Immigrant Settlement and Employment Suburbanization: Is There a Spatial Mismatch?

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ABSTRACT

Two significant trends have occurred in urban areas across the United States during the past decades: immigration and the decentralization of employment. While each trend has been investigated by research, the magnitude of spatial disparity between immigrant settlement patterns and employment location and its change over time has received much less attention. Using a sample of the 60 largest immigrant metropolitan areas, this study uses a Spatial Mismatch Index (Martin, 2001) and regression methods to address this question over the period 1980 - 2000. Results indicate immigrants are more spatially mismatched with job opportunities than the white population, but less so than the black population. We find that job growth occurred close to where the native-born whites concentrate, and away from immigrants and other minority populations. However, immigrants residential location patterns shifted towards employment opportunities and was able to offset the otherwise enlarging spatial disparity.

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INTRODUCTION

Two significant trends have occurred in urban areas across the United States during the past decades: immigration and the decentralization of employment. While immigrants continue to arrive in traditional "gateway" metropolitan areas, they have also begun to disperse from established gateways and migrate directly to new destinations (Singer 2004, Painter and Yu 2010; Frey and Liaw 2005; Hempstead 2007). At the same time, employment decentralization accelerated in the second half of the 20th century, with higher job growth happening in suburban rather than central city areas (Holzer and Stoll 2007). Research shows that a quarter of central cities experienced job losses and more than three quarters lost their private sector employment share to suburbs between 1993 and 1996 (Brennan and Hill 1999).[i] Industries like manufacturing, service, and retail suburbanized at especially rapid rates, and these industries are sectors that immigrants heavily concentrate in. While both trends have been documented, it remains unclear what the magnitude of the spatial disparity is between where immigrants live and where jobs are located within metropolitan areas, and how this disparity may have changed over time.

Reduced spatial accessibility to jobs has been identified as one of the barriers to employment for inner city minorities since Kain's seminal work (1968). The "Spatial Mismatch Hypothesis" states that in the context of economic restructuring, blacks in inner city neighborhoods suffer from high unemployment rate, low wages and long commutes due to their spatial isolation from suburbanized low-skill and semi-skill job opportunities and limited residential mobility to settle in suburban areas given exclusionary zoning and other discriminatory housing practices. Voluminous empirical studies in the past years have tested this hypothesis on different scales and with different approaches (Ihlanfeldt and Sjouquist 1998 for

comprehensive review) and many have documented the effect of living in job-poor central cities on blacks' economic well-being (Raphael 1998, Stoll 1999). Most of the reviewed studies are conducted for selected case study metropolitan areas and for a single point in time. Results have been mixed and sometimes sensitive to the specification of the studies' research design. As exceptions, a few studies have tested for the persistence of spatial mismatch and the changing degree of spatial disparity between blacks and jobs using data over a longer period of time. Martin (2001) found that between 1970 and 1990, as blacks' residential mobility did not fully adjust to decentralized employment, and that the resultant combined impact increased the disparity between the spatial distribution of employment and the distribution of the black population by more than 20% in 39 selected metropolitan areas. Raphael and Stoll (2002) extended this study and documented a modest reversal of this trend from 1990 to 2000 in the 20 metropolitan areas with largest black populations.

Despite the increasing presence of immigrants in the U.S. labor market, past research on their employment accessibility has been limited (e.g. Parks 2004; Painter, Liu and Zhuang 2007 on Los Angeles; Wang 2006 on San Francisco). What makes the study of how the labor market outcomes of immigrants are influenced by space particularly interesting is the fact that immigrants may choose to locate near co-ethnics to share resources and their common culture (Logan, Alba, and Zhang, 2002) even if their residential choices are less constrained than those of African-Americans. Because many of these ethnic communities exist in central city areas, immigrant may still be at a disadvantage spatially. Further, recent evidence indicates that while discrimination diminished during the 1990s, all minority groups still face adverse treatment in rental and owner occupied housing markets (Turner et al. 2002, Turner and Ross 2003). Many of these Hispanics and Asians are likely immigrants.

However, it is an open question whether spatial concentration will disadvantage immigrants because of the documented reliance on ethnic networks and neighborhood-based social ties in locating jobs (Elliott and Sims 2001). In addition, immigrants are increasingly settling away from the urban core within metro areas (Singer et al 2008, Massey 2008). In 2007, slightly over half of the nation's foreign-born residents live in major metropolitan suburbs (Frey et al, 2009). Recent studies have characterized this increasingly decentralized residential pattern as "ethnoburbs" (Li 1998), "melting pot suburbs" (Frey 2001) and "suburban immigrant nation" (Hardwick 2008). Therefore, immigrants may suffer less from spatial dislocation from jobs than other minority groups. However, it might also be the case that suburbanized immigrants are located into lower income immigrant enclave in the suburban areas (Dawkins, 2009) and such residential mobility cannot be taken as an indicator of socioeconomic advancement (Lichter et al, 2010). These studies did not examine the changing geographic proximity to jobs that accompanied these residential patterns and it is unclear the extent to which immigrants' residential mobility may have changed their job accessibility over time.

This paper thus fills an important gap in the literature on spatial mismatch between minorities and whites by examining the impact of the evolving urban spatial structure in a sample of 60 of the largest immigrant-receiving metropolitan areas. Instead of focusing on labor market outcomes, the changing spatial distribution of jobs and residential distribution of immigrants is compared with that of native born white and African American households to document the overall changes in these patterns.[ii] Given residential segregation, employment decentralization might increase the job proximity of some households while distancing from others, depending on their ability to adjust to employment shifts. The literature (Baird et al 2008) has suggested that immigrants are able to follow job opportunities by altering their residential

location choices via inter-metropolitan moves, but it is not clear if the same holds true on the intra-metropolitan level as well. If it is the case that immigrants tend to locate in closer proximity to jobs than blacks, it might help explain their overall higher employment rates (Camarota and Jensenius, 2009). To determine the impact of employment decentralization on spatial mismatch, the overall change is decomposed to determine the portion of the shift due to the population shift alone and employment shift alone in an effort to understand whether employment is occurring towards or away from immigrant concentrations and how immigrants are adjusting to employment locations through their residential choices. Finally, county-level regression models are estimated that examine the various factors that underlie the evolving intra-metropolitan distribution of jobs and residents between 1980-1990, and 1990 -2000.

THEORY AND PREVIOUS RESEARCH

Residential Location of Immigrants

Understanding immigrants' locational choices is an important and integral element in understanding their assimilation process. A formal theorizing of spatial assimilation starts from Massey (1985), who largely adopts the earlier ecological model of spatial succession and invasion proposed in Parks, Burgess and McKenzie (1925). This model predicts that with their acculturation in the American society and accumulation of economic resources, immigrants disperse from their initial settlement in inner city ethnic communities towards better quality, native-majority suburban neighborhoods. An opposing view holds that ethnic concentration and clustering may endure, even given immigrants' higher socioeconomic status. Place stratification literature suggests the persistence of structural barriers in the housing market may perpetuate residential segregation over time. A recent study reveals that immigrant segregation in 2000 is at

its century-high (Cutler, Glaeser, and Vigdor 2008). While black segregation level declined modestly at the national level between 1980 and 2000, Hispanic and Asian segregation remained unchanged or rose in most metropolitan areas (Logan, Stults, and Farley, 2004).

The emergence of high-status suburban immigrant communities (Li, 1998; Logan, Alba, and Zhang 2002) and the fact that many immigrants choose suburban residential locations immediately upon arriving in the U.S. (Alba et al. 1999) questions the validity of stereotypical spatial assimilation theories. The quality of such suburbanizing residential pattern for the general immigrant population lacks definite evidence. Suburban residence does not necessarily bring immigrants to closer contact with white native-born population as traditional spatial assimilation theory would suggest. This might be attributable to the fact that immigrant households are sorting themselves into lower status immigrant enclaves in the suburban areas and those with higher existing suburban immigrant and minority population (Dawkins, 2009; Timberlake, Howell, and Straight, 2009). However, it is not clear how their evolving residential arrangement changes their proximity to job opportunities. Dispersed residential locations might bring immigrants closer to jobs in the context of employment suburbanization. But if the areas that immigrants move to are not the areas that experience economic growth then suburbanization will not necessarily increase their job proximity. This paper thus provides a broad and dynamic perspective on this question.

The Spatial Pattern of Employment

Theories on the location of firms begin with the von Thünen-type monocentric model which states that the trade-off between land rent and transport costs determine firms' optimal locations. Urban spatial structure evolves as industries with different bid-rent functions compete for land

uses (O'Sullivan 2000). A decentralization of employment in American metropolises accelerated in the second half of the 20th century and recent statistics show that this trend is not slowing: a quarter of central cities experienced job losses and more than three quarters lost their private sector employment share to suburbs between 1993 and 1996 (Brennan and Hill 1999) and in 1996 a third of people work more than 10 miles from the city center (Glaeser, Kahn, and Chu 2001). Recent statistics show that most employment (72 percent) is located more than five miles from CBDs (Raphael and Stoll, 2010).

