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Competitiveness of Ethnic Minority Neighborhoods in Metropolitan Areas in the Seventh District

by Maude Toussaint-Comeau

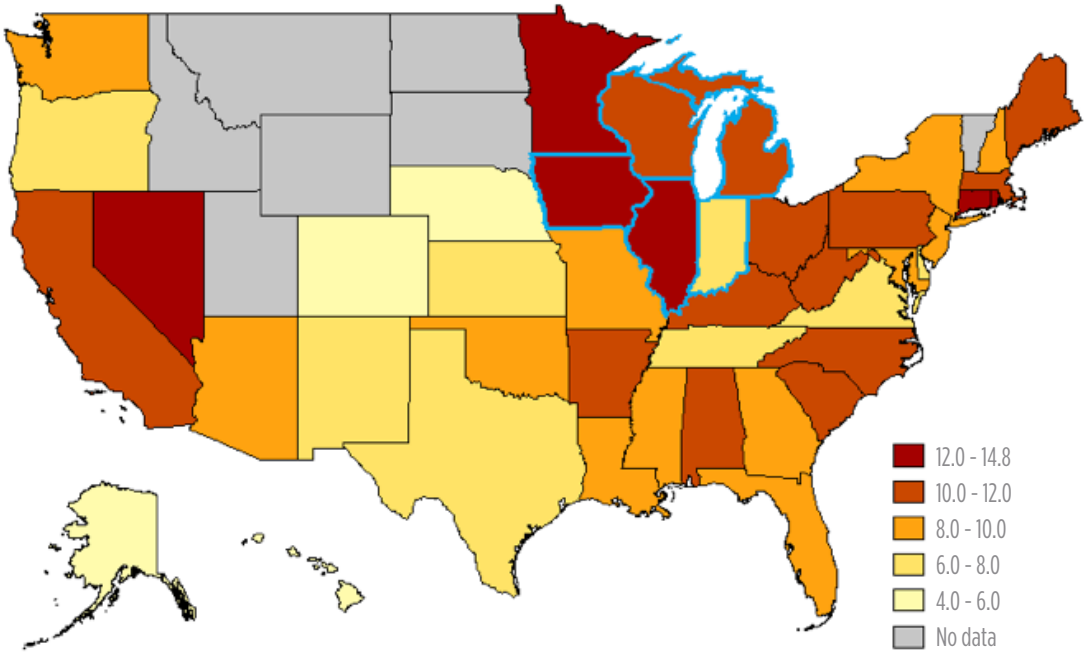
The Seventh District of the Federal Reserve is home to many ethnic/racial communities with mixed socio-economic and demographic characteristics, including several traditionally vibrant middle-class, predominantly black neighborhoods such as Greater Chatham, and Hispanic neighborhoods like Little Village.[1] Many of these communities felt the most damaging impacts of the 2007-2009 housing market crash and financial crisis. Changing demographics, the outmigration of working-age residents, and crime rates, which tend to be exacerbated in areas of concentrated poverty, have created further challenges in some of these places. As a result, employment and competitiveness (among various industries) in some of these neighborhoods have lagged behind their region. As of 2015 data, unemployment in states in the district remains fairly high for blacks, for example, compared to the nationwide average (map 1).

This article examines employment change in ethnic minority neighborhoods and the extent to which these places are integrated in their region's economy, and explores the different factors associated with this integration. Indeed previous researchers have analyzed job competitiveness in local areas and have provided insights behind factors that contribute to increasing jobs in these places. Such places are in proximity to cities with strong local and traded clusters, including large clusters of employer anchor institutions such as universities and hospitals (e.g., Porter, 1995; Mattoon and Wang, 2014). They have increased accessibility to cities with increased population with more human capital. In addition, places that are targeted by special public policies and initiatives, such as being designated empowerment and economic recovery zones, tend to have faster job growth (e.g., Hartley, Kaza, and Lester, 2016). Research also suggests that the financial market and access to banking services and credit can play a role in the well-being of local areas (Metzger, 2011; Bates and Ross, 2016). Based on previous studies, overall, neighborhoods in growing metropolitan areas tend to also grow; metro areas do best when growth and benefits cross socioeconomic boundaries.[2]

This article offers a case study of neighborhoods in the Fed's Seventh District, building on previous research that explores factors associated with creating or sustaining employment growth in local areas. We find a number of interesting results that seem to characterize neighborhoods that experience job growth and are competitive within their regions. These neighborhoods tend to be in metropolitan areas that also experience overall job growth; there seems to be less disparity in employment gains across diverse neighborhoods in growing metropolitan areas; expanding metropolitan areas have a wider range of mixed industries, and diverse neighborhoods benefit with employment gains in those growing industries.

In addition, we analyze the association between various factors and job growth, and find results consistent with expectations. We find that faster employment growth tends to happen in places that have greater industry diversity, redevelopment, and increased population. We also find that place-based public policies like the Low Income Housing Tax Credit (LIHTC) are associated with faster local employment growth. Finally, we analyze how different ethnic/racial communities kept up with employment expansion post the 2008 recession, during the economic recovery period, and the factors that played a role. And, for these communities, we find that the overall health of the region and financial service factors and credit (available) to businesses were even more important during this period.

Map 1. Unemployment rate of blacks in the United States and states in the Seventh District, 2015



Source: Bureau of Labor Statistics.
Note: States in the Federal Reserve Seventh District outlined in blue.

Data sources and methodology

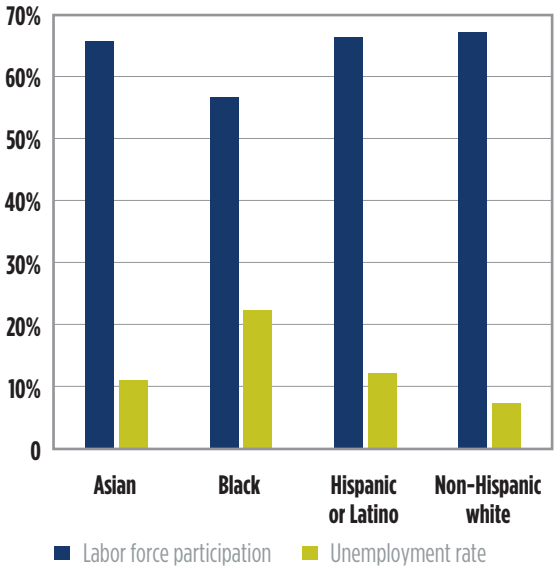
We primarily use data from the U.S. Census Bureau's Longitudinal Employment and Household Dynamics (LEHD) data set. Specifically, we use special tabulations of the LEHD data created for local transportation and workforce development analysis called the LODES program, from 2002 to 2014 (the latest year available). The data set is available at a 2010 block-group-level geography. We aggregate total employment and employment by broad industry sector to a tract level (2010 census tract boundaries) for the purpose of this analysis. The LODES data are also available on a worker residence basis and on workplace basis. We use the latter counts of employment, as we are primarily interested in the changing geography of employment between neighborhoods (and related, contributing factors).[3]

We use this LODES data to measure competitiveness of neighborhoods. Consistent with the literature, we define "competitiveness" based on the job growth of the census tract relative to the job growth in its metropolitan area. Census tracts that have increased their share of jobs are considered competitive (Hartley, Kaza, and Lester, 2016). We conduct this analysis at both the aggregate and industry levels to understand the nature of job/industry competitiveness for given neighborhoods.

For this place-based analysis, we identify selected major metropolitan areas known as "core-base statistical areas" (CBSAs) in the Seventh District. These include Chicago; Indianapolis; Milwaukee, Cedar Rapids, and Waterloo in Wisconsin; Detroit and Flint in Michigan; and Des Moines. Within these metropolitan areas, we identify census tracts (our proxy for neighborhoods) for analysis purposes. Using population and racial/ethnicity of the census tracts from ACS data (2015), we compute the ethnic/racial plurality of the census tract. Both the LODES and this additional data source allow us to measure competitiveness of neighborhoods of different ethnic/racial plurality relative to each other and relative to their respective metropolitan areas.

From the ACS data, we also identify various other characteristics related to the labor market and socioeconomic conditions of the census tracts. These include the labor force participation, unemployment rate, and poverty rate. In addition, we use archived data from the EPA to measure various environmental or spatial accessibility factors in the census tracts, including access to public transit, overall transportation networks, and proximity to

Chart 1. Labor market indicators in 7th District by ethnic/racial neighborhoods



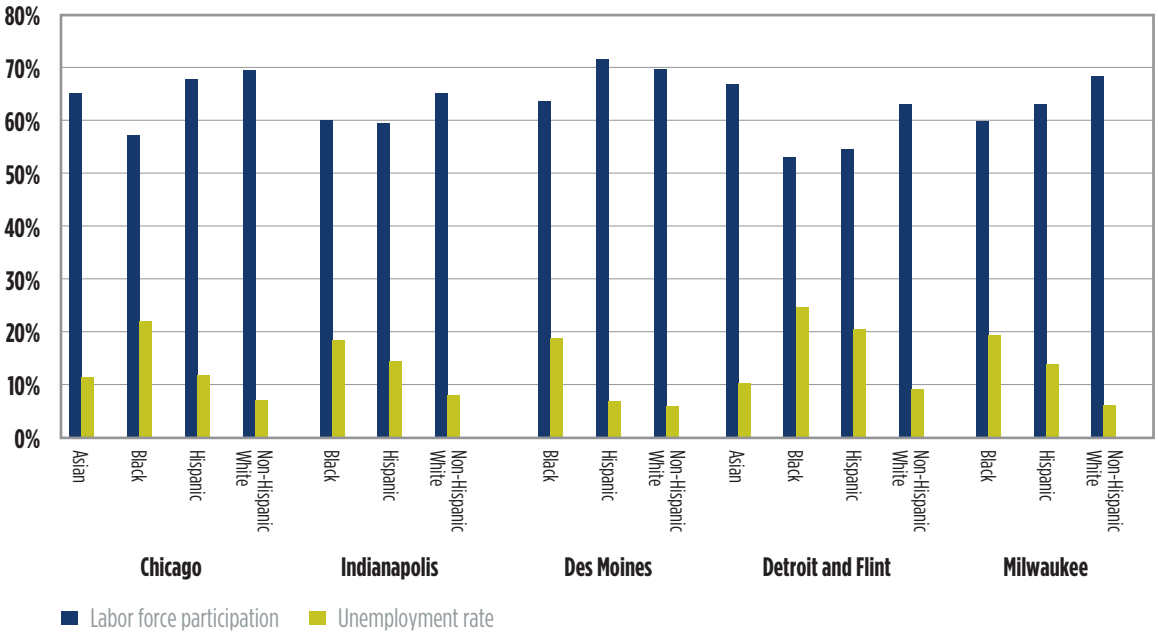
Source: American Community Survey, 2011-2015, 5-Year estimates

central business districts. We use data from HUD to ascertain the relationship of place-based policies in census tracts, such as LIHTCs and empowerment and economic zone designation, and subsequent employment growth and competitiveness. To measure financial services, we use bank branch addresses (which we geocode to census tracts) and deposits in bank branches in the census tract. These data are from the FDIC Summary of Deposits. Data for credit flows to businesses are from and the FFIEC, CRA small business data.

