

CityReport

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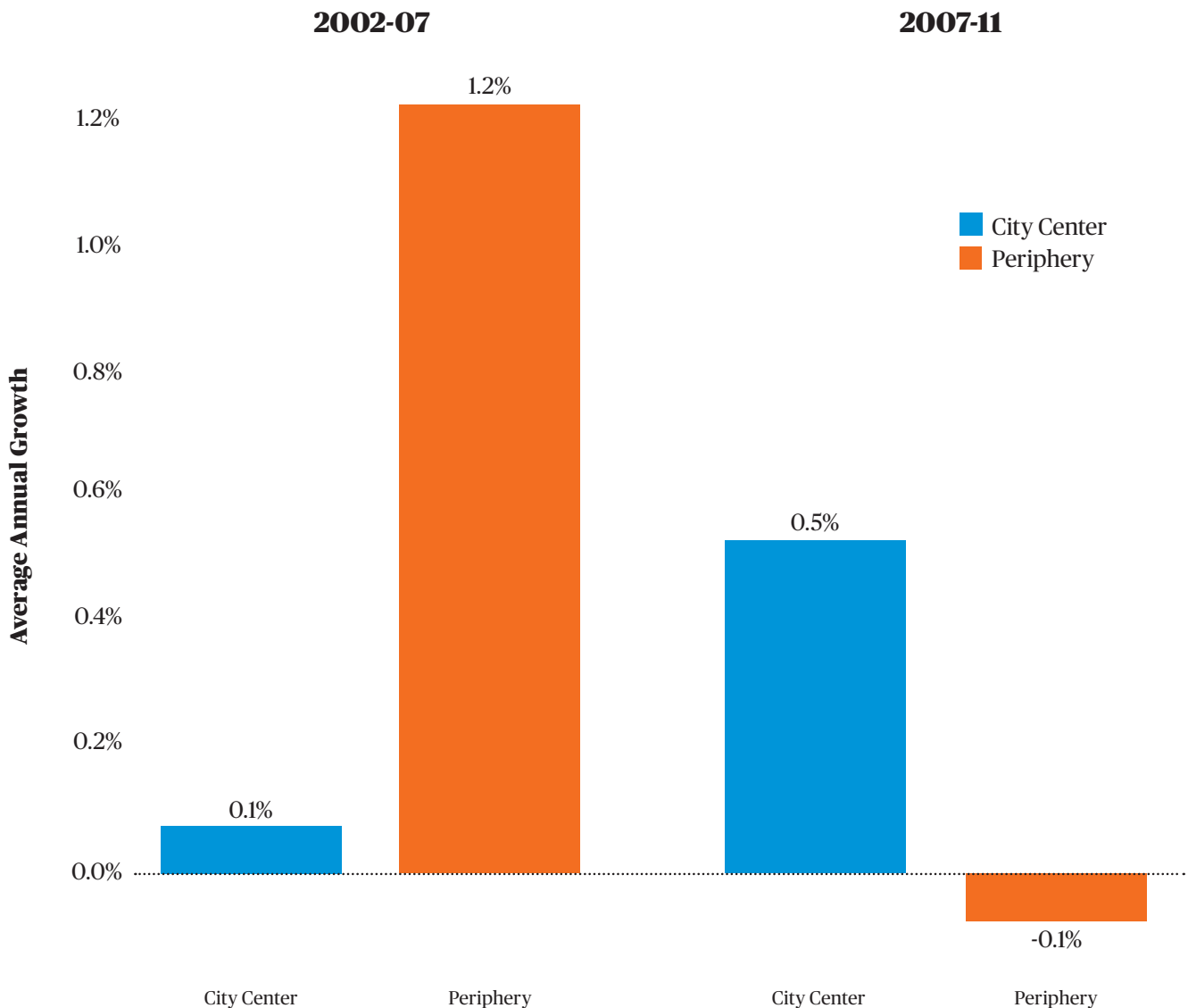
Surging City Center Job Growth

Joe Cortright

Summary

For over half a century, American cities were decentralizing, with suburban areas surpassing city centers in both population and job growth. It appears that these economic and demographic tides are now changing. Over the past few years, urban populations in America's cities have grown faster than outlying areas, and our research shows that jobs are coming with them.

Our analysis of census data shows that downtown employment centers of the nation's largest metropolitan areas are recording faster job growth than areas located further from the city center. When we compared the aggregate economic performance of urban cores to the surrounding metro periphery over the four years from 2007 to 2011, we found that city centers—which we define



as the area within 3 miles of the center of each region's central business district—grew jobs at a 0.5 percent annual rate. Over the same period, employment in the surrounding peripheral portion of metropolitan areas declined 0.1 percent per year. When it comes to job growth, city centers are out-performing the surrounding areas in 21 of the 41 metropolitan areas we examined.

This “center-led” growth represents the reversal of a historic trend of job de-centralization that has persisted for the past half century. As recently as 2002-2007, peripheral areas were growing much faster (1.2 percent annually) and aggregate job growth was stagnant in urban cores (0.1 percent).

While the shift of metropolitan job growth toward services is aiding job centralization, the strong central growth of 2007-11 appears to be driven by the growing competitiveness of central cities relative to peripheral locations. Our analysis shows that city centers had unusually strong job growth relative to peripheral locations in the wake of the Great Recession.

The story is not just that job growth in central cities is improving when compared to outlying areas - city centers have also erased their competitive disadvantage. The data make it clear that city centers are more competitive in 2011 than they were in 2007. While city centers had a negative competitive effect in the 2002-07 period, their relative competitiveness for industry has been equal to peripheral locations from 2007-11.

The strength of city centers appears to be driven by a combination of the growing attractiveness of urban living, and the relatively stronger performance of urban-centered industries (business and professional services, software) relative to decentralized industries (construction, manufacturing) in this economic cycle. While it

remains to be seen whether these same patterns continue to hold as the recovery progresses, (the latest LEHD data on city center job growth are for calendar year 2011), there are structural forces that suggest the trend of center-led growth will continue.

Introduction

This report compares the performance of the urban core of the nation's large metro areas—defined as the area within 3 miles of the center of the region's central business district (CBD)—with the performance of the periphery, which we define as that portion of the metro area outside the 3-mile radius around the CBD. We compared performance for the last economic expansion (the period 2002 to 2007), with data

covering the recession and early years of the recovery (2007 to 2011). Data are available for 41 of the nation's 51 largest metropolitan areas (those with populations of 1 million or more).

The past two decades have witnessed a remarkable resurgence in urban living in the United States. A number of large urban centers that were long written off as moribund or locked

Table 1: Companies locating or expanding in city centers

City	Companies Locating or Expanding in Center
Atlanta	Coca Cola, NCR
Austin	Cirrus Logic
Boston	Acquia, Biogen/IDEC
Chicago	Archer Daniels Midland, Motorola, Hillshire Brands, United
Cincinnati	Omnicare
Dallas	Active Network
Detroit	Quicken Loans, Blue Cross Blue Shield, Fifth Third Bank
Kansas City	MindMixer
Las Vegas	Zappos
Nashville	Bridgestone
New York	UBS, Hugo Boss
Pittsburgh	Jawbone, Michael Baker, True Fit
San Diego	Bumble Bee Seafoods
San Francisco	Pinterest, VISA, Yahoo
Seattle	Amazon, Inrix, Tableau, Weyerhaeuser

Compiled from media reports. Details at CityObservatory.org

in decline have rebounded, recording new residential development and population growth. Popular press accounts have declared the rebound of central cities. Seattle, for example, is adding population faster than its suburbs for the first time in a century (Balk, 2014). Population in the nation's 10 largest downtown business districts increased 17.2 percent between 2000 and 2010, compared to a national population increase of 9.7 percent (Levy & Gilchrist, 2013). The relative strength of city centers and weakness of suburban growth has led one author to call the pattern of change in the fortunes of metropolitan areas "The Great Inversion" (Ehrenhalt, 2012).