A few of the factors underlying this trend include: (1) innovations in technologies that make production more flexible and suburban locations more accessible; (2) the development of interstate highways and suburban airports which diversify means of transport from a single central export node and reduce transportation costs; and (3) the suburbanization of population that both provide suburban firms with ample local labor supply and also constitute the demand and clientele for their produced goods and services (Mieszkowski and Mills 1993; O'Sullivan 2000). As a consequence, subcenters emerge that serve as employment nodes in the polycentric urban structure (Anas, Arnott, and Small 1998). Within this general pattern, the suburbanization of manufacturing, service and retail jobs is especially prominent and these are exactly the sectors in which low-skill jobs heavily concentrate. Relatively insensitive to knowledge spillover and other proximity advantages of the central cities, manufacturing firms are attracted to the suburbs for its cheaper land rents, convenient transportation and lower congestion. Service firms and retailers also find suburban locations attractive as the growing suburban population serves as stable clientele. Manufacturing, construction, and services are among the industries that are most suburbanized (Kneebone, 2009).

Given residential segregation in American metropolitan areas, it can be expected that employment decentralization will increase the job proximity of some households while taking jobs away from others. The degree of proximity between residents and jobs over time partly depend on residents' ability to adjust their residential locations in response to employment location change. It has long been argued that continued job sprawl has made these jobs increasingly inaccessible to inner city black residents over time (spatial mismatch hypothesis, Kain, 1968; see Ihlanfeldt and Sjoquist 1998 for review). Martin (2001) showed that between 1970 and 1990 the spatial disparity between the distribution of employment and distribution of blacks increased by 20 percent. Black population shifts eliminated about 57% of the increases in spatial mismatch index caused by employment shifts. For the period between 1990 and 2000, Raphael and Stoll (2002) found that blacks' overall proximity to jobs improved slightly and narrowed the gap between blacks and jobs by 13 percent. However, they remained the most physically isolated from jobs across all groups in 2000. The modest progress is due entirely to the residential movement of black households. The movement of jobs alone over the decade would have increased spatial mismatch between blacks and jobs. No study has examined how job sprawl has changed the spatial mismatch conditions for the immigrant populations.

Spatial Mismatch between Immigrants and Jobs

Despite the continued growth of immigrant population around the country, very few studies address the effect of residential segregation on immigrants' employment accessibility. Aponte (1996) began the inquiry for immigrants and found that Mexican workers are an "exception" to the spatial mismatch hypothesis as they consistently depict relatively high employment rate as compared to native-born minority workers, which might be attributable to their strong social

networks in job search and employers' hiring strategy. Pastor and Marcelli (2000) found that individual skills matter more than "pure" spatial mismatch in Los Angeles, especially for recent Latino immigrants. Also for Los Angeles, Painter, Liu, and Zhuang (2007) underscored the importance of space and spatial variation of job growth on Latino and second-generation immigrant youth's employment probabilities, but not for first-generation immigrants. As regards to commuting, Preston, McLafferty and Liu (1998)'s results indicate the persistence of spatial barriers faced by immigrant workers as evidenced by their overall longer commutes than their native-born counterparts in central New York CMSA. Liu (2009) documented that Latino immigrants living in job-poor central cities tend to have both lower employment probability and longer commutes than their suburban counterparts.

Most of the spatial mismatch studies on immigrants focus on selected case study areas for a given point in time. As immigrants have started to move in large quantities to most metropolitan areas (Painter and Yu, 2010), it is important to develop an understanding of how the magnitude of immigrants' spatial disparity between jobs and residential location has changed for a broad cross section of the United States. Given the highly local nature of immigrants' employment concentration (Ellis, Wright, and Parks 2007), it can be hypothesized that their degree of spatial mismatch with jobs will be reduced over time with their suburbanizing residential pattern.

Overall, the literature suggests that both the white population and jobs have been decentralizing. It is expected that immigrant populations will be following those jobs. Further, it would be expected immigrant populations may be quicker at following jobs than the black population due to the fact that they may have less developed social networks in many of the metropolitan areas, and due to the fact that many immigrants may have moved directly from their

country of origin to the locations of greatest job growth. Therefore, one would expect less spatial mismatch for immigrants than for the black population.

DATA AND CONTEXT

Data for this research are primarily drawn from the Decennial Census County and City Data Books for years 1980, 1990 and 2000 and are accessed from Census Bureau website. These datasets feature a wide range of statistics on the population, employment (by industry), and other characteristics of each county, which are essential for this study. Among them, data on population are drawn from the Decennial Census, and employment statistics are drawn from the Economic Census' County Business Patterns. Counties are chosen as the geographic sub-units on which the metropolitan-level Spatial Mismatch Index is calculated for their consistency in boundary over time. While the initial spatial mismatch conceptualization of Kain (1968) involves testing spatial structure and its economic implications at a more nuanced level, counties have been used in similar research design for blacks before (Martin 2001, 2004). Other studies have used zip-code level as the analytical unit for calculating spatial mismatch index, but statistics on immigrants are not available on the zip-code level. One disadvantage stemming from the use of counties is that they can be relatively large, especially in certain metropolitan areas, but their consistency in boundary over time and the availability of relevant information for all population groups, industries, and contextual variables serve the purpose of this study very well. While the magnitude of spatial mismatch index would necessarily differ according to different geographic scales, as long as the same methods are applied to all sub-groups and time periods, direct comparison can be obtained.[iii]

The definition of metropolitan areas in the U.S. underwent a major change at the turn of the century, with the Office of Management and Budgeting (OMB) publishing a new classification of metropolitan areas (OMB 2003) which supersede the previous set of definitions (OMB 1999).[iv] The basis of such change is a reevaluation of the economic activities and connectivity among subunits (counties) within a region, especially commuting patterns across counties in the context of decentralized residence and employment (Frey et al 2004). County composition of MSAs are identified based on the new definition and a consistent spatial boundary is kept from 1980 through 2000 in order to trace the evolution of residential and employment locations within these metropolitan areas over time.

To conduct the analysis, we initially select all of the counties that were part of the top 100 U.S. metropolitan areas with largest immigrant population in 2000. We first removed the MSAs that contain a single county from the dataset (thirty-five MSAs fall into this category). Another 5 MSAs are removed from the analysis sample because they have a single county dominating the metropolitan area economic activities (share of MSA population and employment exceeds 98%). The resulting sample is comprised of 60 MSAs, including 450 counties. These 60 MSAs are home to 74 percent of all immigrants in the country as of 2000 and thus constitute a representative sample of this population.

While there exist numerous ways of measuring spatial decentralization and sprawl across different dimensions (Jaret et al 2009), we measure spatial decentralization using the following approach. Each of the 60 metropolitan areas is divided into center and ring counties. The center counties are those that include the central cities for the MSA and the rest of the counties in a MSA are termed ring counties. In several instances, the central city is not situated within any county. In those cases, the city is identified as the center with all counties as ring counties.

Specifically these are Baltimore City in Baltimore-Towson MD MSA, St. Louis City in St. Louis, MO-IL MSA, Virginia Beach City in Virginia Beach-Norfolk-Newport News VA-NC MSA, and District of Columbia in Washington-Arlington-Alexandria DC-VA-MD-WV MSA.

[Table 1 about here]

Table 1 presents ring counties' share of metropolitan area total employment between 1980 and 2000 and indicates a clear pattern of employment shift from the center to rings in most MSAs examined. In 1980s, all but 18 MSAs witnessed an increase of employment share in ring counties. In 1990s, all but 9 MSAs experienced the same trend. Across the 20 years, 11 center counties gained employment share from ring counties, with the most notable ones being Charlotte-Gastonia-Concord (8.2 percentage points), Virginia Beach-Norfork-Newport News (7.6 percentage points), Richmond (5.7 percentage points), Raleigh-Cary (4.8 percentage points), Allentown-Bethlehem-Easton (4.5 percentage points), and Durham (4.3 percentage points). In all the other 49 MSAs, center counties lost employment share to ring counties to various degrees. The largest shifts occurred in St. Louis (18.3 percentage points), Denver-Aurora (17.1 percentage points), Detroit-Warren-Livonia (15.8 percentage points), Baltimore-Towson (15 percentage points), Milwaukee-Waukesha-West Allis (12.7 percentage points), New Orleans-Metairie-Kenner (12.5 percentage points), Atlanta-Sandy Springs-Marietta (12.4 percentage points), Washington-Arlington-Alexandria (11.3 percentage points), Portland-Vancouver-Beaverton (11.1 percentage points) and Cincinnati-Middleton (10.8 percentage points). Overall, Table 1 demonstrates that ring counties' share of MSA employment increased from 44.7% to 48.6% between 1980 and 2000, an increase of 8.7% (or 3.9 percentage points). While employment decentralization continues across U.S. metropolitan areas, the average rate of change has slowed in the 1990s compared to the previous decade.

[Table 2 about here]

The intra-metropolitan shifts of the immigrant population between center counties and ring counties demonstrate a pattern of both the centralization of the immigrant population in some metropolitan areas, and the suburbanization of the immigrant population in others. As Table 2 shows, of all the 60 MSAs, around half experienced a loss of immigrant share from the center counties to the surrounding ring counties, while the other half gained immigrant share in the center during the 1980s, 1990s, as well as across the 20 years. The MSAs which experienced the largest increase of immigrant population in the ring counties during the 1980-2000 period include Atlanta-Sandy Springs-Marietta (20.4 percentage points), Cincinnati-Middletown (15.2 percentage points), New Orleans-Metairie-Kenner (14.9 percentage points), Baltimore-Towson (13.0 percentage points), Portland-Vancouver-Beaverton (11.9 percentage points), Miami-Fort Lauderdale-Miami Beach (11.7 percentage points) and Detroit-Warren-Livonia (11.3 percentage points). At the same time, the share of the immigrant population shrank significantly in ring counties in some other MSAs. Among those are Port St. Lucie-Fort Pierce (-18.8 percentage points), Tampa-St. Petersburg-Clearwater (-15.2 percentage points), Virginia Beach-Norfolk-Newport News (-11.6 percentage points), Providence-New Bedford-Fall River (-11.3 percentage points) and Omaha-Council Bluffs (-10.5 percentage points). It is worth noting that these are net changes in ring counties' share of immigrants. Therefore, we are not able to distinguish between intra-metropolitan movement of existing immigrants and the residential location choice of newly arrived immigrants from elsewhere in the U.S. and from abroad. As this paper is concerned with immigrants' changing residential redistribution in relation to employment redistribution, no employment outcome is explicitly tested. [v]

[Table 3 about here]

By way of comparison, Table 3 summarizes the average ring county's share of metropolitan area native-born white and black populations among 60 MSAs. Overall, 59.3% of the white population lives in suburban counties in 2000, an increase from 56.2% in 1980 and 57.5% in 1990. While the white population is more suburbanized than the immigrant population, the black population began the sample period more centrally located than were immigrants. Approximately 40% of the black population lived in suburban counties in 1980, but this number increased to 45.3% in 2000. This increasing rate of suburbanization might reflect the reduction of various barriers they face in locating in suburban neighborhoods.