Labor market challenges

Charts 1 and 2 show various labor market indicators in neighborhoods in the Seventh District as a whole, and by major metropolitan areas, respectively.[4] These 2011-2015 ACS estimates suggest that black neighborhoods had lower labor force participation rate on average than non-Hispanic white neighborhoods and Hispanic neighborhoods.[5] Unemployment rate in black neighborhoods was more than 20 percent, twice the rate in other places (chart 1).

Chart 2. Labor market indicator in states in the 7th District by ethnic/racial neighborhoods



Source: American Community Survey, 2011-2015, 5-Year estimates

Chart 2 shows differences in the unemployment rate of different ethnic/racial neighborhoods, by the selected metropolitan areas in the district. Detroit and Flint, followed by Chicago, have the highest unemployment in their respective black communities overall, at 25 percent and 22 percent. The unemployment rate in Hispanic communities in those metropolitan areas in Michigan is also elevated, at 20 percent. In Des Moines, Milwaukee, and Indianapolis, the unemployment rate is just under 20 percent, representing almost three times the rate for non-Hispanic white neighborhoods in those metropolitan areas.

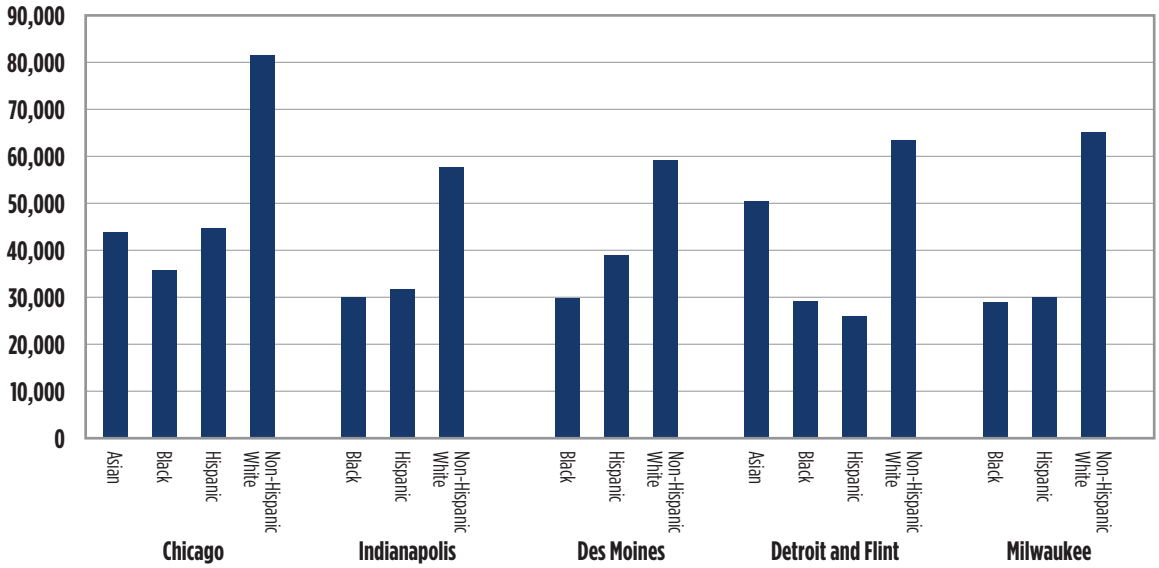
Lower labor force participation and higher unemployment in ethnic minority communities in metropolitan areas throughout the Seventh District translate into households having lower incomes in those communities. The median income in predominantly black neighborhoods is less than half that in predominantly non-Hispanic white neighborhoods in most of the metropolitan areas being considered. In Chicago, black communities on average have income one-third that of non-Hispanic white neighborhoods (chart 3).

Relatedly, there is a stark difference in the poverty rate across neighborhoods. More than 25 percent of households in black neighborhoods in Chicago live in poverty, and more than 30 percent of households in black neighborhoods in Detroit live in poverty. High rates of unemployment are also seen for Hispanic neighborhoods, particularly in Detroit and in Milwaukee (chart 4).

Job growth across neighborhoods

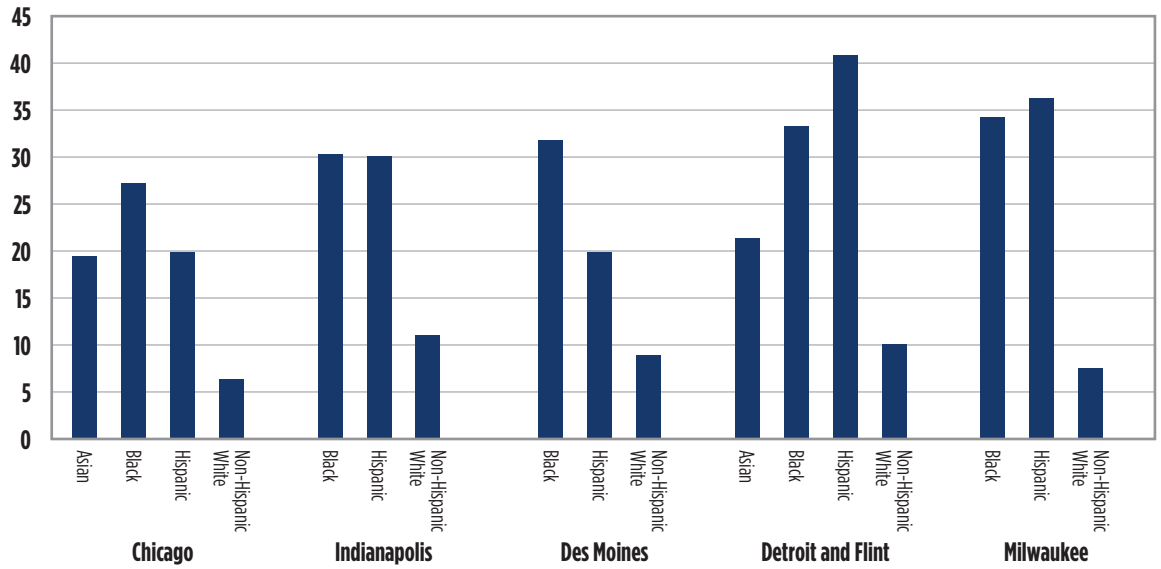
Communities and neighborhoods are obviously part of a broader regional context, and to understand their prospect for expanding, we need to understand their region. We first take a look at job growth and income growth in those selected metropolitan areas in the district (chart 5). Employment declined in Detroit and Flint from 2002 to 2011, although interestingly they experienced some increases in income growth.[6] By contrast, both jobs and income grew in Chicago, Indianapolis and Milwaukee. Des Moines had the highest growth in jobs and income. Chicago, and Milwaukee both had relatively moderate job growth and a relatively faster income growth. Changes in jobs and income were somewhat similar in range between 9 percent and 10 percent for Indianapolis.

Chart 3. Household median income across ethnic/racial neighborhoods in metropolitan areas in the 7th District



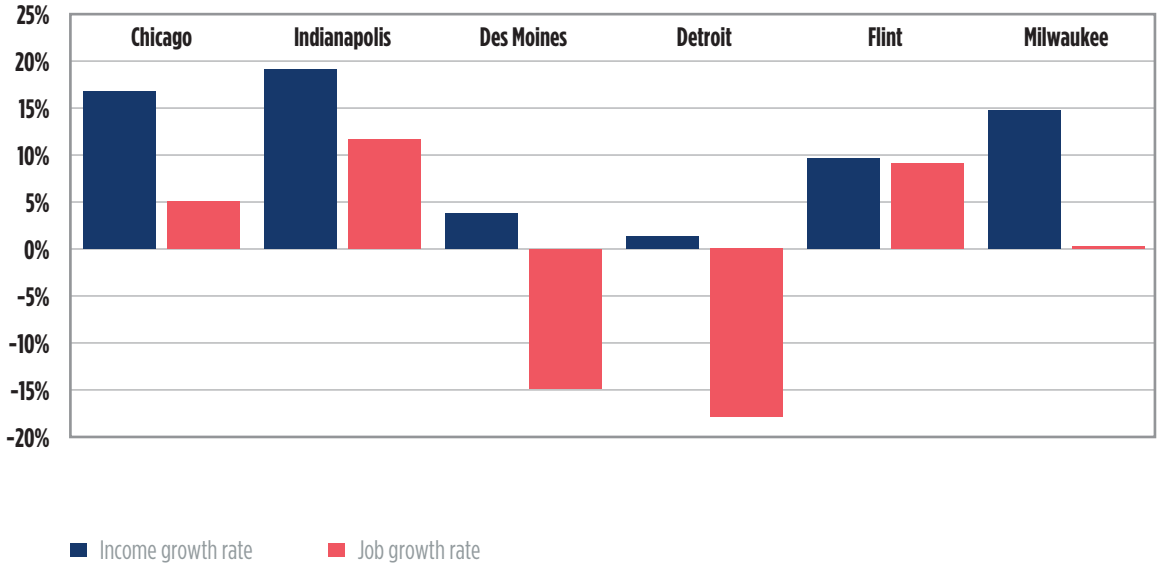
Source: American Community Survey, 2011-2015, 5-Year estimates

Chart 4. Household poverty rate across ethnic/racial neighborhoods in metropolitan areas in the 7th District



Source: American Community Survey, 2011-2015, 5-Year estimates

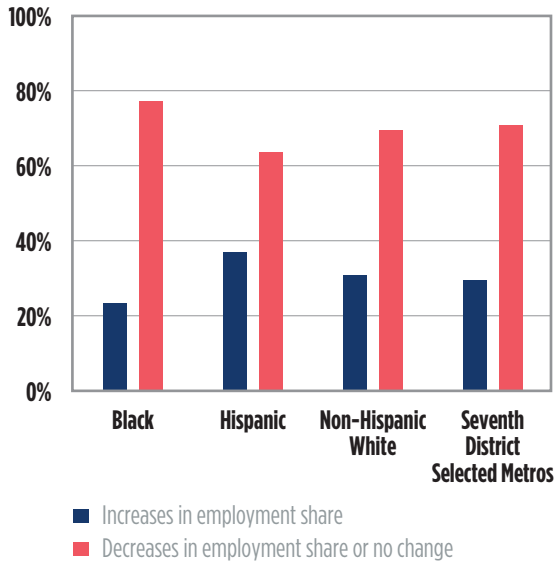
Chart 5. Job growth and household income growth (2002-2011) in selected metropolitan areas in the 7th District



Source: American Community Survey, 2011-2015, 5-Year estimates,
Local Origin Destination Employment Statistics (LODES), 2002, 2011

We looked at the data by the ethnic/racial plurality of the neighborhoods and determined the extent to which neighborhoods, based on this characteristic, had job increases or decreases, as a share of jobs in their respective metropolitan areas (chart 6). Between 2002 and 2011, 29 percent of all neighborhoods had increased their share of employment in their metropolitan areas in the Seventh District. Close to 25 percent of black neighborhoods grew their share of employment. Thirty-six percent of Hispanic neighborhoods increased their share of employment. By contrast, 30 percent of non-Hispanic white neighborhoods increased their share of employment.