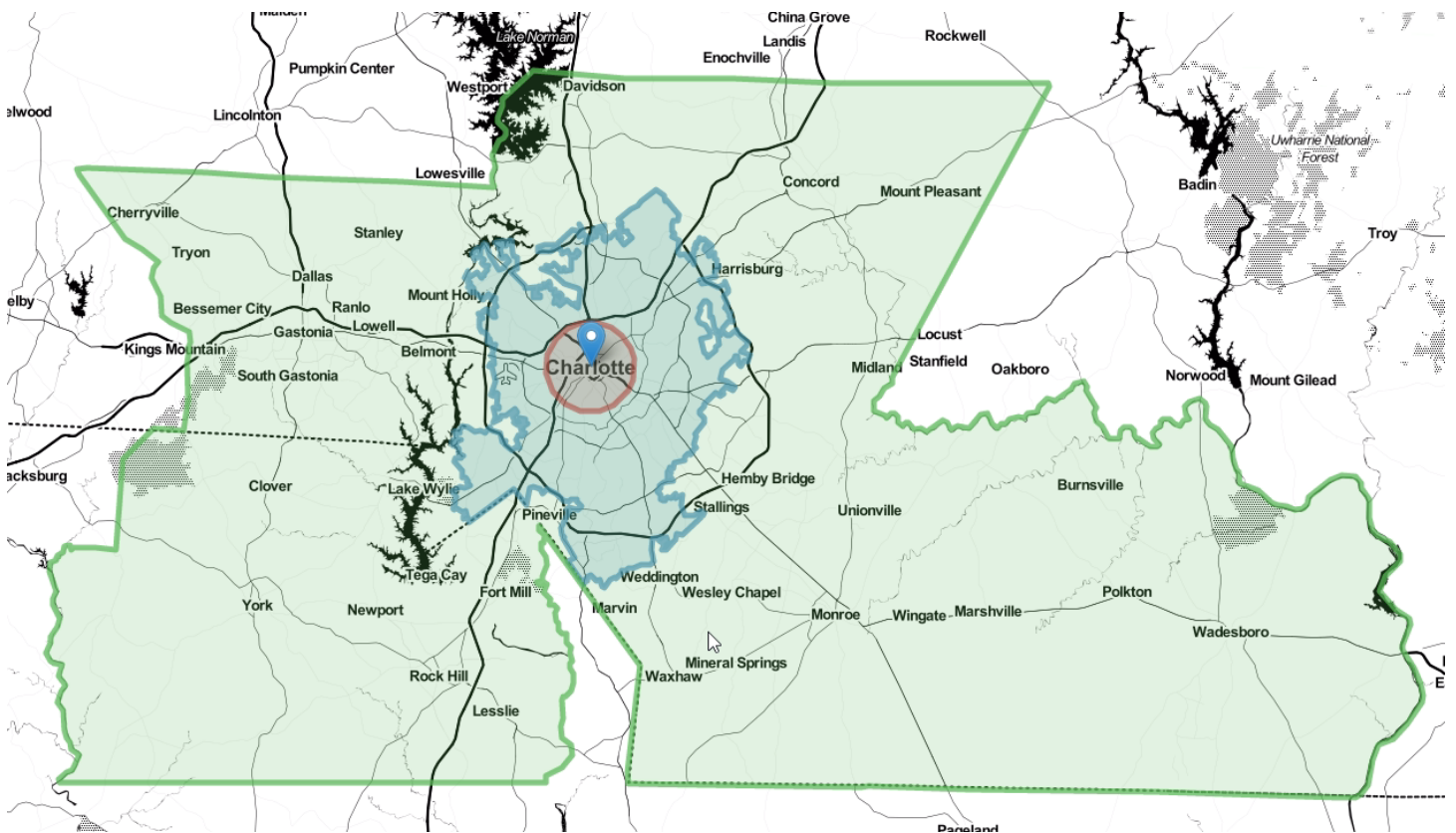
There is growing evidence that city center locations are becoming increasingly attractive to many businesses as well. Many companies have announced that they are moving to or expanding

operations in city centers, in large measure to take advantage of the growing number of talented young workers living in close-in urban neighborhoods. Table 1 shows just a sample of companies locating in city centers in the last 5 years.

While these examples are striking, are they changing the pattern of employment growth within metropolitan areas? For more than a half century, job growth in the United States has been decentralizing. This report looks at recent trends in employment within metropolitan areas to determine whether city centers are reclaiming a portion of their economic importance as centers of employment growth.

This report focuses on the role of city centers defined in an economic rather than a political

Figure 1: Charlotte Metropolitan Areas



context. To avoid problems posed by variation in political boundaries, we define city centers as those areas within 3 miles of the center of each metropolitan area's principal central business district. Typically, these areas include the downtown or central business district of each metropolitan area, including its largest concentration of commercial office buildings, government establishments, and cultural institutions. We're primarily interested in understanding how this small area, usually the densest part of a metropolitan economy, is faring relative to more peripheral locations.

Figure 1 shows how the geography of the 3-mile radius compares to the municipal boundaries of the City of Charlotte and the Charlotte-Gastonia-Rock Hill, NC-SC metropolitan area. In 2010, the metropolitan area had a population of 1.76 million, of which about 730,000 lived in the City of Charlotte and about 85,000 lived within 3 miles of the center of the city's central business district.

The universe for this report is the 51 largest metropolitan areas in the United States—all those with more than 1 million population in 2012. We exclude ten metropolitan areas for which we do not have adequate data to complete our analysis. An appendix describes our methodology, the sources and limitations of our data, and compares our approach with other research in this field.

This report unfolds in five parts. Part 1 explores the economic role of city centers. Part 2 considers the long-term pattern of employment decentralization within metropolitan areas in the United States. Part 3 presents new evidence on recent trends in employment growth in city centers and more peripheral parts of metropolitan areas. Part 4 decomposes the change in employment within metropolitan areas by industry to better illuminate

the processes at work. Part 5 looks ahead and considers the reasons that the center-led pattern of growth we've observed in the past few years may continue.

The Economic Role of City Centers

By definition, city centers are the heart of the metropolitan areas in which they are located. Except where restricted by natural boundaries, especially water, cities tend to develop in a radial pattern away from the urban core. City centers play distinct functional roles in metropolitan areas - they serve as the nucleus of the larger metropolitan organism.

In each metropolitan area, the city center serves a range of important economic roles: it is a place of commerce, the civic heart of the community, and the focus of cultural activity. City centers disproportionately perform a range of specialized functions that are less likely to occur in the peripheral parts of metropolitan areas. We can itemize these distinctive roles in a number of categories:

Commercial. The city center is a place of trade and transactions, where business is conducted. Professional service firms, including lawyers, accountants, and consultants are often most concentrated in city centers where the density of particular kinds of business and expertise make

it easy to meet, especially face-to-face, with clients and counterparties.