RESULTS

Spatial Mismatch Index

As noted previously, the spatial organization of both residents and employment in metropolitan areas has changed over the past decades. One way of measuring the net effect of the movement of population and jobs within a metropolitan area is through a Spatial Mismatch Index (SMI). This index allows for both inter-temporal comparisons of the movement of population and jobs and for the testing of the persistence and degree of spatial mismatch over time. This index is adapted from the concept of a dissimilarity index in the residential segregation literature (Massey and Denton 1988) and has been applied to measure the spatial disparity between blacks and jobs (Martin 2001, Raphael and Stoll 2002). Formally, the Spatial Mismatch Index (SMI) is expressed as

$$SMI = \frac{1}{2}\sum_i \left| \frac{E_i}{E} - \frac{P_i}{P} \right|, \qquad (1)$$

where i = (1,…, n) and refers to each geographic sub-units (for this paper, it is county) in the metropolitan area. In this analysis, E_i and P_i are the employment and population in a given county respectively. E and P are the employment and population for the metro as a whole. Multiplying this proportion by 100, the SMI can be interpreted as the percentage of residents that need to be relocated in order to achieve an even balance between the distribution of employment and residents. It is worth noting that the spatial mismatch index does not take into account the physical distance between jobs and residents, only their relative distribution among geographic sub-units.

This index is calculated for immigrants and the native-born, white, and black populations for the three years of 1980, 1990 and 2000. An increase in SMI indicates a higher level of separation between jobs and residents and a higher percentage of jobs/residents that would need to move to achieve a jobs/housing balance, while a decrease of SMI indicates a convergence between the distribution of jobs and people. The change in SMI within each decade is further decomposed into shifts in population alone and shifts in employment alone in order to gauge the sources of change in spatial imbalance over time. This is achieved by hypothetically holding population distribution from the previous time period constant and using employment distribution from the current time period to construct SMIs that take into account one shift at a time. These changes are calculated for 1980-1990, 1990-2000, as well as 1980-2000 periods.

[Table 4 about here]

The average SMI between jobs and immigrants, as well as between jobs and the native-born white and black populations are presented in Table 4. Table 4 presents average statistics calculated by weighting each MSA by its total population (see Appendix A for detailed statistics for the immigrant population).[vi] Some interesting patterns emerge when comparing the SMIs for

these different groups over the 20 year period. The overall spatial imbalance between jobs and residents is largest for the native-born black population, and smallest for the native-born white population. The immigrant population has an index level of spatial mismatch that is in between the white and black population, with values of 16.8 in 1980, 17.1 in 1990 and 15.8 in 2000. The change in the index over the two decades reveals that there is an overall decline across metropolitan areas in the SMI of 1 percentage point. However, actual changes across metropolitan areas range from 11.6 percentage points in Milwaukee-Waukesha-West Allis to negative 10.9 percentage points in San Francisco-Oakland-Fremont (Appendix A). Once the total change is decomposed into employment shifts alone and population shifts alone[vii], it is evident that between 1980 and 2000, jobs occurred away from where immigrants lived, thereby increasing SMI by 3.1 percentage points. However, immigrants were attracted to where jobs are, lowering SMI by 4.2 percentage points and resulting in a total SMI reduction of 1 percentage points. Between the two decades, the suburbanization of the residential location of immigrants increased in the 1990s when compared to 1980s, bringing immigrants in closer proximity to jobs. In sum, immigrants became more spatially mismatched from jobs as jobs occurred away from their residential locations. However, their residential location choices brought them closer to job opportunities, offsetting the adverse effect of employment decentralization and achieving a more balanced spatial distribution.

The intra-metropolitan dynamics between jobs and native-born white residents are in the opposite direction. While at the beginning of each decade the distribution of native-born white populations are on average more identical to distribution of jobs than immigrants, they tend to move away from jobs. However, employment growth shifts towards the fringes of the urban areas, offsetting the otherwise increasing spatial disparity. Over the two decades, jobs gravitated

towards white residents at a faster rate than whites suburbanized, resulting in a reduction of spatial mismatch between 1980 and 2000. On the contrary, blacks are even more spatially segregated from job opportunities than immigrants, as evidenced by a high SMI of 23.8 in 1980 and 25.6 in both 1990 and 2000. As with immigrants, jobs growth occurred away from black residents, but at a more dramatic rate than for immigrants. The residential mobility of black residents was able to partially (1980s) or even totally (1990s) offset the resultant enlarging spatial disparity. It is worth noting that they are moving towards jobs at a higher rate than immigrants, which might be partially explained by their more concentrated location pattern in central counties in 1980.[viii]

[Table 5 about here]

Within the context of job decentralization, Table 5 demonstrates the contribution of industry job movement to compare the relative contribution of each industry using the SMI for immigrants. There are clear differences by industry. Immigrants' residential shifts occurred closest to where the services and construction jobs are located causing a reduction in the SMI, even though these jobs had shifted away from the initial location of immigrants. On the other hand, growth in wholesale, manufacturing and retail jobs diverge from the initial locations of immigrants at faster rates, and immigrant residential mobility did not always make up for the difference in spatial disparity caused by the shift in the location of jobs. Therefore the SMI fell by 1.5 to 1.8 percentage points for service and construction jobs, and either rose or fell in the other industries by about half a percentage points.

Regression Models

While the analysis presented above demonstrates the general trend that employment growth in U.S. metropolitan areas is occurring away from where immigrants live and towards where the native-born white population lives, regression analysis provides tests regarding the intra-metropolitan movement of jobs and residents in relation to each other while controlling for other factors that might be correlated with jobs and residential shifts. Following Martin (2001), we first test whether county level population shifts are a function of the previous period's concentration of jobs and one's own group population share. Ordinary least squares models are estimated for each group as follows:

$$\Delta IMMSHARE_i = \alpha_i + \beta * IMMSHARE_i + \gamma J_i + \delta X_i + \varepsilon,^{ix} \quad (2)$$

where $\Delta IMMSHARE_i$ is the change in county *i*'s share of the metropolitan area's immigrant (native-born) population between 1980 and 1990, and between 1990 and 2000, $IMMSHARE_i$ is county *i*'s share of the metropolitan area's immigrant population in 1980 and 1990. J_i is a variable that measures county *i*'s share of metropolitan area total employment. The level of immigrant concentration in a given county measures to what extent newly settled immigrants are converging or diverging to existing immigrant-concentrated areas within the MSA. Numerous studies have established immigrants' propensity to locate in communities with considerable co-ethnic presence (Timberlake, Howell, and Straight, 2009; Dawkins, 2009). The inclusion of a county's employment share measures the extent to which immigrants move towards areas with larger shares of MSA employment.[x]

[Table 6 about here]

X_i contains a series of contextual variables that are expected to be important in residents' location choices. Detailed description of all variables is provided in Table 6. It is expected that residents will be attracted to areas with high percentage of college graduates, low poverty rate,

low housing price, low crime rate, high per capital direct general expenditures by local government and low per capita property taxes. These variables have been identified on the inter-metropolitan level as determinants of immigrants' residential locations (e.g., Baird et al, 2008). A dummy variable denoting the center county is also included to measure the relative movement of residents and jobs relative to the metro center. Again, variables are used for the years 1980 and 1990 when estimating models on changes between 1980 and 1990, and between 1990 and 2000, respectively. Each variable is calculated as an index value by dividing the county's value for a variable by the average value among counties of the same MSA (Martin 2001). This approach is intended to capture the intra-metropolitan variation in locational amenities that underlie intra-metropolitan movement of residents, but not the variation across MSAs. To account for the correlation that exists for counties within the same MSA, counties are clustered by their respective MSAs and standard errors are adjusted accordingly. Model results for immigrants are compared with results for native born black and white residents in Table 7.

[Table 7 about here]

Beginning with the results for immigrants, it is evident that during the 1990s, immigrants shifted away from their existing 1990 residential location and were more likely to locate in areas with higher shares of metropolitan employment. Both of these factors were not significantly predictive of immigrant residential location during the 1980s. This could be due to the rapid suburbanization trend among immigrant populations in this period. Of all the county characteristics, only the poverty rate and violent crime rate are significant predictors, as immigrant growth occurred away from areas with high poverty rates (1980s) and high crime rates (1990s).