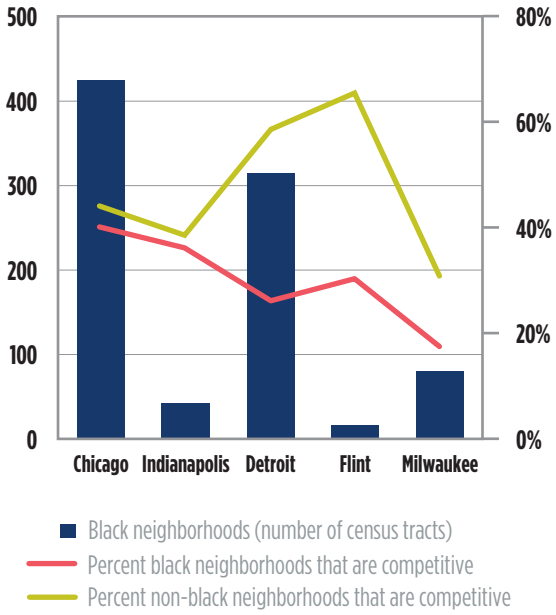
Chart 6. Percent and number of census tracts with increased/decreased share of employment by ethnic/racial plurality of neighborhoods in the Seventh District



Source: American Community Survey, 2011-2015, 5-Year estimates, Local Origin Destination Employment Statistics (LODES), 2002, 2011

Looking at similar information by the metropolitan areas (chart 7), the results suggest that faster growing metropolitan areas (Chicago, Indianapolis, Milwaukee) have job growth rates which are more closely similar across various ethnic/racial neighborhoods on average, compared to metropolitan areas with slower or declining job growth overall (Detroit, Flint). In Chicago, 41 percent of neighborhoods with a black plurality population have had job increasing as a share of all jobs in the Chicago metro. The corresponding percentage for non-black plurality census tracts is 46 percent, a 5 percentage point difference. By contrast in Detroit, 28 percent of its black neighborhoods had job increases as a share of jobs in that metropolitan area. The corresponding percentage for non-black plurality tracts in Detroit is 60 percent, which is more than a 50 percentage point higher. Similar differences can be seen in Flint, another metro that experience overall job declines.

Chart 7. Percent and number of census tracts with increases in share of jobs by ethnic/racial plurality of the tracts in the metropolitan areas



Source: American Community Survey, 2011-2015, 5-Year estimates, Local Origin Destination Employment Statistics (LODES), 2002, 2011

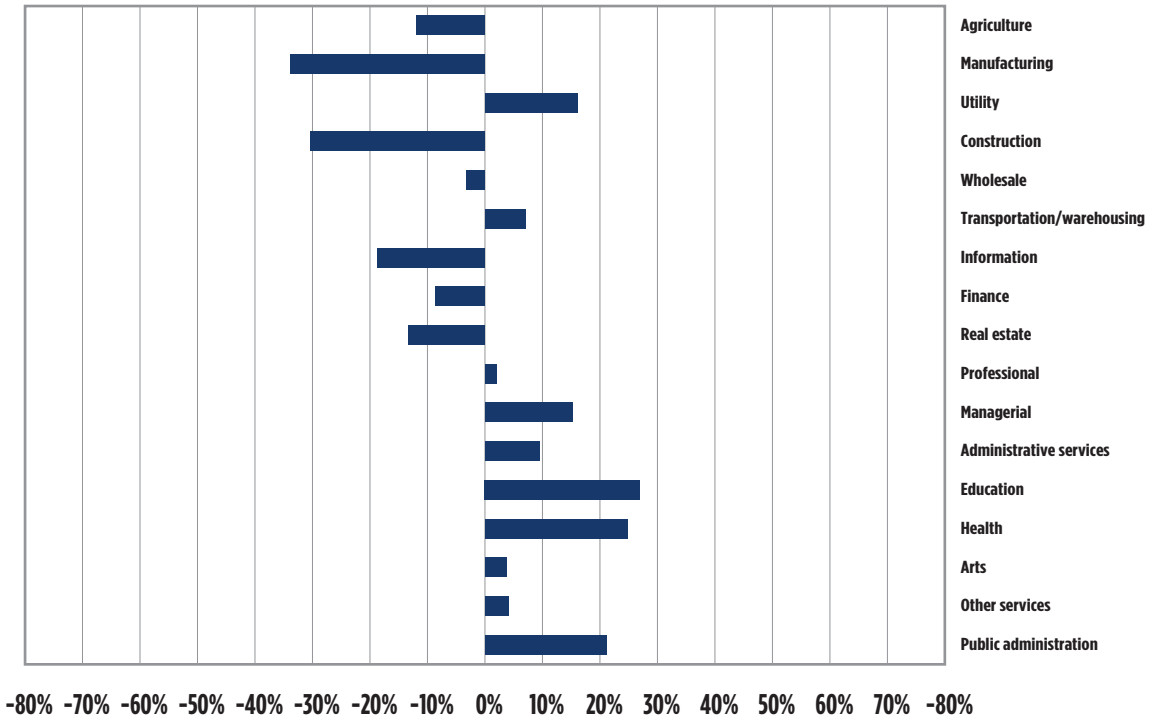
Note: This figure shows the number of census tracts in each metropolitan area that are blacks on the left axis. On the right axis, it shows the corresponding percentage of census tracts that are blacks and the percent of census tracts that are non-blacks, respectively, that are competitive in each of those metropolitan areas, in the sense that their employment growth has increased as a share of the overall employment growth in their respective metropolitan areas.

Industry mix

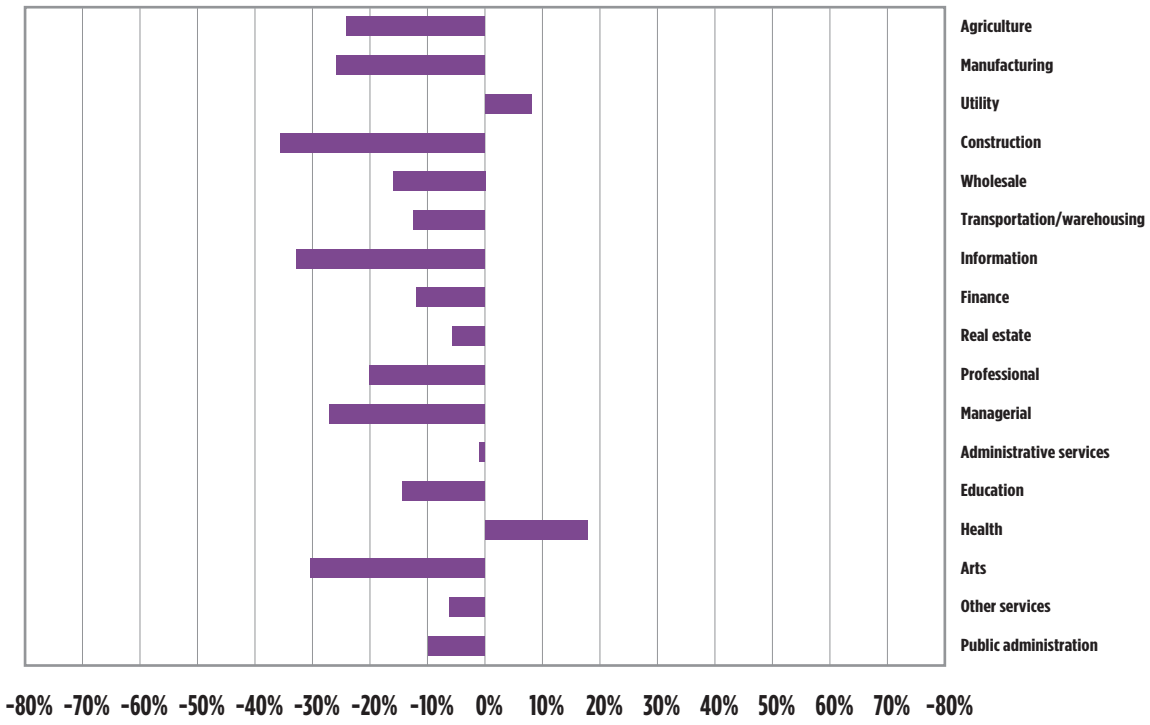
It is interesting to note the specific industry or sectors that are sources of employment, which make places more or less competitive. Chart 8 (various panels) shows the change in the number of jobs by industry for the selected metropolitan areas in the Seventh District. This chart suggests that metropolitan areas that have grown, like Chicago, Des Moines, and Indianapolis, have a greater mix of expanded industries. Ten to 13 of the 16 main industries in those metropolitan areas have grown in terms of generating jobs. As can be seen, there has been noticeable job growth in utilities in Chicago and Milwaukee. Job growth in managerial and administrative industries, education, arts, public, and other services were also seen in Chicago, Milwaukee, and Des Moines. Noticeable job growth in the health industries was common in all the selected metropolitan areas. By contrast, employment in only two industries, health and utilities, grew over this period in the Detroit metropolitan area. In Flint, some relatively more tepid job growth is seen in four other industries, in addition to health. These include information technology, finance, administrative, and arts services industries.