Civic. The city center is generally a seat of government; it is the location of the city hall in every case, and usually important federal and judicial offices, as well as, in some cases, the state capitol. The city center typically includes iconic features and landmarks that convey a city's identity, and public squares and civic spaces where citizens gather for events and celebrations.

Cultural. Large cultural institutions, including universities, museums, symphonies, opera and ballet companies, libraries, and sports and entertainment facilities are disproportionately found in city centers. Usually the city center also contains the oldest part of the metropolitan area, and so has the strongest collection of historic buildings and heritage.

Creative. City centers are disproportionately home to the arts, artists, music, and creative endeavors of all sorts. Urbanist Jane Jacobs argues that the density and diversity of people and activities in the city center gives rise to “new work” that helps drive

the local, and in some cases national, economy.

Central and connected. Physically, the city center is usually the most accessible location in a metropolitan area, measured both by physical distance as well as accessibility via different modes of transportation. The center is also typically the hub of a region's connections to the outside world, and the place through which visitors travel.

Consumer city. The city center is often the preferred location for distinctive shops and services. While cities historically had large department stores, as retailing has become more ubiquitous and decentralized, the comparative advantage of city centers has shifted to experiences and specialized shopping. City centers tend to be home to boutiques, clubs, restaurants, and hotels.

Residential. City centers often play a unique role in the local housing market. They generally have the highest density of housing, and the proximity they provide to services and employment is valued by some high-income households and households that don't own cars. In some cities, older, depreciated housing in or close to the center is the most affordable to low- and moderate-income households. This proximity to employment and other amenities can provide opportunities for lower and moderate-income citizens.

City center neighborhoods have become increasingly attractive to well-educated young adults (Cortright, 2014). This labor force has in turn made city center locations more attractive to fast-growing firms looking to hire knowledge workers. Laura Wolf-Powers (2013) found that central cities with the fastest growth in the number of well-educated adults also tended to experience faster job growth than cities with slower growth rates of well-educated adults. While her evidence dealt

with municipalities rather than a fixed three-mile radius, it does suggest that the growth of the number of well-educated young adults in urban neighborhoods may have the effect of stimulating additional job growth in these neighborhoods.

Finally, there is growing evidence that the health of the city center is related to the health of the overall metropolitan economy. The evidence indicates that the health of metropolitan economies depends on, or goes hand-in-hand with, the health and vibrancy of the urban core. Fee and Hartley (2012) note that metro areas with stronger central cities have exhibited stronger overall economic performance in recent years.

Employment Decentralization: Long Term Trends

For at least the past six decades, employment in the United States has been moving outward from the urban core. Employment in city centers, once the dominant places of employment, has been declining relative to outlying locations. Retail and service employment has decentralized to be closer to customers in suburban residential areas. Manufacturing and warehousing have moved from city center locations close to ports and rail lines, to more suburban locations served by trucks.

These trends have been so well founded and enduring that they seem inexorable. Writing in the 1960s, John Kain and John Neidercorn (1963) saw that the “observed trends strongly indicate rapid growth in the levels of population and employment in the metropolitan ring [suburbs] and only slow growth in the central city.”

Summarizing the data for the early post-war period, Edwin S. Mills reported that between 1947 and 1963, the share of metropolitan employment in central cities fell from more than two-thirds to barely half (Mills, 1972). Absolute levels of employment in manufacturing, wholesaling and retailing declined in central cities, while growing rapidly in suburbs. Services did grow in central cities, but much more slowly than in suburbs.

Later studies confirmed the continuing decentralization of employment through the end of the 20th Century. Improving data and technology allowed later researchers to study job decentralization in greater detail. Ed Glaeser and his colleagues (2001) used data compiled by zip code geographies to look at the location of employment within three miles and beyond ten miles of the center of the central business district in metropolitan areas. In their analysis of

Table 2: Employment in Central Cities, by Industry, 1947 and 1963

	Central City			Suburbs		
	1947	1963	Annual Growth	1947	1963	Annual Growth
Manufacturing	3,750	3,250	-0.9%	2,449.0	3,791.0	2.7%
Retailing	2,032	1,667	-1.2%	811.0	1,756.0	4.8%
Service	673	826	1.3%	173.0	525.0	6.9%
Wholesaling	980	943	-0.2%	171.0	503.0	6.7%

Source: Mills, 1972. Note: Data are for 90 metropolitan areas. Central city refers to the largest municipality in each metropolitan area. Suburbs are the balance of the metropolitan area outside the central city.

employment decentralization based on data from through the 1990s, they concluded that “most American cities are decentralized” and that in 1996, on average about 22 percent of jobs in the 100 largest metropolitan areas were located within 3 miles of the central business district (Glaeser & Kahn, 2001).

Elizabeth Kneebone and co-authors conducted similar analyses using data through 2006 (2009), and later through 2010 (2013). Like Glaeser and Kahn, Kneebone used zip code level data. These two studies follow the same approach, with some minor differences. Unlike Glaeser, Kneebone computes employment around multiple central business districts in some metropolitan areas without a dominant central business district.

Table 3 shows data summarizing Kneebone’s analysis of core and periphery employment growth rates for the period 1996 to 2006 and 2000 to 2010. Data from the two studies are not directly comparable because of changes in the metro areas examined and in the methodology employed. The first study (Kneebone 2009) presents data for

the 1996 to 2006 period that show a continued decentralization of employment for areas within 3 miles of the center (core) growing at 0.1 percent per year, while areas beyond 3 miles grew at 1.8 percent per year.

Kneebone (2013) presents data for two time periods: 2000 to 2007 and 2007 to 2010. The earlier period shows continuing decentralization of employment: employment in the metropolitan core declined at 0.6 percent per year, while peripheral employment grew at 0.9 percent per year. Data for the later period show employment declining both in the core and periphery, but at a faster rate in peripheral locations (-0.9 percent in the core and -1.1 percent in the periphery). The somewhat greater decline in the periphery led Kneebone to ask whether job sprawl had stalled.

The biggest factors influencing the decline in employment in city centers seem to have to do with changes in residential location patterns and transportation technology. A key factor driving continuing decentralization seemed to be the locational preference of workers, especially

Table 3: Zip Code Based Estimates of City Center and Periphery Employment

Year	98 MSA Total	3 Mile Share	City Center	Periphery
1996	70,159,860	23.3%	16,347,247	53,812,613
2006	77,411,492	21.3%	16,488,648	60,922,844
Annual Growth Rate, 1996-2006			0.1%	1.8%

Source: Kneebone, 2009, Appendix A, page 17

Year	100 MSA Total	3 Mile Share	City Center	Periphery
2000	76,252,828	0.245%	18,681,943	57,570,885
2007	79,071,921	0.226%	17,870,254	61,201,667
2010	73,247,962	0.229%	16,773,783	56,474,179
Annual Growth Rate, 2000-2007			-0.6%	0.9%
Annual Growth Rate, 2007-2010			-0.9%	-1.1%

Source: Kneebone, 2013, Appendix B pages 15-17

workers with high human capital. Glaeser and Kahn attribute the decentralization of employment through 2000 to the decentralization of population. As population decentralized in the last half of the twentieth century, businesses located and expanded in more dispersed locations to achieve proximity to customers and workers. They concluded: “the dominant factor explaining [employment] decentralization is the residential preference of workers” (Glaeser & Kahn, 2001).