By comparison, model results for native-born whites and blacks are also shown in Table 7. In the case of white residents, their growth is converging to areas with higher shares of metropolitan area white residents but away from existing employment centers (significant for 1990s). This suggests that white residents are continuing to decentralize. Unlike the other two groups, white population growth is occurring in areas with significantly higher housing values. Unlike whites, blacks are attracted to areas with dense job opportunities, an effect that is significant for both 1980s and 1990s. In addition, blacks are also diverging from city centers, which are their traditional residential concentrated areas. This suggests the suburbanization of black residents as documented elsewhere (Raphael and Stoll, 2002), though the magnitude of this residential shift is smaller than that of immigrants during the 1990s.

All these results further illustrate the patterns derived from spatial mismatch indices presented earlier. While the direction of the concurrent movements of jobs and residents is hard to establish, a general trend regarding the relative movement of one in relation to another can be observed. During these 20 year period in general and in the 1990s in particular, immigrants and black population shifts are occurring towards metropolitan employment centers whereas white population shifts are occurring away from existing job centers. Immigrants and blacks are also diverging from parts of the metropolitan areas where their presences have been traditionally large, a phenomenon indicative of their suburbanizing residential pattern.

We next estimate employment models in an analogous manner:

$$\Delta EMPSHARE_i = \alpha_i + \beta * EMPSHARE_i + \gamma * IMMSHARE_i + \theta * WHITE\_SHARE_i + \zeta * BLACK\_SHARE_i + \delta X_i + \varepsilon, \quad (3)$$

where $\Delta EMPSHARE_i$ is the change in county *i*'s share of MSA total employment 1980-1990 and 1990-2000, $EMPSHARE_i$, $IMMSHARE_i$, $WHITE\_SHARE_i$, and $BLACK\_SHARE_i$ are county

i's share of MSA total employment, immigrant population and native-born white and black population, respectively, for 1980 and 1990. This model allows us to determine where employment growth is occurring in relation to existing concentration of jobs and residents. X_i is a vector of control variables that are expected to affect the location decisions of employers from previous research (Martin, 2001), including percentage college graduates, per capita direct general expenditures by local government, per capita property taxes collected by local government and civilian labor force unemployment rate, all on the county level, as well as a center dummy variable to indicate whether the county is where the MSA's central city is located or the central city itself. As explained earlier, these variables are constructed as index variables by dividing county values by average values across counties in the same MSA.

[Table 8 about here]

Model results are presented in Table 8 and evidence from the two time periods exhibits very similar patterns. The first model for each time period includes the immigrant share and employment share together with additional controls. Neither the immigrant share nor the employment share is statistically significant. Once the white and black population shares are added to the model, it is evident that job growth is occurring close to where the white population is residing, and away from where the black population is residing, although this later result is not statistically significant. Immigrant share again has the expected negative sign, but is not statistically significant. The positive movement towards the concentration of the white population is strongly significant in both cases. While immigrant growth is occurring close to employment centers, employment on the contrary shifts away from current immigrant concentrations, suggesting immigrants are following job opportunities. These results are similar for both time periods, although the effect sizes are generally smaller in the later period than in

the decade of the 1980s. For both time periods, employment growth is shifting towards counties with high levels of college graduates, and away from areas with high local government expenditure and high unemployment rate.[xi]

CONCLUSION

This paper provides evidence concerning the persistence of spatial mismatch of immigrant populations and jobs across a broad set of metropolitan areas during the 1980-2000 periods. In order to determine whether the increasing decentralization of jobs might adversely affect employment access for immigrants, two sets of analyses were done. First, we constructed a spatial mismatch index to provide evidence from 60 metropolitan areas in the U.S. with largest immigrant populations. The results demonstrate that there is a higher degree of spatial disparity between immigrants and jobs than between the native-born white population and jobs, implying that a higher percentage of immigrants would have to relocate to other counties to achieve an even balance between residents and jobs. However, we also find that immigrants are less spatially dislocated from jobs than is the black population.

With respect to the residential location of immigrants, evidence suggests that they tend to locate close to jobs and their residential mobility was able to offset the otherwise enlarging spatial disparity. Further, this movement towards jobs is faster in the 1990s than in the 1980s. The pattern for the black population is similar although jobs have moved away from the black population at a faster rate than the black population has moved toward the jobs, leaving a higher level of spatial disparity in 2000 than in 1980.[xii] Overall, the evidence gleaned from the SMI suggests that jobs are moving toward the white population as the white population suburbanizes,

and that the immigrant and black population move toward where the jobs are relocating at differing rates.

Second, we conducted regression analysis to describe the role of job location and residential population shares on the probabilities of locating in a particular part of the metropolitan area. We find that immigrants are attracted to areas with higher shares of employment and away from the residential location of existing immigrant populations during the 1990s. This confirms the recent suburbanization trend of the immigrant population (Singer et al, 2008; Massey 2008), though the data in this analysis does not make a distinction between the residential mobility of earlier immigrants and location choice of new arrivals. In addition, immigrants are moving towards parts of the MSAs with high levels of college graduates and low levels of crime rates. They are however diverging from their existing residential concentrations, signaling their heightened suburbanizing pattern in recent decades. It is possible that immigrants are sorting themselves into lower status enclaves in the suburban areas, a phenomenon worth further exploration. These results are similar to Baird et al (2008)'s inter-metropolitan level analysis, and demonstrate that economic and quality of life factors play a more critical role than ethnic factors in immigrants' intra-metropolitan settlement pattern as well. This analysis further finds that employment continues to decentralize. Employment growth is occurring close to white-concentrated parts of the metropolitan area, and away from the black-concentrated locations. Employment growth is happening outside existing employment centers. Areas with a highly-educated labor pool (percentage with college degree), low unemployment rate and low per capita government expenditure are experiencing faster economic growth as compared to elsewhere in the metropolitan area.

This paper traces the dynamics of concurrent geographic shifts in the immigrant population and the location of jobs in metropolitan areas across the U.S. Despite continued suburbanization of jobs during the 1980s and1990s, this study also provides evidence that immigrants have been able to close the disparity between their residence and the location of jobs by moving to where the jobs are locating at faster rates that did the jobs move away from the existing immigrant population. This suggests that job decentralization alone did not lead to increased immigrant stratification. The question of how immigrants are able to do this better than other minority populations is an open question for future research. It may be the case that specific local housing market and labor market dynamics or land use patterns and policies play a role in the different metropolitan areas. It also may be due to higher levels of mobility that exists among recent immigrants. In addition, future research is needed to discover how the geographic proximity to jobs impacts immigrants' overall employment outcomes in different types of metropolitan areas, and compare this to other minority groups to provide policy makers and planners with better insights into how to provide assistance to populations that are most disadvantaged in the job market.

REFERENCES

Alba, R. D., J. R. Logan, B. J. Stults, G. Marzan, and W. Q. Zhang. 1999. Immigrant Groups in the Suburbs: A Reexamination of Suburbanization and Spatial Assimilation. *American Sociological Review* 64 (3):446-460.

Anas, A., R. Arnott, and K. A. Small. 1998. Urban Spatial Structure. *Journal of Economic Literature* 36 (3):1426-1464.

Aponte, R. 1996. Urban Employment and the Mismatch Dilemma: Accounting for the Immigration Exception. *Social Problems* 43 (3):268-283.

Baird, J., R. M. Adelman, L. W. Reid and C. Jaret. 2008. Immigrant Settlement Patterns: The Role of Metropolitan Characteristics. *Sociological Inquiry* 78 (3): 310-334.

Brennan, J., and E. W. Hill. 1999. Where are the jobs?: Cities, Suburbs, and the Competition for Employment. The Brookings Institution, Center on Urban and Metropolitan Policy, Survey Series.

Camarota, S. A. and K. Jensenius. 2009. Trends in immigrant and native employment. Washington, D.C.: Center for Immigration Studies, May 2009.

Cutler, D. M., E. L. Glaeser, and J. L. Vigdor. Is the melting pot still hot? Explaining the resurgence of immigrant segregation. *The Review of Economics and Statistics* 90 (3): 478-497.

Dawkins, C. J. 2009. Exploring recent trends in immigrant suburbanization. *Cityscape: A Journal of Policy Development and Research* 11 (3): 81 – 98.

Elliott, J. R. and M. Sims. 2001. Ghettos and Barrios: The Impact of Neighborhood Poverty and Race on Job Matching among Blacks and Latinos. *Social Problems*, 48 (3), 341-361.

Ellis, M., R. Wright, and V. Parks. 2007. Geography and the immigrant division of labor. *Economic Geography* 83(3): 255-281.

Frey, W. H. 2001. Melting Pot Suburbs: A Census 2000 Study of Suburban Diversity. The Brookings Institution, Center on Urban and Metropolitan Policy.

Frey, W. H. and K.-L. Liaw. 2005. Migration within the United States: Role of Race and Ethnicity. In Brookings-Wharton *Papers on Urban Affairs*. G. Burtless and J. R. Pack. Washington DC, The Brookings Institution Press,

Frey, W. H., J. H. Wilson, A. Berube and A. Singer. 2004. Tracking Metropolitan America into the 21st Century: A Field Guide to the New Metropolitan and Micropolitan Definitions. The Brookings Institution: Metropolitan Policy Program.

Frey, W. H., A. Berube, A. Singer, and J. H. Wilson. 2009. Getting Current: Recent Demographic Trends in Metropolitan America. The Brookings Institution Metropolitan Policy Program.

Glaeser, E. L., M. E. Kahn, and C. Chu. 2001. Job Sprawl: Employment Location in the U.S. Metropolitan Areas. The Brookings Institution, Center on Urban and Metropolitan Policy.

