neighborhoods have experienced a variety of socioeconomic and demographic changes. Many cities and neighborhoods in the U.S. experienced improvements in vitality along the dimensions of population, residents' educational attainment, employment rates, vacancy rates, and median household income. These improvements coincided with changes in the industrial and occupational structure, racial/ethnic composition and segregation, and immigrant population. Changes in cities were not equally borne across neighborhoods and were not always consistent with changes in their metropolitan area.

First, cities' socioeconomic well-being is related to changes in its economic structure. Cities with growth in the managerial, professional, and technical sector experienced socioeconomic improvements, as these places now have a larger population of highly-educated workers. Manufacturing may no longer be a relevant force in city well-being, as the heyday of industrial urban cores is long past. Those cities where the manufacturing sector saw fewer losses experienced greater socioeconomic improvements. Growth in the construction industry, however, does coincide with city improvement, likely because booming cities are building more.

Second, urban revitalization is largely occurring alongside gains in white population share and declines in minority population share, both at the city and neighborhood level. This is consistent with past research, and it suggests continuing racial stratification across place, with minority residents less likely to enjoy urban revitalization and the benefits it may provide. At the neighborhood-level, initial minority population share was inversely related to future neighborhood improvement. Therefore, minority neighborhoods experience a double disadvantage: they may be passed over altogether in the process of urban improvement, and when they do experience improvement, the neighborhood loses minority population share. The

analyses here cannot fully assess displacement, but the absolute size of the minority population declined more frequently in improving than declining neighborhoods.

Third, the relationship between immigrant population and urban change is complex and has changed over time. Cities with large foreign-born population shares experienced lesser improvement in the 1990s, but cities with growing foreign-born population shares did experience improvement, suggesting that old immigrant gateway cities may have declined, but new destinations were booming. In the 2000s, the opposite was true: cities with large immigrant population shares did better, but cities where the immigrant population increased did worse, perhaps because some cities in the West particularly hard hit by the Great Recession experienced considerable immigrant population growth. At the neighborhood-level, the relationship between foreign-born population and neighborhood well-being depends on city-level change. In declining cities, controlling for Hispanic population share, neighborhoods that experienced greater increases in foreign-born population share experienced improvements in neighborhood vitality. Immigrants may be an important revitalizing force in declining cities. In improving cities, the relationship is not significant once Hispanic population is controlled. Immigrant population is a less important driver of change in improving cities.

Finally, I explored the relationship between socioeconomic improvement in neighborhoods inside and outside the city limits. For improving cities, a greater proportion of neighborhoods inside the city limit increased compared to the proportion among neighborhoods in the entire metropolitan area. For declining cities, the opposite was true. Therefore, declining cities may be located in metropolitan areas experiencing improvements (or lesser decline), while improving cities may be drivers of regional growth, doing better than the metropolitan area within which they lay. Examining urban change at both levels of geography illustrates that even

in declining cities, or cities that historically have been disadvantaged, some neighborhood improvement is evident, which may lead to city-level improvement in the coming decades. However, this improvement may not provide benefits to minority and foreign-born residents. Cities may undergo a demographic change from minority to white as they improve. Researchers and policymakers must consider the demographic and economic traits of urban improvement as they consider the role of gentrification, income segregation, population change, and economic inequality in urban well-being.

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Appendix Table 1. City Vitality Scores, 1990 to 2010, 100 Largest Cities as of 2010

City	CVS 1990	CVS 2000	CVS 2010	Change in CVS, 1990 to 2010
ALBUQUERQUE	0.196	0.183	0.260	0.064
ANAHEIM	1.072	0.271	0.378	-0.694
ANCHORAGE	1.278	0.982	1.276	-0.002
ARLINGTON	1.303	1.081	0.554	-0.749
ATLANTA	-0.607	-0.328	-0.191	0.416
AURORA	0.940	0.842	0.395	-0.545
AUSTIN	0.368	1.077	1.115	0.747
BAKERSFIELD	0.226	-0.201	-0.144	-0.370
BALTIMORE	-0.807	-1.296	-0.968	-0.161
BATON ROUGE	-0.620	-0.412	-0.276	0.345
BIRMINGHAM	-1.156	-1.245	-1.528	-0.372
BOSTON	0.168	0.276	0.670	0.502
BUFFALO	-1.350	-1.536	-1.347	0.003
CHANDLER, AZ	1.375	1.520	1.446	0.071
CHARLOTTE	0.875	0.984	0.734	-0.141
CHESAPEAKE	0.488	0.601	0.844	0.356
CHICAGO	-0.529	-0.356	-0.170	0.359
CHULA VISTA	-0.058	-0.011	0.164	0.222
CINCINNATI	-0.719	-0.557	-0.943	-0.225
CLEVELAND	-1.794	-1.529	-2.134	-0.341
COLORADO SPRINGS	0.042	0.697	0.475	0.433
COLUMBUS	0.208	0.405	0.085	-0.123
CORPUS CHRISTI	-0.466	-0.501	-0.360	0.106
DALLAS	0.235	0.028	-0.108	-0.343
DENVER	-0.015	0.510	0.775	0.789
DETROIT	-1.902	-1.497	-3.007	-1.105
DURHAM	0.477	0.681	0.696	0.219
EL PASO	-0.902	-0.926	-0.563	0.339
FORT WAYNE	-0.104	-0.074	-0.278	-0.174
FORT WORTH	-0.216	-0.196	0.110	0.325
FREMONT	2.202	2.246	2.002	-0.199
FRESNO	-0.594	-0.778	-0.720	-0.126
GARLAND	1.346	0.779	0.350	-0.996
GLENDALE	0.372	0.403	-0.285	-0.657
GREENSBORO	0.611	0.447	-0.078	-0.689
HENDERSON, NV	0.825	0.824	0.415	-0.411
HIALEAH	-0.664	-1.359	-1.094	-0.430
HONOLULU	0.743	-0.105	0.305	-0.438
HOUSTON	-0.020	-0.211	-0.114	-0.094
INDIANAPOLIS	0.252	0.211	-0.297	-0.549
IRVINE	2.938	2.348	2.298	-0.640
IRVING	1.110	0.963	0.613	-0.497
JACKSONVILLE	-0.168	-0.057	-0.391	-0.224
JERSEY CITY	-0.161	-0.208	0.599	0.761
KANSAS CITY	-0.065	-0.039	-0.067	-0.002
LAREDO	-1.391	-1.271	-0.586	0.805
LAS VEGAS	0.156	-0.139	-0.431	-0.588