The shift in transportation technology from rail and ship to over-the-road trucking helped drive the decentralization of manufacturing and distribution industries. Within metropolitan areas, the construction of highways encouraged the decentralization of population, and with it,

employment. Each additional radial highway corridor constructed within a large metropolitan area was associated with an 18 percent decline in central city population (Baum-Snow, 2007).

Recent Trends in City Center Employment

Since 2002, the Census Bureau has compiled highly disaggregated data on employment by place of work and place of residence as part of its Local Employment and Housing Dynamics (LEHD) program. A unique attribute of these data is that, unlike other geographic data that are available only for relatively large geographic aggregations like counties or zip code tabulation areas, LEHD data are compiled for specific addresses. The Census Bureau anonymizes and aggregates data to protect the disclosure of firm-specific or individual data. The LEHD data allow an unusual degree of geographic specificity. We used the Census

Bureau's web-based data selection tools to compile data - see the Appendix for details. Our analysis is confined to a selected set of industries and metropolitan areas for which comparable data was available through LEHD for the period 2002-2011.

We use these data to measure changes in employment over time within a three-mile radius around the center of the central business district in each of the nation's largest metropolitan areas. In 2011, the latest year for which data are available, there were 54.5 million workers employed in the 41 metropolitan areas for which we compiled data. Of

Table 4: Employment in City Centers, Outside City Centers, in Large Metropolitan Areas, 2011

	Employment	Share of Metro
City Center	8,617,709	15.8%
Outside City Center	45,868,274	84.2%
Metro	54,485,983	100.0%

these, 8.6 million—or about 16 percent of the total—were employed by employers located within three miles of the center of the central business district.

Core Employment by Metropolitan Area

The share of total metropolitan employment in the urban core—the radius within three miles of the center of the central business district—varies by metropolitan area. Some larger, sprawling metropolitan areas (Atlanta, Dallas, Houston, Los Angeles, and Miami) have less than ten percent of their total employment in the urban core. A mix

of older and smaller metropolitan areas tend to have a higher concentration of employment in the urban core. New York has about 23 percent of its employment in the core; San Francisco about 26 percent. Austin (29 percent) and Rochester, NY, (28 percent) have the highest levels of core employment.

Table 5: Employment in City Centers, by Metropolitan Area, 2011

Metro	City Center	Metro	Percent in City Center
Atlanta	186,299	2,023,782	9.2%
Austin	213,211	739,630	28.8%
Baltimore	168,591	1,050,129	16.1%
Birmingham	102,686	430,971	23.8%
Buffalo	76,481	478,661	16.0%
Charlotte	149,211	765,441	19.5%
Chicago	647,518	3,791,689	17.1%
Cincinnati	134,482	866,284	15.5%
Cleveland	120,194	884,991	13.6%
Columbus	123,293	803,005	15.4%
Dallas	239,607	2,695,780	8.9%
Denver	212,029	1,086,274	19.5%
Hartford	123,368	541,746	22.8%
Houston	197,361	2,397,080	8.2%
Indianapolis	151,506	795,111	19.1%
Jacksonville	97,012	527,676	18.4%
Kansas City	107,489	849,960	12.6%
Las Vegas	83,102	719,377	11.6%
Los Angeles	340,465	4,851,959	7.0%
Louisville	112,460	538,175	20.9%

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Table 5: Employment in City Centers, by Metropolitan Area, 2011 (cont.)

Metro	City Center	Metro	Percent in City Center
Miami	157,521	1,993,284	7.9%
Milwaukee	148,455	725,144	20.5%
Minneapolis	247,582	1,505,349	16.4%
Nashville	143,240	671,132	21.3%
New Orleans	101,989	437,978	23.3%
New York	1,672,725	7,304,357	22.9%
Oklahoma City	84,165	488,054	17.2%
Orlando	124,831	918,136	13.6%
Philadelphia	357,739	2,405,782	14.9%
Pittsburgh	212,547	1,017,092	20.9%
Portland	201,915	905,875	22.3%
Richmond	88,248	515,043	17.1%
Rochester	120,639	431,810	27.9%
Sacramento	90,106	661,099	13.6%
San Antonio	104,768	758,607	13.8%
San Diego	127,176	1,106,558	11.5%
San Francisco	461,261	1,764,024	26.1%
San Jose	104,572	793,415	13.2%
Seattle	279,841	1,463,541	19.1%
St. Louis	118,002	1,160,338	10.2%
Virginia Beach	84,022	621,644	13.5%
Total	8,617,709	54,485,983	15.8%

Average Wage Levels

The LEHD database provides some limited categorical information about the average level of wages paid for different jobs. It identifies the number of jobs paying wages of \$3,333 per month (\$40,000 per year) or higher. A higher proportion of city center jobs are in this highest category than all jobs in subject metropolitan areas. About 56 percent of jobs located within three miles of

the center of CBDs paid \$40,000 or more in 2011, compared with about 46 percent of all jobs in these metropolitan areas. This pattern of a larger fraction of higher paying jobs in city centers held for all but one of the large metropolitan areas we examined (San Jose).

Employment Change in the Core and Periphery

For the purposes of our analysis, we divide our data into two time periods: 2002 to 2007 and 2007 to 2011. The former period coincides with the economic expansion following the 2001-02 national recession. The latter period measures from the economic peak through the trough of the

Great Recession and the early part of the recovery from that downturn.

Figure 2 shows the pattern of employment growth for city centers and surrounding areas for these two time periods. For brevity, we refer to city centers as the “core” and the remainder of the metropolitan area outside the core as the “periphery.” The core or city center is defined using our three-mile radius around the center of the central business district.