Chart 8. Change in employment by industry in selected metropolitan areas in the 7th District

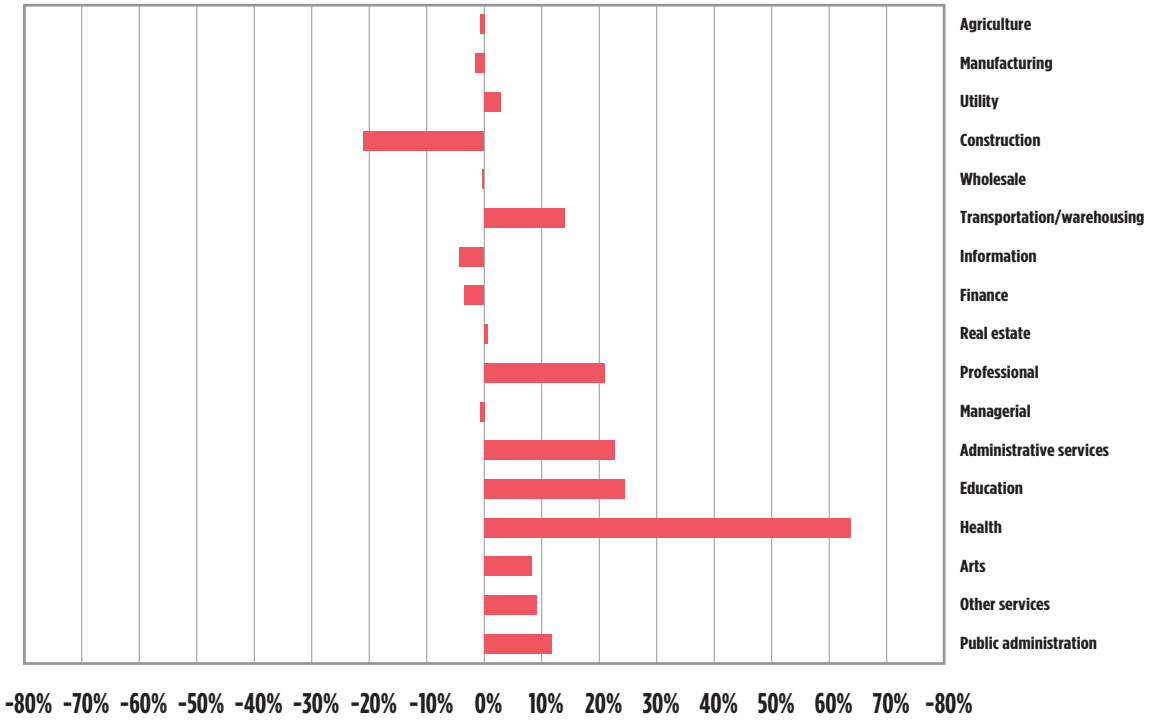
8A. Chicago



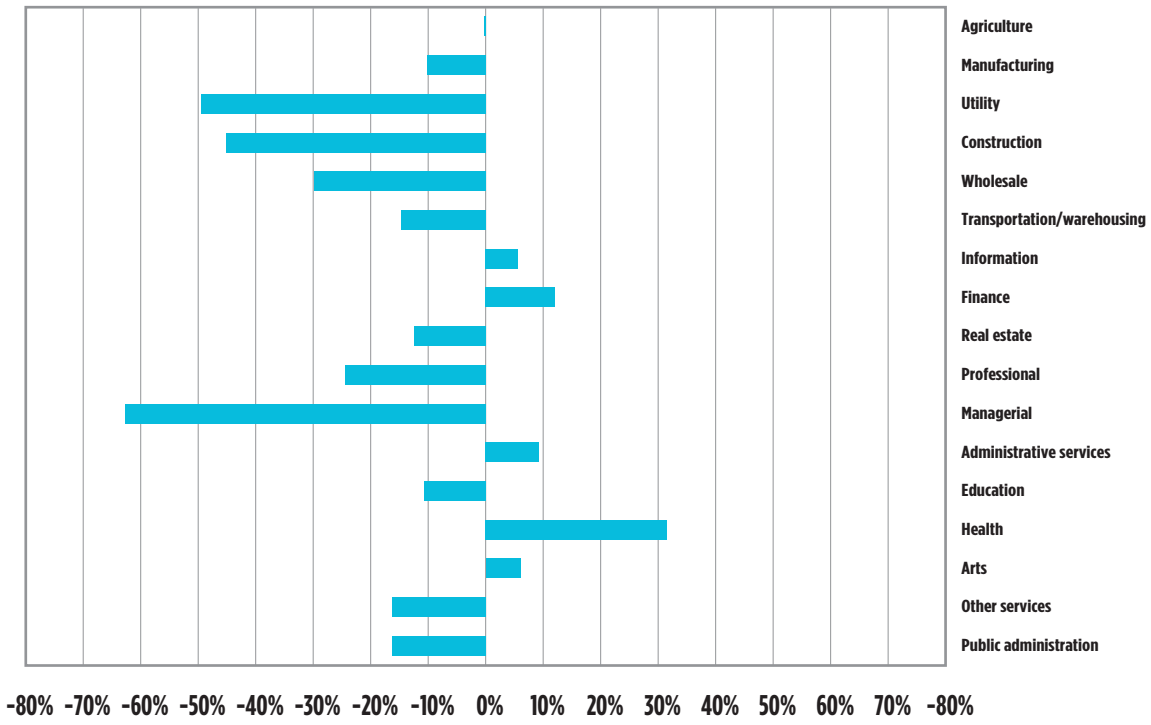
8B. Detroit



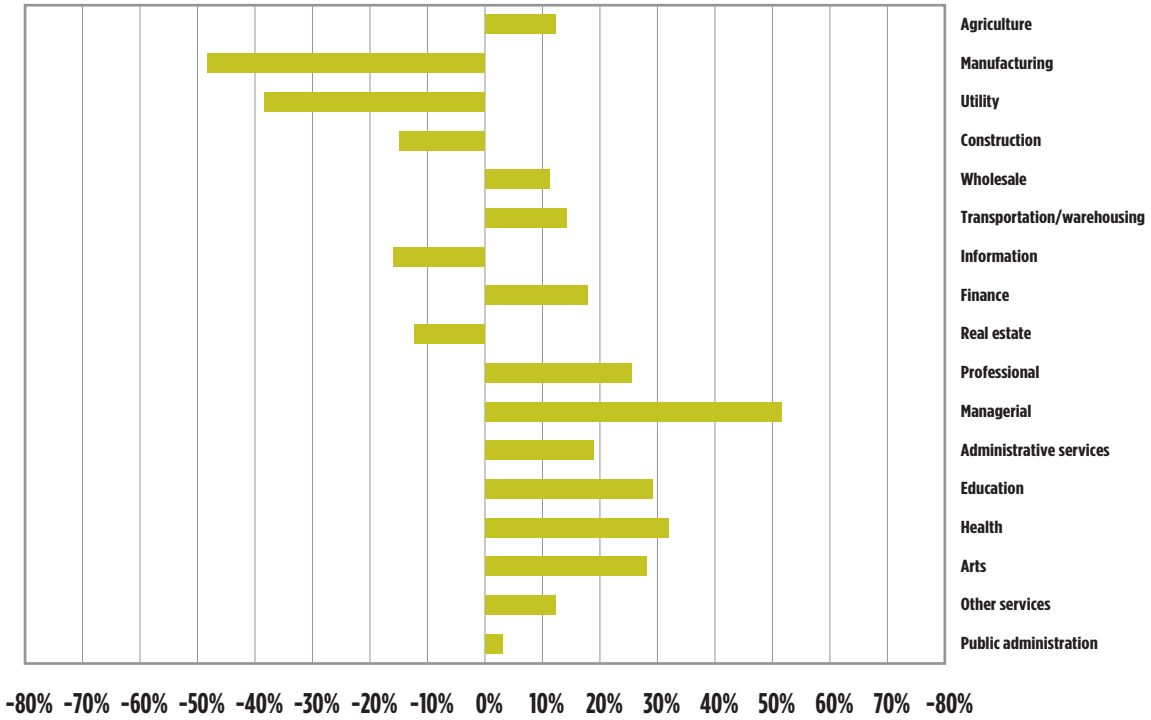
8C. Indianapolis



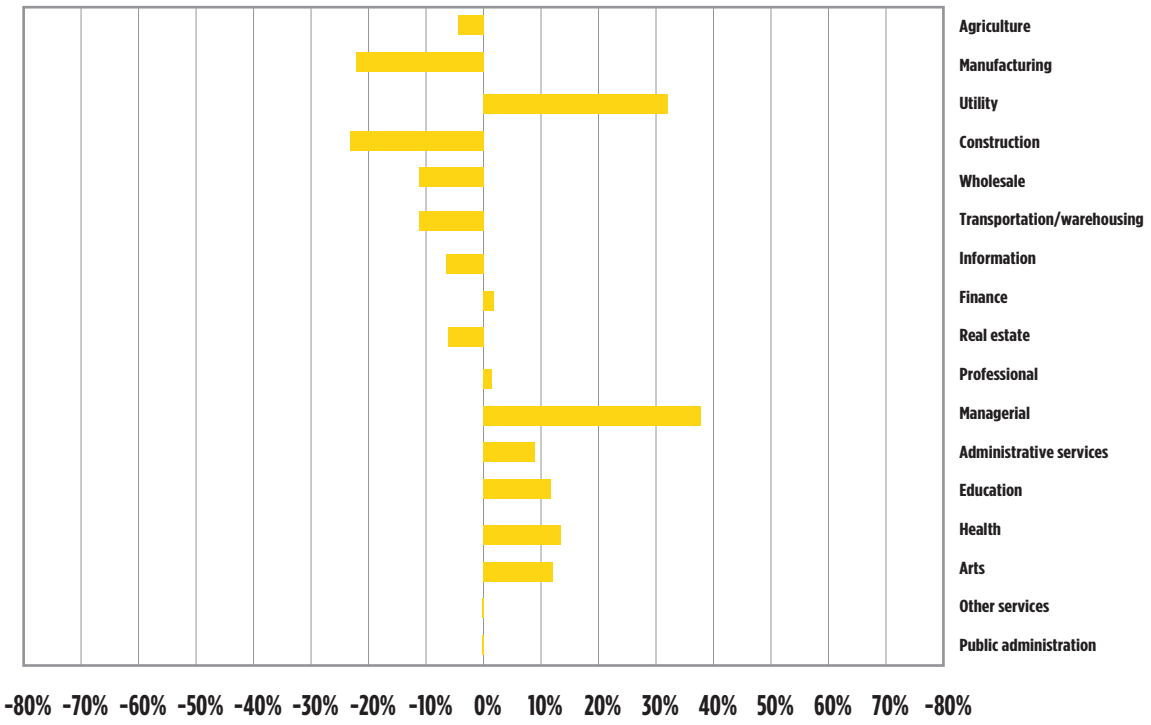
8D. Flint



8E. Des Moines



8F. Milwaukee



Source: Local Origin-Destination Employment Statistics (LODES), 2002 , 2011.