Hardwick, S. W. 2008. Toward a Suburban Immigrant Nation. In A. Singer, S. W. Hardwick and C. B. Brettell eds., *Twenty-First Century Gateways: Immigrant Incorporation in Suburban America*, pp. 31-50. Washington, D.C.: Brookings Institution Press.

Hempstead, K. 2007. Mobility of the Foreign-Born Population in the United States, 1995-2000: The Role of Gateway States, *International Migration Review*, 22(4): 333-349.

Holzer, H. J. and M. A. Stoll. 2007. Where Workers Go, Do Jobs Follow? Metropolitan Labor Markets in the U.S., 1990-2000. Brookings Institution, Metro Economy Series from the Metropolitan Policy Program at Brookings.

Ihlanfeldt, K. R., and D. L. Sjoquist. 1998. The Spatial Mismatch Hypothesis: A Review of Recent Studies and Their Implications for Welfare Reform. *Housing Policy Debate* 9 (4): 849-892.

Jaret, C., R. Ghadge, L. W. Reid and R. M. Adelman. 2009. The Measurement of Suburban Sprawl: An Evaluation. *City and Community* 8 (1): 65-84.

Kain, J. F. 1968. Housing Segregation, Negro Employment, and Metropolitan Decentralization. *The Quarterly Journal of Economics* 82(2): 175-197.

Kneebone, E. 2009. Job Sprawl Revisited: The Changing Geography of Metropolitan Employment. The Brookings Institute, Metropolitan Policy Program.

Li, W. 1998. Anatomy of a New Ethnic Settlement: The Chinese Ethnoburb in Los Angeles. *Urban Studies* 35 (3): 479-501.

Lichter, D. T., D. Parisi, M. C. Taquino, and S. M. Grice. 2009. Residential segregation in new Hispanic destinations: Cities, suburbs, and rural communities compared. *Social Science Research* 39: 215 – 230.

Liu, C. Y. 2009. Ethnic Enclave Residence, Employment and Commuting of Latino Workers. *Journal of Policy Analysis and Management* 28 (4): 600-625.

Logan, J. R., R. D. Alba, and W. Q. Zhang. 2002. Immigrant Enclaves and Ethnic Communities in New York and Los Angeles. *American Sociological Review* 67 (2): 299-322.

Logan, J. R., B. J. Stults, and R. Farley. 2004. Segregation of minorities in the metropolis: Two decades of change. *Demography* 41 (1): 1-22.

Martin, R. W. 2001. The Adjustment of Black Residents to Metropolitan Employment Shifts: How Persistent is Spatial Mismatch? *Journal of Urban Economics* 50 (1):52-76.

Martin, R. W. 2004. Can Black Workers Escape Spatial Mismatch? Employment Shifts, Population Shifts, and Black Unemployment in American Cities. *Journal of Urban Economics* 55 (1):179-194.

Massey, D. S. 1985. Ethnic residential segregation: A theoretical synthesis and empirical review. *Sociology and Social Research* 69: 315 – 50.

Massey, D. S. 2008. New faces in new places: The changing geography of American immigration. New York: Russell Sage Foundation.

Massey, D.S. and N. A. Denton. 1988. The Dimensions of Residential Segregation. *Social Forces* 67: 281-315.

Mieszkowski, P. and E. S. Mills. 1993. The causes of metropolitan suburbanization. *Journal of Economic Perspectives* 7 (1): 135-147.

Office of Management and Budget. 1999. Bulletin 99-04. June 30.

Office of Management and Budget. 2003. Bulletin No. 03-04, June 6.

O'Sullivan, A. 2000. *Urban Economics*, 4th ed. Boston: Irwin/McGraw-Hill.

Painter, G. and Z. Yu. 2010. Immigrants and Housing Markets in Mid-size Metropolitan Areas, *International Migration Review* 44(2): 442-476.

Painter, G., C. Y. Liu, and D. Zhuang. 2007. Immigrants and the Spatial Mismatch Hypothesis: Employment Outcomes among Immigrant Youth in Los Angeles. *Urban Studies* 44 (13): 2627-2649.

Parks, V. 2004. Access to Work: The Effects of Spatial and Social Accessibility on Unemployment for Native-Born Black and Immigrant Women in Los Angeles. *Economic Geography* 80 (2):141-172.

Park, R. E., E.W. Burgess, and R.McKenzie (eds.) 1925. *The City: Suggestions for the Investigation of Human Behavior in the Urban Environment*. Chicago: University of Chicago Press.

Pastor, M., and E. Marcelli. 2000. Social, Spatial and Skill Mismatch among Immigrants and Native-born Workers in Los Angeles. Center for Comparative Immigration Studies Working Paper No. 1, University of California, San Diego.

Preston, V., McLafferty, S. & Liu, X. F. (1998). Geographical barriers to employment for American-born and immigrant workers. *Urban Studies*, 35 (3), 529-545.

Raphael, S. 1998. The Spatial Mismatch Hypothesis and Black Youth Joblessness: Evidence from the San Francisco Bay Area. *Journal of Urban Economics* 43 (1):79-111.

Raphael, S., and M. A. Stoll. 2002. Modest Progress: The Narrowing Spatial Mismatch between Blacks and Jobs in the 1990s. The Brookings Institution, Living Cities Census Series.

Singer, A. 2004. The Rise of New Immigrant Gateways. The Brookings Institution, Center on Urban and Metropolitan Policy.

Singer, A., S. W. Hardwick and C. B. Brettell (eds.) *Twenty-First Century Gateways: Immigrant Incorporation in Suburban America*. Washington, D.C.: Brookings Institution Press.

Stoll, M. A. 1999. Spatial Mismatch, Discrimination, and Male Youth Employment in the Washington, DC Area: Implications for Residential Mobility Policies. *Journal of Policy Analysis and Management* 18 (1): 77-98.

Turner, M. A. and Ross, S. L. 2003. Discrimination in Metropolitan Housing Markets: Phase 2 – Asians and Pacific Islanders. Washington, D.C.: The Urban Institute. Available at http://www.huduser.org/publications/pdf/phase2_final.pdf

Turner, M. A., Ross, S. L., Galster, G. C. and Yinger, J. 2002. Discrimination in Metropolitan Housing Markets: National Results from Phase HDS 2000. Washington, D.C.: The Urban Institute. Available at http://www.huduser.org/publications/pdf/phase1_report.pdf

Wang, Q. 2006. Linking Home to Work: Ethnic Labor Market Concentration in the San Francisco CMSA. *Urban Geography* 27 (1): 72-92.

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[i] In addition, a third of workers live more than 10 miles from the city center in 1996 (Glaeser et al 2001).

[ii] Research has consistently established a link between job proximity and labor market outcomes (Raphael 1998; Stoll 1999, Painter et al 2007). This is particularly true for minority and immigrant populations who are more likely to be linked to a local labor market (Ellis, Wright, and Parks, 2007).

[iii] Comparing statistics based on these two scales, SMI values are generally larger for zip-code level analysis (Raphael and Stoll, 2002) than for county level analysis (Martin, 2001). It is found that the number of sub-areas in a metropolitan area has significantly positive effect on SMI indices (Martin, 2004).

[iv] One major component of the new system is the use of the Metropolitan Statistical Area (MSA) as the standard tool of representing metropolitan geographies, as opposed to the old system which consists of three categories: MSA, PMSA (Primary Metropolitan Statistical Area) and CMSA (Consolidated Metropolitan Statistical Area).
[v] All immigrants, not just working-age immigrants, are included in all calculations.
[vi] Metropolitan details for the native born black and white population are available upon request.
[vii] Employment shift is calculated by using the base year's residential distribution with the newer period's job distribution and measures how jobs have shifted in relation to the residential distribution from the previous period. Residential shift is obtained by total change minus change due to job shift.
[viii] The detailed statistics for each metropolitan area for the native-born, whites and blacks are available upon request from the authors.
[ix] Analogous models are estimated for native-born white and black residents.
[x] Our analysis shows that the county shares of employment by sector are highly correlated with each other; thus total employment share is used in the regression.
[xi] For both population and employment models, we tried adding county land area as an additional control to account for the potential role county size might play in population and employment shifts. In no case did this variable qualitatively change model results.
[xii] This finding is similar to analysis conducted by Martin (2001) for the black population during the 1970-1990 period.