Figure 2: Core and Periphery Job Growth, 2002-07 and 2007-11

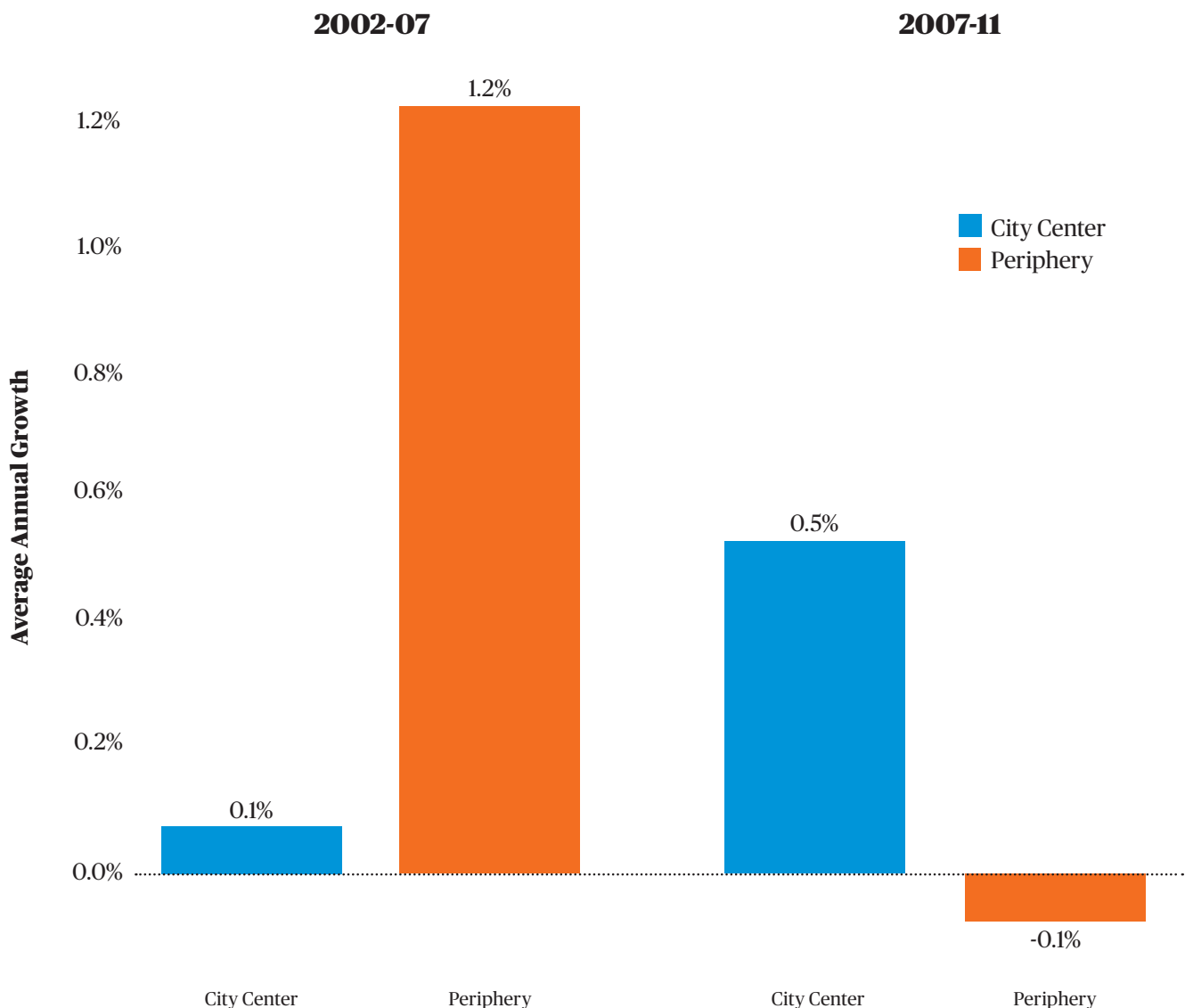


Table 6: Employment in City Centers, Outside City Centers, in Large Metropolitan Areas, 2002, 2007, and 2011

	Core	Periphery	Metro
Jobs, 2002	8,406,315	43,290,398	51,696,713
Jobs, 2007	8,437,852	46,002,745	54,440,597
Jobs, 2011	8,617,709	45,868,274	54,485,983
Job Change, 2002-07	31,537	2,712,347	2,743,884
Job Change, 2007-11	179,857	(134,471)	45,386
Average Growth Rate, 2002-07	0.1%	1.2%	1.0%
Average Growth Rate, 2007-11	0.5%	-0.1%	0.0%

In the economic expansion of the middle part of the last decade, employment growth was much stronger in the periphery than in the urban core. In the aggregate, employment in the periphery of our 41 metropolitan areas expanded at an annual rate of 1.2 percent between 2002 and 2007. Employment in the urban core increased much more slowly, about 0.1 percent per year over this same time period.

In the period 2007 through 2011—from the beginning of the Great Recession through the first two years of recovery—city centers outperformed the remainder of the metropolitan areas in which they were located. Employment growth in the core averaged 0.5 percent per year between 2007 and 2011, while employment in the periphery declined by about 0.1 percent per year.

Table 6 summarizes the employment levels in the core and periphery for the 41 metropolitan areas in our study. In the aggregate, core areas gained about 180,000 jobs in the 2007-11 period, compared with an increase of 32,000 jobs in the period 2002-2007. Peripheral areas, which had added 2.7 million jobs between 2002 and 2007 had a decline in employment of 134,000 jobs between 2007 and 2011.

Aggregate job growth in urban cores, which has long trailed job growth in more peripheral areas,

accounted for all of the net growth in employment in these 41 metropolitan areas over the period 2007-11.

Core and Peripheral Employment by Metropolitan Area

The pattern of change between core and peripheral areas varied by metropolitan area. Table 7 shows the average annual growth rate in employment for the core and periphery of each of the 41 metropolitan areas in our study. Employment growth rates between 2002 and 2007 in urban cores ranged from a high of 2.0 percent in Nashville to a low of -6.5 percent in New Orleans (coinciding with the economic effect of Katrina). Austin, Charlotte and a rebounding New Orleans recorded the fastest core growth rates in the 2007-11 period, while a number of other urban cores continued to experience employment declines—with the largest declines in Las Vegas (down by 5.1 percent) and Jacksonville (down 3.8 percent). The pattern of peripheral growth was much more similar across metropolitan areas. Employment in the periphery grew in 38 of 41 metropolitan areas in 2002-07 and declined in the periphery of 27 metropolitan areas in 2007-11.

Table 7: Employment Change in City Centers and Periphery, 2002-07 and 2007-11
By Metropolitan Area, Average Annual Growth Rate

Metro	Core Growth		Periphery Growth	
	2002-07	2007-11	2002-07	2007-11
Atlanta	-0.2%	-0.5%	1.6%	-0.8%
Austin	0.6%	3.4%	3.1%	2.3%
Baltimore	-0.7%	0.0%	1.5%	0.0%
Birmingham	-1.3%	-1.7%	2.2%	-1.6%
Buffalo	0.2%	-0.4%	0.3%	-0.4%
Charlotte	0.5%	2.5%	1.9%	-0.1%
Chicago	-0.1%	2.1%	0.7%	-0.7%
Cincinnati	-1.6%	-1.8%	0.9%	-1.0%
Cleveland	-1.9%	-2.4%	0.6%	-1.4%
Columbus	-3.7%	0.8%	0.6%	0.8%
Dallas	0.8%	0.5%	2.0%	1.0%
Denver	-0.2%	-0.1%	1.0%	0.1%
Hartford	0.7%	1.1%	0.4%	-0.4%
Houston	-0.1%	-0.1%	2.0%	2.0%
Indianapolis	1.6%	0.4%	1.5%	0.2%
Jacksonville	-0.1%	-3.8%	5.3%	-4.4%
Kansas City	0.1%	-3.2%	1.2%	-0.4%
Las Vegas	0.4%	-5.1%	5.6%	-2.6%
Los Angeles	1.0%	-1.2%	0.9%	-0.3%
Louisville	-0.3%	-1.5%	1.5%	-0.3%
Miami	-2.2%	-0.1%	1.5%	-0.6%
Milwaukee	0.2%	1.4%	0.8%	-1.3%
Minneapolis	1.9%	-0.8%	0.6%	-0.5%
Nashville	2.0%	0.9%	1.9%	-0.2%
New Orleans	-6.5%	2.1%	-0.3%	-0.2%
New York	1.0%	1.8%	0.3%	0.7%
Oklahoma City	-1.9%	2.2%	1.5%	0.5%
Orlando	-3.4%	1.3%	3.2%	-0.3%
Philadelphia	0.3%	2.0%	1.3%	-0.1%
Pittsburgh	0.5%	1.0%	0.8%	0.1%

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Table 7: Employment Change in City Centers and Periphery, 2002-07 and 2007-11
By Metropolitan Area, Average Annual Growth Rate (Cont.)