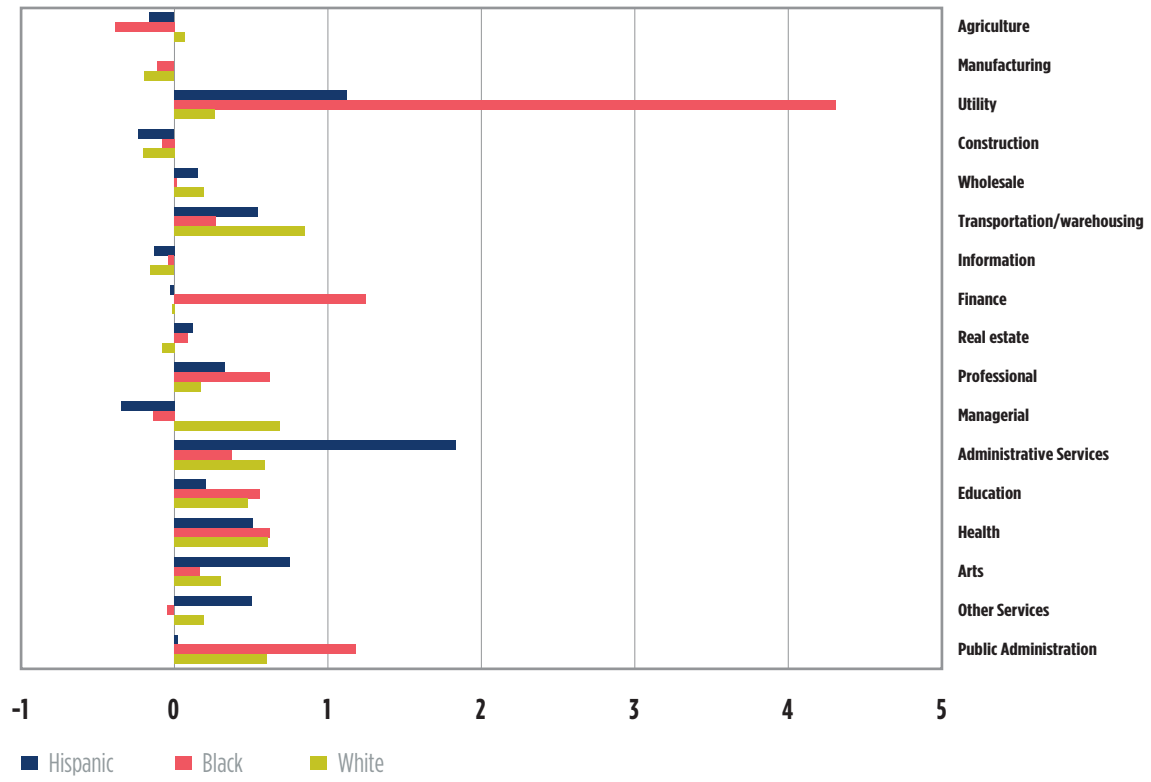
Chart 9 illustrates the potential relationship between job growth in a mixed set of industries in a metropolitan area and job growth in its various ethnic/racial neighborhoods. As can be seen in this illustration for the neighborhoods in the Chicago metro, job growth in the various industry sectors has spread across the neighborhoods. In black neighborhoods on average, jobs in utilities services, transportation and warehousing, public services, health, education have grown in close par with Chicago's. The same is true in Hispanic neighborhoods for various industries, such as utilities, transportation and warehousing, and professional services.

Determinants of neighborhood competitiveness

In this section, we turn to a multivariate analysis with an examination of various correlates of employment growth. We adopt a framework developed in Hartley, Kaza, and Lester (2016) to understand the extent to which various factors are associated with making a place competitive, or affect change in employment. We are indeed interested in documenting how minority places kept up with expansion post the last 2008-2010 recession, and were able to lever and build upon various factors that contribute to their competitiveness. Table 1 lists the factors hypothesized to be associated with employment growth, as well as their mean statistics.[7]

These factors include the metro location of the census tract, whether it is growing in employment or not, as there could be spillover effect from a metropolitan area growing on its neighborhoods. We also consider the distance (in miles) from the centroid of the census tract to the centroid of the central business district (CBD). The tract-level employment at the beginning of the period of analysis (2002 and 2011, respectively) should have an effect on employment change we observe over the period.[8] We also consider factors indicating the residential characteristics of the tract; location factors that measure the accessibility of the tract to the transportation network;[9] and whether certain place-based policies were in effect in the tract, such as whether the census tract had LIHTCs, or was designated with Empowerment Zone (EZ) or Renewal Community (RC) status.[10]

Chart 9. Percent change in the number of employed by industry and neighborhood ethnic/racial plurality in the Chicago metropolitan area



Source: Local Origin-Destination Employment Statistics (LODES), 2002, 2011.

Residential characteristics include the population in census tract in the initial period, change in the population of recent movers in 1990 and 2000, poverty rate in the initial period, share of occupied housing units in which residents moved between 2000 and 2010, share of housing units built between 2000 and 2010, and change in share of foreign-born population between 2000 and 2010. Location factors include residential density of the tracts (housing units per acre), the industrial diversity of the tract,[11] automobile accessibility, and pedestrian accessibility (the number of automobile and pedestrian-oriented road links per square miles).

We also consider factors related to financial (banking) service access and credit flow to businesses and how this relationship correlates with employment.These factors include the deposits in branches in the census tracts, and the number of CRA small business loans in the census tracts.

To understand how the various factors relate to each other, we begin by considering the correlation coefficient matrix in table 2, where we note some interesting results.[12] There is a positive correlation between neighborhoods that had higher growth in employment and increased in population, inflows of new residents, and increased in the share of their population with a college degree or more (education). There is also a positive correlation between such growth and increased industry diversity. On the other hand, black neighborhoods have a higher positive correlation with poverty rate, decreased population, and a negative correlation with increased share of population with a college degree, industry diversity, and loan counts to businesses, all factors that are positively correlated with competitiveness. To a lesser extent, Hispanic neighborhoods are also positively correlated with poverty and less loans to businesses. As expected, LIHTC and EZ/RC designated tracts are positively correlated with poverty, consistent with the place-based target of these policies.

Table 1. Summary statistics

	Full Sample					Black Neighborhoods					Hispanic Neighborhoods				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Dependent variables															
Change in log employment 2002-2011	4,649	-.06	.71	-5.10	4.50	927	-.18	.92	-5.10	3.66	335	-.12	.77	-.500	2.71
Change in log employment 2011-2014	4,654	.07	.60	-6.44	4.03	932	.02	.80	-6.44	4.03	335	.04	.59	-2.97	3.14
Control variables															
Log distance to CBD	4,659	1.87	1.17	-3.88	4.19	936	1.72	.80	-1.50	3.58	335	1.75	.78	-.05	3.51
Log employment 2002	4,652	6.58	1.40	.69	12.45	929	5.74	1.55	1.10	10.40	335	6.32	1.26	2.64	10.57
Log employment 2011	4,656	6.52	1.45	.00	12.57	934	5.56	1.61	.00	10.51	335	6.20	1.31	2.71	10.60
Log population 2000	4,655	8.16	.51	.69	9.34	936	7.99	.59	1.61	9.34	335	8.25	.50	3.26	8.98
Log population 2011	4,648	8.17	.55	.00	10.17	933	7.80	.65	.00	9.73	334	8.20	.46	6.93	9.19
Employment grew in metro area (y/n)	4,659	.69	.46	.00	1.00	936	.63	.48	.00	1.00	335	.95	.21	.00	1.00
Black plurality neighborhoods	4,659	.20	.40	.00	1.00	936	1.00	.00	1.00	1.00	335	.00	.00	.00	.00
Hispanic plurality neighborhoods	4,659	.07	.26	.00	1.00	936	.00	.00	.00	.00	335	1.00	.00	1.00	1.00
Residential characteristics															
Change in new residents 2000-2010	4,659	.20	.10	.00	1.00	936	1.00	.00	1.00	1.00	335	.00	.00	.00	.00
Recent movers	4,642	.64	.12	.22	1.00	929	.68	.12	.22	1.00	334	.71	.09	.39	.91
Change in log population in neighboring tracts, 2000-2010	4,637	.02	.06	-.33	.38	927	.01	.05	-.25	.28	334	-.01	.10	-.33	.27
Change in share of foreign born	4,659	.01	.19	-.72	1.74	936	-.17	.15	-.72	.62	335	-.04	.13	-.38	.56
Poverty rate 2000	4,650	.11	.12	.00	1.00	933	.27	.15	.02	.93	335	.19	.10	.00	.50
Change in share with college degree 2000-2010	4,652	.05	.07	-.48	.59	933	.02	.05	-.48	.51	335	.02	.05	-.10	.29
Share of occupied housing units with new residents 2000 and 2010	4,654	.13	.17	.00	1.00	934	.03	.07	.00	.54	335	.04	.05	.00	.34
Location factors															
Residential density (units/acre)	4,659	5.49	12.58	.00	561.96	936	6.65	6.12	.00	67.10	335	10.01	5.65	.00	29.43
Industry diversity index (5 category entropy index)	4,659	.47	.25	.00	.99	936	.29	.25	.00	.94	335	.43	.24	.00	.95
Automobile accessibility (links per square mile)	4,659	.91	1.91	.00	36.77	936	1.27	2.42	.00	17.55	335	.64	2.20	.00	19.04
Pedestrian accessibility (links per square mile)	4,659	1.30	3.25	.00	56.94	936	2.01	3.93	.00	30.60	335	1.01	4.07	.00	37.86
Place-based policy															
Low-income housing tax credit development (y/n)	4,659	28.05	88.46	.00	1,358	936	57.99	133.78	.00	1,358	335	19.50	64.06	.00	674
Empowerment zone/renewal community (y/n)	4,659	.07	.26	.00	1.00	936	.29	.46	.00	1.00	335	.13	.34	.00	1.00
Financial services															
Log of deposits in bank branches in neighborhoods, 2000	4,659	5.22	5.50	.00	17.17	936	2.58	4.53	.00	15.98	335	4.19	5.35	.00	13.58
Log of deposits in bank branches in neighborhoods, 2010	4,659	5.91	5.64	.00	18.33	936	2.70	4.59	.00	16.45	335	4.80	5.34	.00	13.49
Log of number of bank credit to businesses in neighborhoods, 2005	4,654	4.16	.95	-1.08	7.75	934	3.11	.92	-.47	5.84	335	3.61	.76	1.10	6.59
Log of number of bank credit to businesses in neighborhoods, 2011	4,659	3.63	1.08	-2.59	7.60	936	2.46	1.05	-2.59	6.03	335	3.15	.79	.69	6.21

Note: See text for the multiple sources of the data used in the analysis reported in this table and for the definition of the variables.