Table 1. Ring Counties' Share of MSA Employment, 1980-2000

	Share (Percent)			Change (Percentage Point)		
	1980	1990	2000	1980-1990	1990-2000	Total
St. Louis, MO-IL	63.9	78.3	82.2	14.5	3.9	18.3
Denver-Aurora, CO	45.9	56.7	63.1	10.8	6.4	17.1
Detroit-Warren-Livonia, MI	44.1	53.8	59.9	9.8	6.0	15.8
Baltimore-Towson, MD	55.8	63.8	70.8	7.9	7.1	15.0
Milwaukee-Waukesha-West Allis, WI	25.2	30.8	37.9	5.6	7.2	12.7
New Orleans-Metairie-Kenner, LA	45.0	51.7	57.6	6.7	5.8	12.5
Atlanta-Sandy Springs-Marietta, GA	54.8	63.2	67.2	8.4	4.0	12.4
Washington-Arlington-Alexandria, DC-VA-MD-WV	70.5	77.5	81.8	7.0	4.2	11.3
Portland-Vancouver-Beaverton, OR-WA	44.3	50.4	55.4	6.1	5.0	11.1
Cincinnati-Middletown, OH-KY-IN	35.0	38.5	45.8	3.5	7.4	10.8
Chicago-Naperville-Joliet, IL-IN-WI	29.5	34.1	39.1	4.6	5.0	9.7
Indianapolis, IN	22.6	25.9	31.6	3.3	5.7	9.0
Miami-Fort Lauderdale-Miami Beach, FL	45.4	50.6	54.0	5.2	3.4	8.6
Sarasota-Bradenton-Venice, FL	38.1	39.0	45.9	0.9	6.9	7.8
Nashville-Davidson-Murfreesboro, TN	34.1	36.6	41.6	2.6	5.0	7.6
Dallas-Fort Worth-Arlington, TX	38.1	42.3	44.9	4.2	2.6	6.8
San Francisco-Oakland-Fremont, CA	66.5	70.6	72.8	4.1	2.2	6.3
Port St. Lucie-Fort Pierce, FL	45.1	46.6	50.8	1.5	4.2	5.7
Oklahoma City, OK	20.2	23.3	25.9	3.1	2.6	5.7
Los Angeles-Long Beach-Santa Ana, CA	19.7	22.8	25.3	3.1	2.6	5.6
Sacramento-Arden-Arcade-Roseville, CA	25.7	26.4	31.3	0.7	4.9	5.6
Cleveland-Elyria-Mentor, OH	22.5	24.8	27.9	2.3	3.1	5.5
Louisville, KY-IN	24.0	26.4	29.2	2.5	2.7	5.2
Poughkeepsie-Newburgh-Middletown, NY	47.8	49.3	53.0	1.5	3.7	5.2
Jacksonville, FL	14.0	16.6	19.2	2.6	2.5	5.2
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	76.0	78.1	80.8	2.1	2.6	4.8
Minneapolis-St. Paul-Bloomington, MN-WI	45.7	47.2	50.3	1.6	3.0	4.6
Riverside-San Bernardino-Ontario, CA	43.4	45.1	47.8	1.7	2.8	4.5
Springfield, MA	27.9	30.9	32.3	3.0	1.4	4.4
Memphis, TN-MS-AR	13.7	13.9	17.9	0.1	4.1	4.2
Providence-New Bedford-Fall River, RI-MA	54.8	56.7	58.8	1.9	2.1	4.0
Hartford-West Hartford-East Hartford, CT	15.2	17.3	19.2	2.1	1.9	4.0
Houston-Sugar Land-Baytown, TX	15.7	17.1	19.3	1.4	2.2	3.6
Kansas City, MO-KS	88.9	90.8	92.3	1.9	1.5	3.5
Austin-Round Rock, TX	18.2	18.1	21.5	0.0	3.4	3.4
New York-Northern New Jersey-Long Island, NY-NJ-PA	70.2	71.8	72.8	1.6	1.0	2.6
Boston-Cambridge-Quincy, MA-NH	77.0	78.8	79.4	1.9	0.5	2.4
Tulsa, OK	17.8	18.9	20.2	1.1	1.3	2.4
Rochester, NY	20.8	21.5	23.1	0.7	1.6	2.3
Albuquerque, NM	10.3	8.9	12.5	-1.4	3.7	2.2
San Antonio, TX	11.4	11.9	13.4	0.5	1.5	2.0
Syracuse, NY	18.6	19.0	19.8	0.4	0.8	1.2
Albany-Schenectady-Troy, NY	46.6	46.4	47.5	-0.2	1.1	0.9
Salem, OR	11.9	12.0	12.7	0.1	0.8	0.9
Orlando-Kissimee, FL	30.5	30.1	31.3	-0.4	1.2	0.8
Pittsburgh, PA	36.4	35.4	37.2	-1.1	1.9	0.8
Grand Rapids-Wyoming, MI	13.0	12.1	13.2	-0.9	1.1	0.2
Seattle-Tacoma-Bellevue, WA	29.8	29.6	29.8	-0.2	0.2	0.0
Columbus, OH	23.3	21.7	23.3	-1.6	1.6	0.0
Omaha-Council Bluffs, NE-IA	26.6	25.6	26.3	-0.9	0.6	-0.3
Wichita, KS	16.0	14.8	15.6	-1.3	0.8	-0.5
Buffalo-Niagara Falls, NY	16.7	15.8	14.7	-0.9	-1.2	-2.0
Greensboro-High Point, NC	27.8	25.5	24.4	-2.4	-1.1	-3.4
Tampa-St. Petersburg-Clearwater, FL	52.6	51.0	49.1	-1.6	-1.9	-3.5
Durham, NC	41.7	37.9	37.4	-3.8	-0.5	-4.3
Allentown-Bethlehem-Easton, PA-NJ	51.0	48.6	46.4	-2.3	-2.2	-4.5
Raleigh-Cary, NC	17.5	13.0	12.7	-4.5	-0.3	-4.8
Richmond, VA	68.5	63.3	62.8	-5.1	-0.5	-5.7
Virginia Beach-Norfolk-Newport News, VA-NC	83.0	78.4	75.4	-4.6	-3.0	-7.6
Charlotte-Gastonia-Concord, NC-SC	42.8	37.7	34.5	-5.1	-3.2	-8.2
Average	44.7	46.8	48.6	2.1	1.8	3.9

Source: Authors' calculations of 1980, 1990, and 2000 county and city databook.

Table 2. Ring Counties' Share of MSA Foreign-born Population, 1980-2000

	Share (Percent)			Change (Percentage Point)		
	1980	1990	2000	1980-1990	1990-2000	Total
Atlanta-Sandy Springs-Marietta, GA	55.3	66.8	75.7	11.5	8.8	20.4
Cincinnati-Middletown, OH-KY-IN	29.2	30.2	44.4	1.0	14.2	15.2
New Orleans-Metairie-Kenner, LA	53.0	60.7	67.9	7.7	7.2	14.9
Baltimore-Towson, MD	66.8	73.2	79.7	6.5	6.5	13.0
Portland-Vancouver-Beaverton, OR-WA	47.8	53.2	59.7	5.4	6.5	11.9
Miami-Fort Lauderdale-Miami Beach, FL	22.9	25.8	34.6	2.9	8.8	11.7
Detroit-Warren-Livonia, MI	47.8	56.5	59.1	8.7	2.6	11.3
Greensboro-High Point, NC	17.0	15.9	26.6	-1.1	10.7	9.6
Chicago-Naperville-Joliet, IL-IN-WI	19.9	21.5	27.3	1.6	5.8	7.4
Sarasota-Bradenton-Venice, FL	35.0	40.6	42.2	5.6	1.6	7.3
Los Angeles-Long Beach-Santa Ana, CA	13.4	16.6	19.8	3.2	3.2	6.4
Washington-Arlington-Alexandria, DC-VA-MD-WV	86.8	90.4	93.1	3.6	2.7	6.2
Poughkeepsie-Newburgh-Middletown, NY	48.7	55.1	54.9	6.3	-0.2	6.2
Springfield, MA	21.4	27.5	27.6	6.0	0.1	6.1
Raleigh-Cary, NC	7.0	5.7	12.8	-1.3	7.2	5.8
Denver-Aurora, CO4	53.0	57.5	58.7	4.5	1.2	5.7
Jacksonville, FL	18.6	23.7	23.7	5.0	0.0	5.1
Cleveland-Elyria-Mentor, OH	17.7	19.1	21.5	1.4	2.3	3.8
Houston-Sugar Land-Baytown, TX	12.1	12.5	15.8	0.4	3.3	3.7
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	72.1	73.7	75.7	1.5	2.0	3.6
Dallas-Fort Worth-Arlington, TX	37.3	38.3	40.8	1.0	2.5	3.5
Indianapolis, IN	22.6	27.3	26.1	4.7	-1.2	3.5
New York-Northern New Jersey-Long Island, NY-NJ-PA	87.2	88.8	90.7	1.6	1.9	3.4
San Antonio, TX	6.9	7.6	9.7	0.7	2.1	2.8
Albuquerque, NM	13.6	12.8	15.5	-0.8	2.7	1.9
Charlotte-Gastonia-Concord, NC-SC	21.1	15.2	22.3	-5.9	7.1	1.3
Hartford-West Hartford-East Hartford, CT	13.3	13.8	14.6	0.5	0.8	1.3
Milwaukee-Waukesha-West Allis, WI	20.8	20.9	22.0	0.1	1.1	1.2
Louisville, KY-IN	22.0	24.1	22.1	2.1	-2.0	0.0
Rochester, NY	12.6	11.6	12.6	-1.0	1.0	0.0
Nashville-Davidson-Murfreesboro, TN	32.4	30.6	32.4	-1.8	1.8	0.0
Minneapolis-St. Paul-Bloomington, MN-WI	48.4	49.9	47.5	1.5	-2.4	-0.9
Riverside-San Bernardino-Ontario, CA	48.9	48.2	48.0	-0.8	-0.2	-1.0
Memphis, TN-MS-AR	11.4	7.3	9.9	-4.1	2.6	-1.5
Boston-Cambridge-Quincy, MA-NH	75.9	73.7	74.3	-2.2	0.5	-1.7
St. Louis, MO-IL5	78.0	79.8	76.0	1.8	-3.7	-2.0
Seattle-Tacoma-Bellevue, WA	32.1	30.4	30.1	-1.7	-0.3	-2.0
Buffalo-Niagara Falls, NY	18.7	17.8	16.5	-1.0	-1.2	-2.2
Austin-Round Rock, TX	22.1	19.7	19.8	-2.4	0.0	-2.4
Syracuse, NY	14.5	14.2	11.9	-0.3	-2.3	-2.6
Orlando-Kissimee, FL	37.4	37.8	34.6	0.4	-3.2	-2.8
San Francisco-Oakland-Fremont, CA	93.2	91.3	89.9	-1.9	-1.4	-3.3
Columbus, OH	13.9	11.1	10.4	-2.9	-0.7	-3.6
Sacramento-Arden-Arcade-Roseville, CA	27.9	26.0	24.2	-1.8	-1.9	-3.7
Wichita, KS	11.0	9.9	6.9	-1.2	-2.9	-4.1
Kansas City, MO-KS	86.0	88.3	81.6	2.3	-6.8	-4.5
Grand Rapids-Wyoming, MI	9.8	8.4	5.1	-1.3	-3.4	-4.7
Tulsa, OK	14.8	11.8	9.8	-3.1	-2.0	-5.1
Oklahoma City, OK	28.2	26.5	22.7	-1.7	-3.8	-5.5
Salem, OR	15.6	12.6	10.1	-3.0	-2.5	-5.6
Albany-Schenectady-Troy, NY	57.4	54.0	51.5	-3.4	-2.4	-5.8
Allentown-Bethlehem-Easton, PA-NJ	56.8	52.3	49.8	-4.6	-2.4	-7.0
Richmond, VA	62.6	59.2	54.8	-3.5	-4.3	-7.8
Durham, NC	47.6	46.7	38.9	-0.9	-7.8	-8.7
Omaha-Council Bluffs, NE-IA	30.8	29.2	21.2	-1.5	-8.0	-9.5
Pittsburgh, PA	33.6	27.9	23.1	-5.7	-4.8	-10.5
Providence-New Bedford-Fall River, RI-MA	58.2	52.5	46.9	-5.7	-5.6	-11.3
Virginia Beach-Norfolk-Newport News, VA-NC	71.4	58.8	59.8	-12.6	1.1	-11.6
Tampa-St. Petersburg-Clearwater, FL	66.0	56.6	50.8	-9.4	-5.8	-15.2
Port St. Lucie-Fort Pierce, FL	52.6	41.9	33.8	-10.7	-8.1	-18.8
Average*	48.1	47.4	49.8	-0.7	2.4	1.8