Metro	Core Growth		Periphery Growth	
	2002-07	2007-11	2002-07	2007-11
Portland	0.8%	0.8%	2.2%	-0.5%
Richmond	0.9%	-2.5%	1.6%	-0.8%
Rochester	-3.0%	-1.4%	0.3%	0.0%
Sacramento	-1.7%	-1.1%	2.0%	-1.2%
San Antonio	-1.2%	-0.9%	2.0%	2.0%
San Diego	0.1%	-0.4%	0.8%	0.3%
San Francisco	0.9%	1.7%	-0.6%	-0.3%
San Jose	-0.8%	-0.7%	0.0%	0.0%
Seattle	1.0%	0.1%	1.9%	0.2%
St. Louis	-0.7%	-0.5%	0.9%	-0.8%
Virginia Beach	1.6%	-1.3%	1.7%	-0.4%

It is interesting to compare the performance of core areas to their surrounding peripheries. In the period 2002-2007, core areas underperformed (expanded more slowly or contracted more rapidly) compared to their metropolitan peripheries in all but seven metropolitan areas. Over the latter four-year period (2007-11) 21 of 41 urban cores outperformed their surrounding peripheries. (See Table 8).

It also appears that city centers generally weathered the Great Recession better than did their surrounding peripheries. In 22 of 41 metropolitan cores, employment growth in the 2007-11 period exceeded the growth rate of the earlier 2002-07 period (either the urban core grew faster or shrank more slowly than it had in the earlier period). In contrast, only six of 41 peripheral areas had stronger employment performance in the 2007-11 period than they did in the 2002-07 period.

Table 8: Employment in City Centers, Outside City Centers, in Large Metropolitan Areas, 2011

Category	2002-07	2007-11
Core outperformed periphery	7	21
Periphery outperformed core	34	20

Some city centers have consistently outperformed the surrounding portions of their metropolitan areas. The city centers of New York and San Francisco have seen consistently faster job growth than in their peripheries. In many cases the differences between city center and peripheral growth are small. If we exclude from our analysis cities where the city/periphery growth rate differential in each period was less than one percentage point per year, the number of cities where the core grew substantially faster than the periphery increases from two in 2002-07 (Minneapolis and San Francisco) to 13 in 2007-11.

While widespread, the pattern of resurgent city center job growth is not universal. The historic pattern of job decentralization persists in some metros, as evidenced by peripheral employment growth rates that exceed those in city centers. As before, if we exclude from consideration cities where the core-periphery growth differential was less than one percentage point, six metropolitan areas exhibited much stronger performance in the periphery in both the 2002-07 and 2007-11 time periods: Houston, Kansas City, Las Vegas, Louisville, Rochester, and San Antonio.

The Industrial Composition of City Center Job Growth

Does the relatively strong performance of city centers in the past few years signify attenuation or a reversal of the historic pattern of employment decentralization, or is it just a temporary cyclical phenomenon? We try to answer that question by undertaking an industrial decomposition of employment change in the core and periphery.

The industrial lens is critical for understanding whether the changes of past few years are permanent or transitory. The nature of recessions and economic cycles is that they produce greater declines in employment in some industries than others. Some economic sectors are much more cyclically sensitive; this is especially true for durable goods manufacturing and construction. The Great Recession was characterized by large declines in manufacturing output and employment, as well as by declines in homebuilding and construction employment. In contrast, many service industries had modest or negligible declines during the recession: healthcare employment continued to increase nationally even as aggregate employment declined.

We have good reasons to believe that the kinds of industries that are located in urban centers were less likely to be affected by the Great Recession than more peripheral industries. Economists and geographers have long observed that different industries tend to exhibit distinctive location patterns within metropolitan areas. Some industries - like grocery stores and common personal services, such as barbers, hairdressers, and retail banks - tend to be widely distributed throughout a metropolitan area, mirroring the distribution of residential population. Other industries have larger scale or are more clustered near one another.

Some industries cluster in the city center (finance, professional services, law, accounting, creative services), while other industries (especially large-scale manufacturing and warehousing), tend to be found more on the urban periphery. As Holmes and Stevens have shown, professional and technical services, information, and financial sectors are disproportionately concentrated in the most urban locations in the country (2003). In contrast, manufacturing employment is disproportionately found in more rural locations.

Centralized and Decentralized Industries

Some industries are systematically more likely to be located in city centers than others. Economists use location quotients to describe industrial concentrations in particular places. In Table 9, we use LEHD data for 19 major industries to compute the location quotient for city centers relative to the metropolitan areas in which they are located. These location quotients show the relatively

likelihood that jobs in a particular industry are found in the city center, given their overall representation in the metropolitan economy. A location quotient of one means a given job makes up the same share of city center jobs as it does the share of jobs in the region. Location quotients greater than one signify industries that are more concentrated in the center, and location quotients less than one indicate decentralized industries.

Table 9: Metropolitan and City Center Employment, by Industry 2011

Industry	City Center	Metro	Percent in City Center	Location Quotient
Accommodation and Food Services	734,095	4,574,627	16%	1.01
Administration & Support,	574,785	3,639,152	16%	1.00
Agriculture, Forestry, Fishing	2,667	130,273	2%	0.13
Arts, Entertainment, and Recreation	203,588	979,939	21%	1.31
Construction	220,566	2,367,035	9%	0.59
Educational Services	973,716	5,393,380	18%	1.14
Finance and Insurance	812,529	3,086,386	26%	1.66
Health Care and Social Assistance	1,298,427	7,591,001	17%	1.08
Information	376,659	1,634,037	23%	1.46
Management of Companies	263,629	1,151,824	23%	1.45
Manufacturing	323,580	4,651,397	7%	0.44
Mining	35,968	197,036	18%	1.15
Other Services	359,993	2,035,956	18%	1.12
Professional, and Technical Services	1,099,802	4,327,423	25%	1.61
Real Estate and Rental and Leasing	208,234	1,062,751	20%	1.24
Retail Trade	467,191	6,136,272	8%	0.48
Transportation and Warehousing	222,672	2,173,624	10%	0.65
Utilities	114,281	346,165	33%	2.09
Wholesale Trade	325,327	3,007,705	11%	0.68
Total	8,617,709	54,485,983	16%	1.00

Overall, city centers account for about 15 percent of metropolitan employment, but this proportion varies widely by industry. One-third of utility employment, and approximately one-quarter of finance, insurance, and professional and technical services employment, is located in these city centers. At the other extreme, fewer than two percent of metropolitan area jobs in agriculture, forestry, fishing, and hunting are located in city centers. Manufacturing and retail employment are also both highly decentralized, with only about seven percent of metropolitan employment in these industries located in city centers.

In general, knowledge-oriented industries that require considerable face-to-face interaction are clustered in city centers, while goods producing and moving industries are more decentralized. Knowledge-oriented industries tend to use land much more intensively than goods producing and distribution industries. Employment in

manufacturing, construction, warehousing and distribution, and transportation are all relatively decentralized. The data in Table 9 are broadly consistent with other analyses of the spatial structure of industrial employment in urban areas (Holmes and Stevens, 2003).

Table 10 presents these nineteen industries ordered according to their city center location quotient. Industries most disproportionately located in the city center have the highest location quotients (utilities, finance, and professional services). Those with the lowest location quotients (agriculture, manufacturing, and retail trade) are relatively under-represented in the city center. The final two columns of Table 10 present the percentage growth in employment between 2002 and 2007 and between 2007 and 2011 for our sample of 41 metropolitan areas. With a few exceptions (utilities), growth was lower in the latter period in every industry.