Table 2. Correlation coefficients matrix

	Change in log employment 2002-2011	Change in log employment 2011-2014	Log distance to CBD	Log employment 2002	Employment grew in metro area (y/n)	White neighborhoods	Black neighborhoods	Hispanic Neighborhoods	Log population 2000
Change in log employment 2002-2011	1.00								
Change in log employment 2011-2014	-.35	1.00							
Log distance to CBD	.08	-.04	1.00						
Log employment 2002	-.18	-.08	.02	1.00					
Employment grew in metro area (y/n)	.08	.01	.46	.11	1.00				
White neighborhoods	.09	.04	.08	.30	-.03	1.00			
Black neighborhoods	-.08	-.04	-.07	-.30	-.07	-.81	1.00		
Hispanic neighborhoods	-.03	-.01	-.03	-.06	.16	-.46	-.14	1.00	
Log population 2000	.03	-.05	.22	.23	.16	.13	-.18	.05	1.00
Change in new residents 2000-2010	.02	.05	-.08	.06	.23	-.20	.13	.14	-.13
Change in share of foreign born	.03	.01	.11	.08	.10	.13	-.07	-.11	.08
Change in log population in neighboring tracts	.16	.06	.12	.22	.22	.48	-.49	-.08	.12
Poverty rate 2000	-.10	-.03	-.21	-.25	.00	-.69	.64	.19	-.25
Change in share with college degree 2000-2010	.11	.04	-.02	.06	.05	.30	-.25	-.13	-.05
Units with new residents 2000 and 2010	.18	.05	.12	.09	.03	.35	-.29	-.16	.07
Residential density (units/acre)	-.03	-.02	-.08	-.05	.13	-.10	.05	.10	-.03
Industry diversity index (5 category entropy index)	.15	-.05	.03	.46	.10	.34	-.35	-.04	-.02
Automobile accessibility (links per square mile)	.00	.03	-.12	.11	-.06	-.08	.10	-.04	-.17
Pedestrian accessibility (links per square mile)	-.03	.04	-.17	.11	-.12	-.10	.11	-.02	-.16
Low-income housing tax credit development (y/n)	.00	-.02	-.08	.00	.04	-.21	.25	-.02	-.01
Empowerment zone/renewal community (y/n)	-.05	.01	-.13	-.18	.00	-.43	.43	.07	-.20
Log of deposits in bank branches in neighborhoods	.03	-.02	.06	.42	.03	.25	-.24	-.05	.21
Log loan counts to businesses	.10	.02	.11	.63	.05	.60	-.55	-.17	.45

Change in new residents 2000-2010	Change in share of foreign born	Change in log population in neighboring tracts	Poverty rate 2000	Change in share with college degree 2000-2010	Share of occupied housing units with new residents 2000 and 2010	Residential density (units/acre)	Industry diversity index (5 category entropy index)	Automobile accessibility (links per square mile)	Pedestrian accessibility (links per square mile)	Low-income housing tax credit development (y/n)	Empowerment zone/renewal community (y/n)	Low of deposits in bank branches in neighborhoods	Log loan counts to businesses
1.00													
.05	1.00												
.02	.13	1.00											
.39	-.10	-.49	1.00										
.03	.00	.28	-.26	1.00									
.02	.16	.575	-.36	.39	1.00								
.21	-.07	-.12	.17	.06	-.16	1.00							
.05	.01	.32	-.29	.20	.26	-.05	1.00						
.12	.00	-.06	.13	-.03	-.05	.04	.04	1.00					
.12	-.01	-.09	.14	-.03	-.09	.09	.02	.87	1.00				
.26	-.02	-.12	.36	-.09	-.03	.04	-.03	.04	.03	1.00			
.18	-.04	-.31	.58	-.13	-.16	.04	-.19	.09	.09	.20	1.00		
-.05	.04	.15	-.25	.05	.06	-.06	.32	-.01	.01	-.01	-.15	1.00	
-.16	.10	.46	-.63	.28	.37	-.10	.48	-.02	-.03	-.16	-.37	.40	1.00

Note: See text for the multiple sources of the data used in the analysis reported in this table and for the definition of the variables.

To ascertain further the relationship between these factors and job growth, we conduct some multivariate analyses. Table 3 shows the results of census-tract level regressions, which reveal the direction and statistical significance of the correlates of employment growth for two separate periods. More precisely, the table shows four specifications; the first three specifications are presented for the same population (census tracts in the selected metropolitan areas in the district for the period 2002 to 2011). The fourth specification shows the results of the correlates of employment growth for the period 2011 to 2014. The latter two specifications show the full set of tract-level explanatory variables.

The first specification includes the log of the distance from the centroid of the census tract to the central business district (CBD). The positive coefficient suggests that tracts that are twice as far from the CBD have faster employment growth. For this period here we therefore do not see that neighborhoods that are closer to downtown necessarily add jobs at a faster rate than those further away, unlike results using national data. This specification also includes the log of the population of the tract at the initial period (year 2000), which is a proxy for local demand. The positive coefficient of 0.104 implies that, on average a 10-log-point increase in tract population is associated with a 1-log-point increase in own-tract employment.

The second specification adds an indicator for whether the census tracts are in metropolitan areas that are competitive (i.e., have had employment growth), and whether there are differences by ethnic/racial diversity of the census tracts. The result suggests that census tracts in metropolitan areas that grew also experienced a faster growth than those in metropolitan areas that did not grow. We also note in this second specification that census tracts that have a plurality of minority population have lower employment growth than those that are non-minority.

The third specification includes the full set of variables with the addition of factors indicating residential characteristics, location characteristics, place-based public policies, and financial service and credit flow to business. What is perhaps more notable in this specification is that including all these characteristics makes the ethnic/racial neighborhood effect and the initial local demand factor insignificant, suggesting that the observed neighborhood-based disparities in employment growth are fully explained by those other characteristics included in the specification.

Considering the residential factors, the results show that dynamics of population changes, both within tracts, and in the surrounding tracts, are correlated with own-tract employment growth. New movers in the census tracts and changes in the census tract population in neighboring tracts are also significantly correlated with tract-level employment growth. The coefficient of 0.30 for new movers and 0.17 for changes in the local area neighboring population mean that on average a 10-log-point increase in new movers is associated with a 3-log-point increase in own-tract employment; whereas a 10-log-point increase in neighboring tract population is associated with a 2-log-point increase in own-tract population. Relatedly, increase in the share of occupied housing units with new residents is significantly correlated with employment growth. Change in building activity and changes in population around the tracts in question have been interpreted in previous research as potentially providing some indication of gentrification, although in our analytical framework, this is difficult to confirm.

Other factors, such as the change in the share of foreign-born, are included in the third specification, as it is understood that immigrant inflows might affect labor supply and help make local area more competitive. We also include the change in the share of the population with a college degree to capture the effect of human capital. Poverty, which is a pervasive issue, has been found to be a detriment to local area job growth in a nationwide analysis (e.g., Kasarda, 1993). For these metropolitan areas in the district, the inclusion in the regression of residential factors related to overall population movement dynamics into and around the local areas, and residential turnover consistent with urban redevelopment factors, seems to usurp the poverty effect.

The third specification also includes locational factors, and they are almost all significant, consistent with expectation. Places with higher residential density tend to be negatively associated with job growth, in sync with the idea that census tracts that are mostly residential have less room for business uses. Industrial diversity is highly correlated with more local job growth. This result is important, especially given the fact that higher human capital was not distinctively significant in increasing competitiveness of local areas. This suggests that places which offer a wide range of employment opportunities, and which make use of a wide range of skills, make such places competitive and able to increase overall employment.

Table 3. OLS regression results: Predictors of census tract-level employment growth, 2002-2011, 2011-2014

	(1) 2002-2011		(2) 2002-2011		(3) 2002-2011		(4) 2011-2014	
CONSTANT	-.312***	(.166)	.070	(.169)	-.001	(.212)	.921	(.172)
Log distance to CBD	.040***	(.009)	.008	(.010)	.009	(.010)	-.030***	(.008)
Log population 2002	-.102***	(.007)	-.131***	(.008)	-.254***	(.001)	-.238***	(.008)
Log population 2000	.104***	(.021)	.083***	(.021)	.004	(.027)	-.065***	(.022)
Employment grew in metro area (y/n)			.149***	(.025)	.114***	(.026)	.074***	(.022)
Black			-.268***	(.027)	.052	(.036)	-.053***	(.030)
Hispanic			-.208***	(.040)	.020	(.042)	-.041	(.035)
Change in number of new residents 2000-2010					.302***	(.092)	.563***	(.079)
Change in share of foreign born					.161	(.155)	.117	(.133)
Change in neighboring population					.172***	(.073)	.136***	(.062)
Poverty rate 2000					.134	(.148)	.122	(.127)
Change in share with college degree 2000-2010					-.016	(.164)	-.106	(.122)
Share of occupied housing units with new residents 2000 and 2010					.212	(.076)	-.079	(.062)
Residential density (units/acre)					-.002***	(.001)	-.003***	(.001)
Industry diversity index (5 category entropy index)					.554***	(.049)	.034	(.042)
Automobile accessibility (Links per square mile)					.025	(.010)***	.001	(.009)
Pedestrian accessibility (Links per square mile)					-.004	(.006)	.014***	(.005)
Low-income housing tax credit development (y/n)					.003	(.000)	.000	(.000)
Empowerment zone/renewal community (y/n)					-.002	(.046)	.051	(.039)
Log of deposits in bank branches in neighborhoods					.008***	(.002)	.009***	(.002)
Log of number of bank credit to businesses in neighborhoods					.219***	(.020)	.222***	(.014)
R-square	.0468		.0746		.1727		.1737	
Observations	4,645		4,645		4,628		4,632	

OLS = ordinary least squares; Robust standard errors in parenthesis next to the coefficient estimate. *** Significant at 99percent confidence interval. See text for the multiple sources of the data used in the analysis reported in this table and for the definition of the variables.