Note: Averages are obtained by weighting each MSA by their population.

Source: Authors' calculations of 1980, 1990, and 2000 county and city databook.

Table 3. Ring Counties' Share of MSA Populations (60 MSA average), 1980-2000

	Share (Percent)			Change (Percentage Point)		
	1980	1990	2000	1980-1990	1990-2000	Total
Native-born	54.4	55.5	57.0	1.2	1.4	2.6
White	56.2	57.5	59.3	1.3	1.8	3.1
Black	39.8	42.5	45.3	2.7	2.8	5.5

Source: Authors' calculations of 1980, 1990, and 2000 county and city databook.

Table 4. Spatial Mismatch Index between Residents and Jobs, 1980-2000

	SMI			1980-1990 Change			1990-2000 Change			1980-2000 Change		
	1980	1990	2000	Total	Due to job shift	Due to residential shift	Total	Due to job shift	Due to residential shift	Total	Due to job shift	Due to residential shift
Immigrant	16.8	17.1	15.8	0.2	1.8	-1.5	-1.3	1.4	-2.6	-1.0	3.1	-4.2
Native-born	11.1	11.0	11.4	-0.1	-1.1	1.1	0.3	-0.9	1.2	0.3	-2.0	2.3
White	14.2	13.5	13.7	-0.5	-2.5	2.0	0.2	-2.3	2.5	-0.5	-3.9	3.4
Black	23.8	25.6	25.6	1.8	4.2	-2.3	0.0	2.9	-2.9	1.8	7.2	-5.4

Source: Authors' calculations of 1980, 1990, and 2000 county and city databook.

Table 5. Spatial Mismatch Index between Immigrants and Jobs in Different Industries, 1980-2000

	SMI			1980-2000 Change		
	1980	1990	2000	Total	Due to job shift	Due to residential shift
Wholesale	16.6	16.9	17.1	0.5	5.9	-5.3
Manufacturing	18.7	18.9	19.0	0.3	4.8	-4.5
Retail	17.6	18.3	17.2	-0.4	4.8	-5.2
Construction	20.6	20.5	19.1	-1.5	4.5	-5.9
Services	16.6	16.2	14.8	-1.8	3.0	-4.7

Source: Authors' calculations of 1980, 1990, and 2000 county and city databook.

Table 6. Variable Definitions

Variable	1980	1990
Immigrant Share	County's Share of MSA Immigrant Population, 1980	County's Share of MSA Immigrant Population, 1990
Black Share	County's Share of MSA Black Population, 1980	County's Share of MSA Black Population, 1990
White Share	County's Share of MSA White Population, 1980	County's Share of MSA White Population, 1990
Employment Share	County's Share of MSA Employment, 1980	County's Share of MSA Employment, 1990
College	Percentage of county's residents (age 25 or older) with 4 years of college or more, 1980	Percentage of county's residents (age 25 or older) with 4 years of college or more, 1990
Expenditure	Per capita direct general expenditures by local governments, 1982	Per capita direct general expenditures by local governments, 1992
Tax	Per capita property taxes collected by local governments, 1982	Per capita property taxes collected by local governments, 1992
Unemployment	County civilian labor force unemployment rate, 1980	County civilian labor force unemployment rate, 1990
Crime	Per capita violent crimes known to police, 1981	Per capita violent crimes known to police, 1991
Poverty	Percent of persons with income below the poverty level, 1979	Percent of persons with income below the poverty level, 1989
Median Value	Median value of specified owner-occupied housing units, 1980	Median value of specified owner-occupied housing units, 1990
Center	County that the MSA's Central City is situated in or Central City if not included in a county, based on 2003 OMB Metropolitan Statistical Area (MSA) definitions.	

Table 7. Regression Results of County Population Shift

	1980-1990			1990-2000		
	Immigrants	Whites	Blacks	Immigrants	Whites	Blacks
Intercept	0.002	-0.017 **	0.032 *	0.024 **	-0.012 *	0.025 *
Immigrant Share	0.017			-0.144 *		
White Share		0.058			0.050	
Black Share			-0.046 *			-0.022
Employment Share	-0.044	-0.073	0.063 **	0.133 *	-0.071 *	0.067 *
College	0.010	0.000	0.014 *	-0.003	-0.006	0.009
Poverty	-0.011	0.001	-0.015	-0.014 **	-0.001	-0.011
Expenditure	-0.003	0.000	-0.007	-0.002	0.003	-0.007
Tax	0.004	0.000	-0.001	-0.004	-0.001	-0.001
Median Value	0.004	0.020 ***	-0.019	-0.001	0.024 ***	-0.013
Crime	-0.005 *	-0.001	-0.004 *	0.000	-0.002 *	-0.003
Center	0.021	-0.007	-0.007	0.012	-0.008	-0.032 **
R^2	0.141	0.390	0.285	0.120	0.528	0.352
N	450	450	450	450	450	450

**p<0.05, **p<0.01, ***p<0.001.*

Note: Significance levels are determined using robust standard errors with MSA clusters.

Table 8. Regression Results of County Employment Shift

	1980-1990		1990-2000	
Intercept	0.017 *	-0.008	0.021 **	0.003
Immigrant Share	0.092	-0.022	0.038	-0.008
White Share		0.239 ***		0.147 ***
Black Share		-0.043 *		-0.040
Employment Share	-0.112	-0.183 ***	-0.051	-0.108 *
College	0.009 **	0.012 ***	0.005 *	0.007 **
Expenditure	-0.013 **	-0.007 *	-0.008 *	-0.005
Tax	0.004	0.005	0.000	0.002
Unemployment	-0.014 **	-0.003	-0.014 **	-0.005
Center	-0.006	0.019 *	-0.017	0.004
R^2	0.285	0.533	0.376	0.487
N	450	450	450	450

**p<0.05, **p<0.01, ***p<0.001.*

Note: Significance levels are determined using robust standard errors with MSA clusters.