Table 10: Metro Employment Growth by Industry 2002-07 and 2007-11 with 2011 City Center Location Quotients

Industry	Location Quotient	Average Annual Growth 2002-07	Average Annual Growth, 2007-11
Utilities	2.09	-0.4%	1.3%
Finance and Insurance	1.66	0.9%	-1.3%
Professional and Technical Services	1.61	2.1%	1.0%
Information	1.46	-1.9%	-0.5%
Management of Companies	1.45	0.9%	1.8%
Arts, Entertainment, and Recreation	1.31	1.1%	1.3%
Real Estate and Rental and Leasing	1.24	1.1%	-1.7%
Mining	1.15	4.2%	2.6%
Educational Services	1.14	1.7%	2.5%
Other Services	1.12	0.8%	1.1%
Health Care and Social Assistance	1.08	2.4%	3.5%

Continued on next page

Table 10: Metro Employment Growth by Industry 2002-07 and 2007-11 with 2011 City Center Location Quotients (Cont.)

Industry	Location Quotient	Average Annual Growth 2002-07	Average Annual Growth, 2007-11
Accommodation and Food Services	1.01	2.3%	1.0%
Administration & Support	1.00	1.7%	-0.2%
Wholesale Trade	0.68	0.9%	-1.4%
Transportation and Warehousing	0.65	0.6%	-0.2%
Construction	0.59	2.4%	-7.8%
Retail Trade	0.48	0.5%	-0.1%
Manufacturing	0.44	-1.9%	-3.5%
Agriculture, Forestry, Fishing	0.13	-1.8%	-2.0%
Total	1.00	1.0%	0.0%

The biggest employment declines in the latter period were in construction (down 7.8 percent) and manufacturing (down 3.5 percent). Both of these industries are highly decentralized. Industries that are disproportionately represented in city centers generally fared better (finance declined 1.3 percent, information 0.5 percent, and utilities, professional services, management, and arts all increased).

Figure 3 illustrates the differential pattern in employment growth by industry in these two time periods, according to the degree of industry centralization. The vertical axis shows the percentage growth by industry in each time period, and the horizontal axis shows the city center location quotient for each industry (higher values correspond to greater centrality). Each mark on the chart represents the central city location quotient and growth rate of one of the nineteen industry sectors in 2002-07 (circles) and 2007-11 (squares). The regression lines on the chart show the relationship between centrality

and growth in each time period. In 2002-07, there was a very weak positive relationship between growth and centrality (more centralized industries grew somewhat faster than more decentralized industries). In 2007-11, this line is much steeper—nearly all industries grew more slowly due to the recession, but the biggest declines were among industries (manufacturing, construction) that were the most decentralized.

This analysis suggests that an important impetus to the relatively strong performance of city centers in the 2007-11 period had to do with the industrial composition of employment declines in the Great Recession.

An open question going forward is whether the centralization of job growth will continue as the economy expands. Construction and manufacturing employment (two relatively decentralized industries) have been late to rebound during the economic recovery. It would be reasonable to expect that they would add

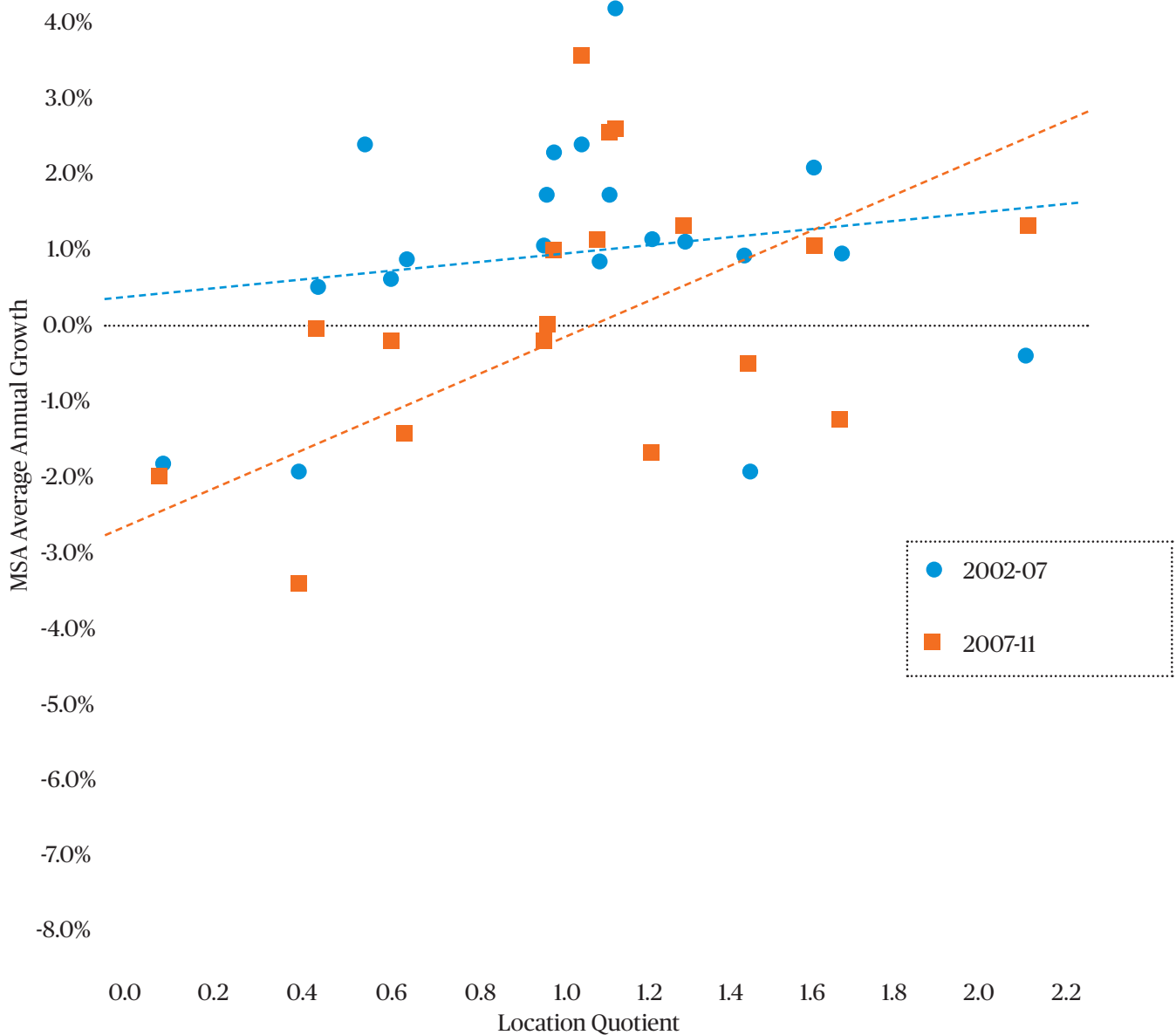
disproportionately to metropolitan job growth as the recovery proceeds.

Shift-share analysis by industry

Shift-share analysis allows us to decompose the change in employment due to shifts in competitive position (the city center increasing its share of

a particular industry) and changes due to the composition of industrial employment (the growth attributable to the greater or lesser share of share of an industry in the urban core). Shift-share analysis builds on the observation that each industry is growing (or declining) at a different rate, and that some industries make up a larger share of employment in city centers than others.

Figure 3: Industry Growth and Centralization, 2002-07 and 2007-11



We compare two time periods—2002-07 and 2007-11. Comparing these periods shows that the shift in employment in favor of city centers was propelled both by competitive improvements and compositional effects.