Census tracts that have more transportation accessibility have a positive association with employment growth.

For neighborhoods in these metropolitan areas in the Seventh District, place-based housing policies seem to have a positive association with local area employment growth. On average, tracts that have received LIHTCs saw a marginal increase in employment than census tracts that did not, holding other factors the same. This result is important, especially given the finding that new housing redevelopment, which can signal gentrification, accompanied more employment growth. It suggests that policies to facilitate low- or mixed-income housing (like the LIHTC) can help create more inclusive growth. We did not find a clear association between empowerment zone/renewal community status and employment growth, though the relationship is evident nation-wide (Busso et al., 2010; Hartley et al., 2016).

Finally, in the third specification, we include the log of bank branch deposits in a census tract at the initial period as well as loan counts to businesses as indicators of the buoyancy of local area banking service markets, consistent with previous research which has suggested that the presence of bank branches in local communities can stimulate relationship-based lending, and more credit flow to businesses can stimulate business formation and growth (Toussaint-Comeau and Newberger, 2014). The results suggest that these factors have a significant and positive association with employment growth in local areas. Lending to businesses appears particularly relevant for employment growth. A 10-log-point increase in lending to businesses on average is associated with 2-log-point-higher employment growth in census tracts.

We repeat the regression estimates for employment growth in the fourth specification, but for the period post-recession from 2011 to 2014. The results remain generally consistent with the regression for the earlier period, with a few differences. Previous factors such as industry mix and LIHTC (presence) are not significant in explaining job growth.[13] Tracts that are further away from the city in this analysis are significantly negatively associated with employment growth, indicating an increased importance of closer proximity to larger employment downtown employment centers during this economic expansion period. Remarkably for this period in addition, black census tracts become statistically significant and negatively associated with employment growth, even with the inclusion of the other characteristics. The coefficient estimate suggests that these neighborhoods are associated with a 5-log-point-lower employment growth than non-minority tracts.

Clearly ethnic/racial differentials vary across the business cycles and are becoming even more important post-recession. To understand how the different dynamics vary by neighborhoods, we therefore re-estimate the regression for employment growth in 2002-2011 and 2011-2014, conditioned on the types of neighborhoods (results of these regression estimates are reported in Appendix 1).

Chart 10 illustrates their covariates by showing the standardized beta coefficients based on those new OLS (ordinary least squares) regression estimates for black and Hispanic census tracts in the metropolitan areas in the district. Standardizing the results allows us to compare the associations between the factors and employment growth in the neighborhoods in question, and to see how they vary. Each change can be interpreted as the increase or decrease in employment growth resulting from one standard deviation from the mean of these factors.

Highlighting the significant results, we note that holding everything else the same, the average black and Hispanic neighborhoods that are in a growing metropolitan area have 5- and 12-log-point-higher employment growth than counterparts that are in declining metropolitan areas. By contrast, the average neighborhood (white census tracts) in these selected metros in the district has 6-log-point employment growth associated with being in a growing metropolitan area (not shown in a table).

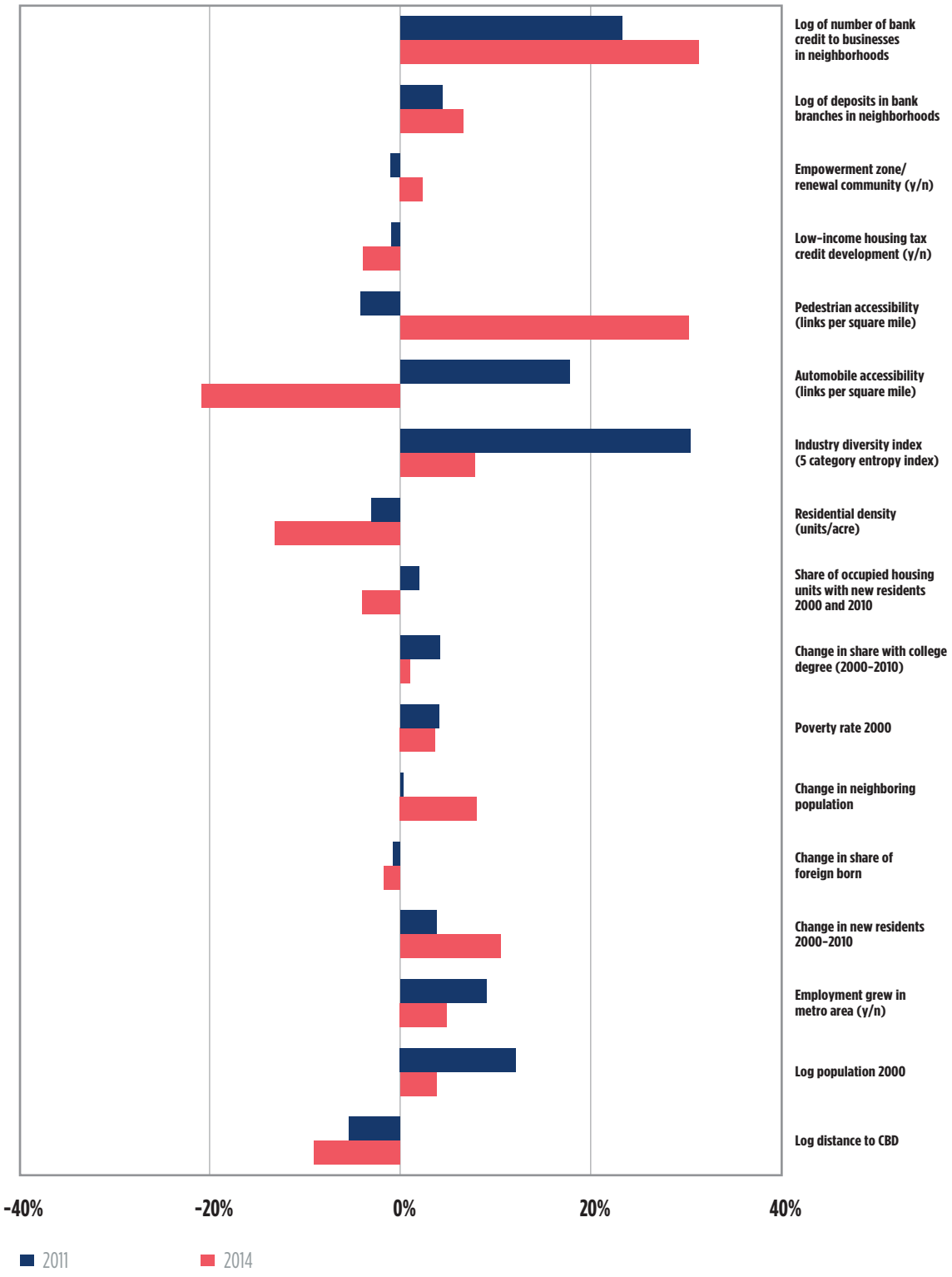
Post the recession period, and even before, ethnic/minority neighborhoods' employment growth appears to be much more heavily associated with industry diversity than the average neighborhood in the district. Before and immediately after the recession, from 2002 to 2011, a change of one standard deviation in this predictor resulted in 30-log-point increase in employment for black neighborhoods. From 2011 to 2014, the effect was a 7.8-log-point change in employment. For that

Appendix 1. OLS regression results: Predictors of census tract-level employment growth, 2002-2011, 2011-2014

	Black neighborhoods			Hispanic Neighborhoods	
	2002-2011	2011-2014		2002-2011	2011-2014
CONSTANT	-1.320***	.295***		.661	1.024
	(.56)	(.512)		(2.753)	(.726)
Log distance to CBD	-.061***	-.091		-.105	-.077***
	(.04)	(.036)		(.069)	(.049)
Log employment 2002	-.362***	-.305***		-.347***	-.281***
	(.025)	(.022)		(.047)	(.032)
Log population 2000	.227***	.059***		.062	-.085
	(.07)	(.066)		(.129)	(.084)
Employment grew in metro area (y/n)	.171***	.082***		.062	.350***
	(.077)	(.066)		(.221)	(.160)
Change in new residents 2000-2010	.290	.691		-.736***	.642***
	(.261)	(.229)		(.470)	(.345)
Change in share of foreign born	-.101	-.272		-.267	.316
	(.574)	(.509)		(.428)	(.317)
Change in neighboring population	.021	.437		-1.414***	.295
	(.252)	(.223)		(.454)	(.346)
Poverty rate 2000	.263	.211		-.449	.637
	(.275)	(.248)		(.653)	(.466)
Change in share with college degree 2000-2010	.761	.118		1.554***	-.301
	(.575)	(.390)		(.971)	(.458)
Share of occupied housing units with new residents	.308	-.508		.302	-1.019***
	(.492)	(.434)		(.880)	(.622)
Residential density (units/acre)	-.005	-.017		-.033***	-.023***
	(.005)	(.004)		(.011)	(.008)
Industry diversity index (5 category entropy index)	1.009***	.246***		.087	.107
	(.141)	(.128)		(.185)	(.138)
Automobile accessibility (links per square mile)	.067***	-.069***		.022	.048
	(.027)	(.023)		(.049)	(.035)
Pedestrian accessibility (links per square mile)	-.010	.062		-.003	-.027
	(.017)	(.015)		(.026)	(.019)
Low-income housing tax credit development (y/n)	.000	.000		.000	.000
	(.000)	(.000)		(.001)	(.000)
Empowerment zone/renewal community (y/n)	-.019	.041		-.009	.064
	(.071)	(.063)		(.137)	(.100)
Log of deposits in bank branches in neighborhoods	.009	.011		.022***	.006
	(.007)	(.006)		(.008)	(.006)
Log of number of bank credit to businesses in neighborhoods	.2390***	.2439***		.3141***	.2819***
	(.052)	(.037)		(.088)	(.057)
R-square					
Observations					