LEXINGTON	0.431	0.607	0.605	0.174
LINCOLN	0.703	0.874	0.886	0.183
LONG BEACH	0.144	-0.283	0.194	0.049
LOS ANGELES	0.157	-0.337	0.180	0.023
LOUISVILLE	-1.016	-0.742	-0.024	0.991
LUBBOCK	-0.229	-0.218	0.084	0.314
MADISON	0.985	1.316	1.510	0.525
MEMPHIS	-0.654	-0.551	-0.967	-0.313
MESA	0.023	-0.243	-0.491	-0.514
MIAMI	-1.388	-1.764	-1.406	-0.019
MILWAUKEE	-0.603	-0.565	-0.679	-0.076
MINNEAPOLIS	0.213	0.802	0.940	0.727
NASHVILLE-DAVIDSON	0.219	0.369	0.323	0.104
NEW ORLEANS	-1.376	-1.089	-1.012	0.364
NEW YORK CITY	-0.286	-0.414	0.124	0.410
NEWARK	-1.334	-1.815	-1.552	-0.218
NORFOLK	-1.500	-1.177	-0.673	0.828
NORTH LAS VEGAS	-0.824	-0.321	-0.392	0.432
OAKLAND	-0.246	0.058	0.198	0.444
OKLAHOMA CITY	-0.256	-0.325	0.019	0.275
OMAHA	0.161	0.485	0.489	0.328
ORLANDO	-0.141	0.150	-0.040	0.101
PARADISE, NV	0.097	-0.160	-0.528	-0.625
PHILADELPHIA	-0.972	-1.225	-1.121	-0.149
PHOENIX	0.140	0.148	-0.210	-0.350
PITTSBURGH	-1.154	-0.967	-0.548	0.607
PLANO	2.952	2.834	2.193	-0.759
PORTLAND	0.028	0.481	0.782	0.754
RALEIGH	1.116	1.239	0.946	-0.169
RENO	0.450	0.192	-0.027	-0.477
RIVERSIDE	0.366	-0.160	-0.215	-0.581
ROCHESTER	-0.601	-0.931	-1.114	-0.513
SACRAMENTO	-0.178	-0.353	-0.120	0.058
SAN ANTONIO	-0.722	-0.354	-0.263	0.458
SAN BERNARDINO	-0.893	-1.408	-1.353	-0.460
SAN DIEGO	0.388	0.459	0.703	0.315
SAN FRANCISCO	0.646	1.307	1.463	0.817
SAN JOSE	1.574	1.634	1.331	-0.243
SANTA ANA	0.435	-0.414	0.007	-0.428
SCOTTSDALE	0.950	0.983	0.781	-0.170
SEATTLE	0.656	1.215	1.707	1.050
ST LOUIS	-1.280	-1.313	-0.986	0.294
ST PAUL	0.125	0.563	0.517	0.392
ST PETERSBURG	-0.789	-0.492	-0.586	0.204
STOCKTON	-0.740	-0.779	-0.851	-0.111
TAMPA	-0.615	-0.356	-0.297	0.317
TOLEDO	-0.747	-0.593	-1.259	-0.512
TUCSON	-0.725	-0.582	-0.803	-0.079
TULSA	-0.041	0.020	-0.160	-0.120
VIRGINIA BEACH	0.414	0.498	0.647	0.233

WASHINGTON	0.302	0.055	0.908	0.606
WICHITA	0.208	0.144	0.114	-0.094
WINSTON-SALEM	-0.070	-0.029	-0.450	-0.380

Appendix Table 2. Factor Loadings for CVS Scores

	1970	1990	2000	2010
Median Income	.634	.817	.796	.759
Population	-.064	-.097	-.083	.006
Proportion with BA+	.535	.653	.731	.723
Vacancy Rate	-.047	-.232	-.490	-.611
Employment Rate	.267	.818	.792	.762