Appendix A. Spatial Mismatch Index between Immigrants and Jobs, 1980-2000

	SMI			1980-1990 Change			1990-2000 Change			1980-2000 Change		
	1980	1990	2000	Total	Due to job shift	Due to residential shift	Total	Due to job shift	Due to residential shift	Total	Due to job shift	Due to residential shift
Milwaukee-Waukesha-West Allis, WI	4.4	9.9	16.0	5.5	5.6	-0.1	6.0	7.2	-1.1	11.6	12.7	-1.2
Pittsburgh, PA	4.7	9.1	14.1	4.5	0.8	3.7	5.0	1.7	3.3	9.5	2.5	7.0
Port St. Lucie-Fort Pierce, FL	7.5	4.7	16.9	-2.8	-1.5	-1.3	12.2	4.2	8.1	9.4	2.6	6.8
Tulsa, OK	3.1	7.3	11.0	4.2	1.6	2.6	3.7	1.3	2.3	7.9	3.0	4.9
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	9.4	14.6	16.4	5.2	8.0	-2.9	1.8	5.3	-3.4	7.0	13.3	-6.3
Memphis, TN-MS-AR	2.4	6.5	8.1	4.1	0.4	3.8	1.5	4.1	-2.6	5.6	4.4	1.2
Indianapolis, IN	3.2	5.3	8.7	2.1	1.3	0.8	3.4	-0.2	3.6	5.5	1.2	4.4
Sacramento-Arden-Arcade-Roseville, CA	4.8	5.4	10.1	0.6	1.4	-0.9	4.7	4.2	0.5	5.3	5.7	-0.4
Richmond, VA	14.1	16.3	19.2	2.2	-2.0	4.2	2.9	-1.3	4.3	5.1	-3.3	8.4
Atlanta-Sandy Springs-Marietta, GA	24.7	28.3	29.7	3.6	-2.5	6.1	1.4	-5.0	6.4	5.0	-7.5	12.5
Grand Rapids-Wyoming, MI	3.2	3.6	8.2	0.4	-0.9	1.3	4.5	1.1	3.4	4.9	0.2	4.7
Portland-Vancouver-Beaverton, OR-WA	4.5	6.5	9.2	2.0	-1.2	3.3	2.7	-0.7	3.4	4.7	-2.0	6.7
Boston-Cambridge-Quincy, MA-NH	3.3	6.8	7.9	3.5	1.9	1.6	1.1	1.0	0.1	4.6	2.9	1.7
Minneapolis-St. Paul-Bloomington, MN-WI	5.4	10.3	9.9	4.9	0.6	4.3	-0.4	2.5	-3.0	4.5	3.1	1.3
Kansas City, MO-KS	8.4	8.7	12.5	0.3	1.6	-1.4	3.9	-0.1	4.0	4.1	1.5	2.6
Syracuse, NY	4.1	4.8	7.9	0.7	0.4	0.3	3.1	0.8	2.3	3.8	1.2	2.6
Denver-Aurora, CO4	7.7	3.7	11.5	-4.0	-2.4	-1.6	7.8	3.0	4.8	3.8	0.6	3.2
Wichita, KS	5.0	4.9	8.6	-0.1	-0.8	0.7	3.7	0.8	2.9	3.7	0.0	3.7
Columbus, OH	9.4	10.6	12.9	1.2	-1.6	2.9	2.3	1.6	0.7	3.6	0.0	3.6
Baltimore-Towson, MD	12.9	14.4	16.4	1.6	-4.5	6.1	1.9	-4.1	6.0	3.5	-8.6	12.1
New Orleans-Metairie-Kenner, LA	15.1	16.4	17.9	1.3	-4.2	5.4	1.6	-2.0	3.6	2.8	-6.1	9.0
Hartford-West Hartford-East Hartford, CT	2.0	3.9	4.6	1.9	1.9	-0.1	0.7	1.5	-0.8	2.5	3.4	-0.9
Louisville, KY-IN	6.9	6.7	9.4	-0.2	2.0	-2.2	2.7	2.1	0.6	2.5	4.1	-1.6
Rochester, NY	8.2	9.9	10.5	1.7	0.7	1.0	0.6	1.6	-1.0	2.3	2.3	0.0
Chicago-Naperville-Joliet, IL-IN-WI	9.6	12.6	11.9	3.0	4.6	-1.6	-0.8	5.0	-5.8	2.3	9.7	-7.4
Virginia Beach-Norfolk-Newport News, VA-NC	15.6	22.0	17.8	6.4	-4.6	11.0	-4.2	-2.7	-1.6	2.2	-7.3	9.4
Dallas-Fort Worth-Arlington, TX	3.6	5.0	5.7	1.5	1.9	-0.5	0.6	1.6	-1.0	2.1	3.5	-1.4
New York-Northern New Jersey-Long Island, NY-NJ-PA	33.8	35.8	35.9	2.0	0.6	1.4	0.1	-0.2	0.3	2.1	0.4	1.7
Cleveland-Elyria-Mentor, OH	4.8	5.7	6.5	0.9	2.3	-1.4	0.8	3.1	-2.3	1.7	5.5	-3.8
Nashville-Davidson-Murfreesboro, TN	7.8	8.5	9.3	0.8	-1.2	2.0	0.7	2.5	-1.8	1.5	1.3	0.2
Cincinnati-Middletown, OH-KY-IN	6.0	10.1	7.0	4.1	3.5	0.6	-3.0	5.8	-8.8	1.0	9.3	-8.2
Poughkeepsie-Newburgh-Middletown, NY	0.9	5.7	1.9	4.8	-0.3	5.1	-3.8	-3.7	-0.2	1.0	-3.9	4.9
Houston-Sugar Land-Baytown, TX	4.9	6.6	5.7	1.7	0.6	1.1	-1.0	0.5	-1.5	0.7	1.1	-0.4
Sarasota-Bradenton-Venice, FL	3.2	1.5	3.7	-1.6	0.9	-2.5	2.1	3.8	-1.6	0.5	4.7	-4.2
Allentown-Bethlehem-Easton, PA-NJ	0.8	1.0	1.0	0.2	0.6	-0.4	-0.1	0.7	-0.7	0.2	1.3	-1.1
Providence-New Bedford-Fall River, RI-MA	6.5	5.3	6.5	-1.3	2.2	-3.5	1.3	2.2	-0.9	0.0	4.4	-4.4
Albuquerque, NM	14.9	14.8	14.9	-0.2	0.7	-0.9	0.1	0.1	0.1	0.0	0.8	-0.8
Buffalo-Niagara Falls, NY	3.5	4.1	3.4	0.6	1.5	-0.9	-0.8	-3.5	2.7	-0.2	-1.9	1.8
San Antonio, TX	2.1	1.9	1.9	-0.1	0.9	-1.0	-0.1	1.2	-1.2	-0.2	2.0	-2.2
Seattle-Tacoma-Bellevue, WA	4.5	4.3	4.0	-0.2	0.5	-0.7	-0.3	1.5	-1.8	-0.5	2.0	-2.5
Detroit-Warren-Livonia, MI	2.4	0.8	1.8	-1.5	1.4	-3.0	1.0	0.5	0.5	-0.6	1.9	-2.5
Los Angeles-Long Beach-Santa Ana, CA	5.7	5.0	5.1	-0.6	3.4	-4.0	0.0	3.0	-3.0	-0.6	6.4	-7.0
Jacksonville, FL	6.3	6.2	5.6	-0.1	3.1	-3.2	-0.6	2.6	-3.2	-0.8	5.6	-6.4
Salem, OR	6.5	8.3	5.7	1.8	-2.5	4.3	-2.6	-2.4	-0.2	-0.8	-4.9	4.1
Austin-Round Rock, TX	2.5	1.6	1.7	-1.0	0.2	-1.2	0.1	0.8	-0.7	-0.9	1.0	-1.8
Orlando-Kissimee, FL	3.8	0.6	2.7	-3.1	-0.1	-3.0	2.0	-0.5	2.5	-1.1	-0.6	-0.5

Springfield, MA	4.0	2.0	2.5	-2.0	0.5	-2.4	0.5	0.9	-0.3	-1.4	1.3	-2.8
Omaha-Council Bluffs, NE-IA	7.9	9.1	6.3	1.2	0.8	0.4	-2.8	-1.0	-1.8	-1.6	-0.2	-1.4
Washington-Arlington-Alexandria, DC-VA-MD-WV	6.5	5.7	4.8	-0.8	3.0	-3.8	-0.8	0.8	-1.6	-1.7	3.8	-5.5
Miami-Fort Lauderdale-Miami Beach, FL	10.5	10.9	7.8	0.4	-1.1	1.5	-3.1	-0.9	-2.2	-2.7	-2.0	-0.6
Albany-Schenectady-Troy, NY	20.8	19.1	17.9	-1.6	-4.9	3.2	-1.2	-1.4	0.1	-2.9	-6.2	3.4
Riverside-San Bernardino-Ontario, CA	22.5	24.8	19.4	2.3	5.2	-2.9	-5.4	3.4	-8.8	-3.1	8.6	-11.7
Greensboro-High Point, NC	10.8	9.1	6.7	-1.7	2.4	-4.1	-2.4	1.9	-4.3	-4.1	4.2	-8.3
St. Louis, MO-IL5	5.6	3.1	0.1	-2.5	-1.7	-0.8	-3.0	-2.8	-0.2	-5.5	-4.5	-1.0
Oklahoma City, OK	10.8	9.6	5.3	-1.2	-2.4	1.1	-4.2	-1.1	-3.2	-5.5	-3.4	-2.0
Charlotte-Gastonia-Concord, NC-SC	17.2	8.5	11.2	-8.7	-10.1	1.4	2.7	1.9	0.8	-6.1	-8.2	2.1
Raleigh-Cary, NC	11.6	7.3	5.4	-4.3	-2.5	-1.8	-1.8	-2.0	0.2	-6.1	-4.5	-1.6
Durham, NC	21.7	22.5	14.0	0.8	-5.1	5.9	-8.5	-3.2	-5.4	-7.7	-8.2	0.5
Tampa-St. Petersburg-Clearwater, FL	10.5	7.3	0.9	-3.2	-4.5	1.3	-6.3	-0.3	-6.1	-9.5	-4.8	-4.7
San Francisco-Oakland-Fremont, CA	15.2	15.5	5.6	0.2	1.0	-0.7	-9.9	0.0	-9.8	-9.7	0.9	-10.6
Tampa-St. Petersburg-Clearwater, FL	13.4	5.6	3.5	-7.8	2.4	-10.2	-2.1	1.9	-4.0	-9.9	4.3	-14.2
San Francisco-Oakland-Fremont, CA	41.0	36.2	30.1	-4.8	0.0	-4.8	-6.2	0.0	-6.2	-10.9	0.0	-10.9
Average	**16.8**	**17.1**	**15.8**	**0.2**	**1.8**	**-1.5**	**-1.3**	**1.4**	**-2.6**	**-1.0**	**3.1**	**-4.2**

Source: Authors' calculations of 1980, 1990, and 2000 county and city databook.