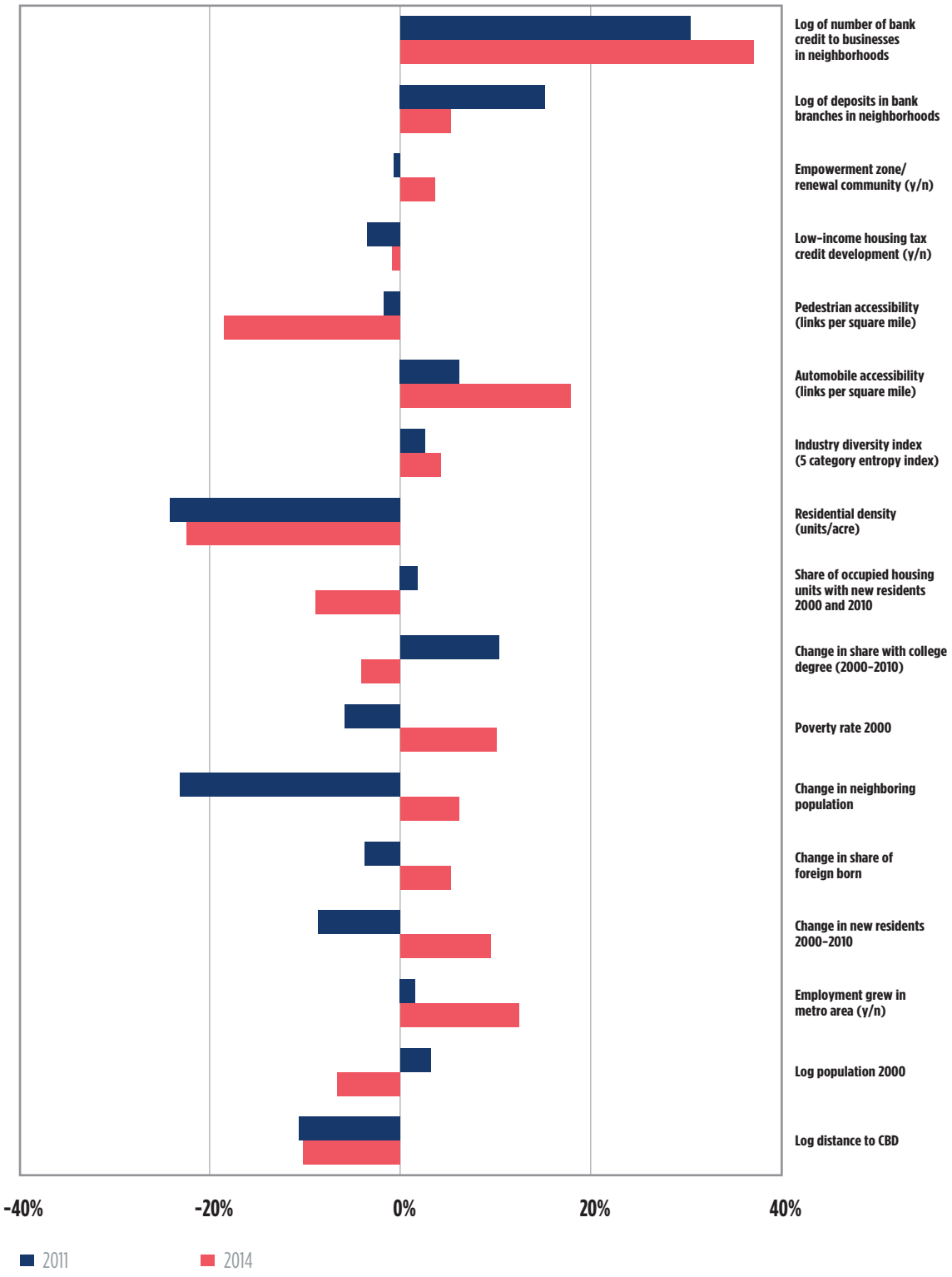
OLS = ordinary least squares. Robust standard errors in parenthesis below the coefficient estimate. *** Significant at 99percent confidence interval. See text for the multiple sources of the data used in the analysis reported in this table and for the definition of the variables.

Chart 10. Standardized OLS regression estimates: Predictors of neighborhood employment growth, 2002-2011, 2011-2014
A. Black neighborhoods



Source: Local Origin-Destination Employment Statistics (LODES), 2002, 2011, 2014.

B. Hispanic neighborhoods



Source: Local Origin-Destination Employment Statistics (LODES), 2002, 2011, 2014.

period for Hispanic neighborhoods, the effect was 4.8-log-point. By contrast, there was a marginal effect of industry diversity (a standardized beta of 0.1) for the average neighborhood in the district. Industrial diversity reflects the variety of economic activities that create differences in economic structure (Malizia and Ke, 1993; Tran, 2011). Economic diversity tends to help mitigate the effects of economic downturn. The result suggests that ethnic/racial neighborhoods are particularly sensitive and benefit from a diversity of industries in metropolitan areas in the Seventh District.[14]

Financial services and business credit factors are other predictors that appear relevant for the competitiveness of neighborhoods throughout the Seventh District, even more so post financial crisis. A change in one standard deviation in the log of bank branch deposit indicator is associated with a 0.7 percent change in employment growth in black neighborhoods and a 0.05 percent increase in employment for Hispanic neighborhoods. As for loans to business, a one standard deviation change is associated with more than 0.30 percent increase in local employment growth. As per previous research, businesses at different stages make use of both formal and informal financing, and this mix of sources of funding has been shown to be contribute to business growth, particularly for ethnic minority neighborhoods (Bond and Townsend, 1996). The results here suggest that bank funding to small businesses and a banking relationship are important for local area employment growth.

Conclusion

We use an increasingly popular data source, the LODES, to analyze competitiveness and job growth, as well as other data sources to measure other location and policy factors associated with such growth. We find ethnic minority neighborhood differentials relative to their region are significant. We analyze both, before and after the 2008-2010 recession, as well as the post-recession period up to 2014 (most recent available data), and find location dynamics that are consistently associated with employment growth in local areas across business cycles. Consistent with regional economic spillovers effect, we find that neighborhoods in metropolitan areas that have increased employment also tend to have job growth increases.

Relatedly, closer distances to central business districts also have potential benefits for neighborhoods; this relationship is stronger for ethnic minority neighborhoods in the district. Previous research has noted the competitive advantage of inner cities of being located near cities and this result is consistent with this thesis (Porter, 1997). A larger population in surrounding neighborhoods as well as a diverse industry employment base also predicts job growth in local areas.

Finally, we consider financial services, an aspect which is important in light of the financial and housing market crisis (Nguyen, 2014), and find that post this period, places with more credit and financial services or bank branches have job growth benefits associated with these factors.

All of the metropolitan areas considered in this article have economic plans and community development initiatives to address regional economic growth, and they recognize the need for policies that ensure inclusive economic growth of neighborhoods, including traditionally disinvested ethnic minority neighborhoods in the district (e.g., Newberger and Keller, 2017; Longworth, 2017; Mattoon and Wang, 2014). The findings support policies and efforts to ensure the economic and financial integration of ethnic minority neighborhoods within their regions.

Notes

1. See Bond and Townsend (1996) for a study of financing in Little Village. See Toussaint-Comeau and Newberger (2017) for an analysis of Greater Chatham.
2. For a review of the cluster literature and inclusive growth of inner cities, see Toussaint-Comeau, Newberger, and Augustine (2016).
3. The LODES data set is a synthetic data set derived from confidential data sources such as unemployment insurance records, Topologically Integrated Geographic Encoding and Referencing line files, and additional administrative data from the U.S. Census Bureau and the Social Security Administration. 'Noise' is then infused into the workplace totals to protect employer and employee confidentiality. For a more complete description of the LODES data set and its differences with the standard census products, such as the American Community Survey, refer to Graham, Kutzbach, and McKenzie (2014).
4. The Fed's Seventh District includes states in whole and in part, namely northern Illinois, the southern peninsula of Michigan, the state of Iowa, northern Indiana, and southern Wisconsin.
5. One of the reasons for the relatively higher Hispanic labor force participation may be the age profile of that population, the latter having a higher percent of younger working-age population (Patten, 2016).
6. The increase in income is consistent with a trend observed nationwide, across states. Accessed from https://www.census.gov/newsroom/press-releases/2017/acs-single-year.html. Also see https://www.freep.com/story/news/2017/09/14/michiganders-making-more-cash-even-detroit-new-stats-say/660518001.
7. The empirical specification can be expressed as follows: $\Delta Emp_{i,c}=\alpha_c+\beta_d distCBD_{i,c}+\beta_e emp_{i,c}+\beta_r res_{i,c}+\beta_l loc_{i,c}+\beta_p pol_{i,c}+\beta_f fin_{i,c}+\beta_m metro_{i,c}+\varepsilon_i$ (1) Where the dependent variable $\Delta Emp_{i,c}$ is the change in the log of employment in census tract 2002 to 2011 in tract, i, in city, c. The explanatory variables are α_c, a metro location fixed effect; $distCBD_{i,c}$ the log of the distance (in miles) from the centroid of the tract to the centroid of the central business district (CBD); $\beta_e emp_{i,c}$ the log of tract-level employment at the beginning of the period); $res_{i,c}$ a vector of variables describing the residential characteristics of the tract; $loc_{i,c}$ a vector of location factors that measure the accessibility of the tract vis-à-vis the transportation network; $pol_{i,c}$ a vector describing whether certain place-based policies were in effect in the tract; $fin_{i,c}$ is the financial market conditions in the census tracts; $metro_{i,c}$ is the metro location of the census tract, whether it is growing in employment or not, and ε_i is an error term.
8. The inclusion of the initial level of employment is meant to control for any measurement error in the employment LODES data.
9. Most of the location variables are from EPA, https://search.epa.gov/epasearch/epasearch?querytext=smartlocationdatabase&collection=epa_default&result_template=2col.ftl.
10. Low-income housing tax credit data is from HUD, https://lihtc.huduser.gov. Empowerment Zone data is from HUD, https://www.hudexchange.info/resource/151/empowerment-zone/renewal-community-ez/rc-census-tract-table.
11. Entropy index of industrial diversity is defined as follows: $D(E_1, E_2 \ldots E_n) = - \sum_{(i=1)}^{n} E_i \log_2 (E_i)$. N is the number of industrial sectors, E_i is the proportion of total employment in the tract that is located in the ith industry. The EPA computed this as part of its Smart Location Initiative.
12. The correlation coefficient is a number between -1 and + 1, which represents the linear association of two variables or sets of data. A value of -1 indicates perfect negative correlation, a value of zero indicates an absence of correlation, and a value of +1 indicates perfect positive correlation.
13. The lack of association may be an artifice of the earlier dates for which the LIHTC data is available and the fact that we are now looking at changes for a later period.
14. Note that this result is only for metropolitan areas. Poor white neighborhoods in rural areas are also likely to be sensitive to structural industry changes. The scope of this analysis does not cover poorer communities throughout the U.S.

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