In general, the compositional shift in employment since 2002 has favored central cities. Industries that tend to be disproportionately located in city centers have, on average, performed better than more decentralized industries. The positive compositional shift of industrial employment in favor of city centers was plus 1.0 percent in the 2002-07 period and plus 2.0 percent in the 2007-11 period. Put another way, if city centers had maintained their share of all industries in those periods, they would have expected positive growth in both periods.

However, this favorable composition of employment change was more than offset by the declining competitive position of central cities—at least through 2007. Between 2002-07, the competitiveness of central cities was slipping in the aggregate. The competitive effect of shift-share analysis was -5.9 percent, meaning cities were losing their market share of industries. The effect was so large that it dwarfed the positive compositional effect (+1.0 percent) over that time period.

In the 2007-11 period, the net competitive effect for city centers was 0.0 percent, meaning city centers had erased their competitive disadvantage compared with the earlier period. This, coupled with a shift in the composition of growth to favor city center industries (+2.0 percent) produced their positive growth during this latter time period.

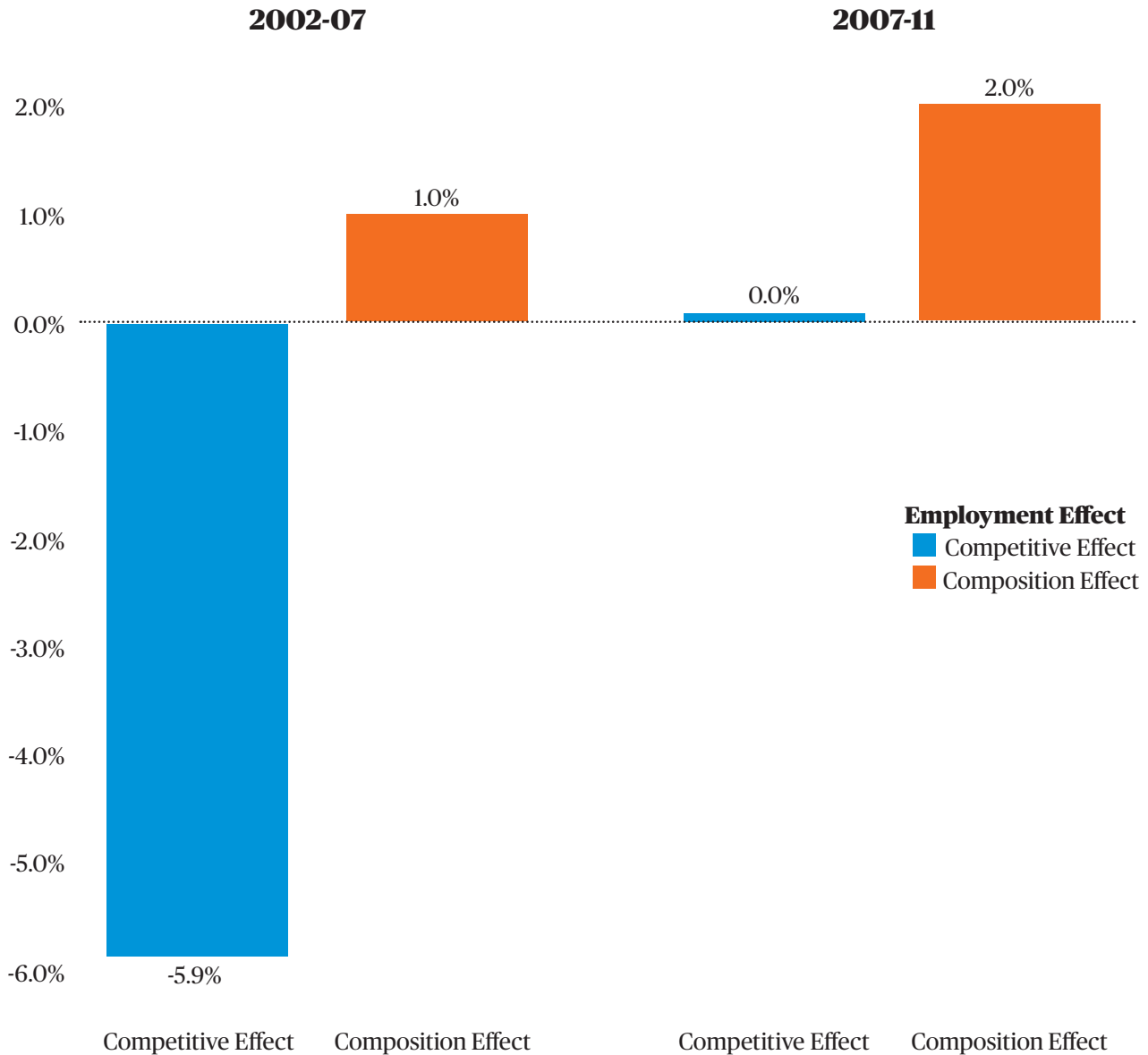
The key conclusions of this analysis are two-fold: first, the composition of industrial employment continues to shift in favor of industries that are disproportionately located in central cities. This shift to knowledge- and service-based industries has the potential to generate additional job growth in city centers. The big change in the last few years is in the relative competitive position of city centers: in 2002-07 the declining competitiveness of central cities more than offset the compositional shift in their favor. In the 2007-11 period, city centers erased their competitive disadvantage, with their competitive position changing from -5.9 percent to essentially neutral—0.0 percent).

While the overall competitiveness of central cities improved in the aggregate, patterns varied by industry. It is clear that city centers are more competitive in 2011 than they were in 2007. In some industries the effect was very strong: accommodation, and food services and arts, entertainment, and recreation showed larger

Table 11: Shift-Share Analysis Summary

	2002-07	2007-11
Competitive Effect	-5.9%	0.0%
Composition Effect	0.1%	2.0%

Figure 4: Comparing Competitive and Composition Effects of City Center Job Growth



competitive gains in the 2007-11 period than in the 2002-07 period. City centers also enjoyed notable competitive gains in employment in professional services, and finance, insurance, and real estate. Table 12 presents these industry effects on core job growth by time period.

We separately performed this analysis for each of the 41 metropolitan areas for which we had data. The aggregate competitive effect for each

metropolitan area for these two time periods is shown in Table 13.

In the earlier time period, all but a handful of metropolitan areas had a negative competitive component in city center employment change (Hartford, Minneapolis, New York, and San Francisco). These cities gained share of metro employment after adjusting for the industrial composition of employment change

Table 12: Contribution of Competitive and Composition Effects to City Center Job Growth, by Industry, 2002-07 and 2007-11

Industry	2002-07		2007-11	
	Competitive Effect	Composition Effect	Competitive Effect	Composition Effect
Accommodation and Food Services	-4.7%	6.8%	5.8%	3.9%
Administration & Support	-8.9%	3.7%	2.7%	-0.9%
Agriculture, Forestry, Fishing	-13.5%	-14.0%	-7.6%	-7.9%
Arts, Entertainment, and Recreation	0.5%	0.4%	4.6%	5.3%
Construction	-10.1%	7.5%	5.0%	-27.0%
Educational Services	-6.9%	3.7%	-1.1%	10.6%
Finance and Insurance	-8.5%	-0.5%	3.1%	-5.0%
Health Care and Social Assistance	-3.1%	7.4%	-2.9%	15.1%
Information	-0.7%	-14.6%	-0.3%	-2.1%
Management of Companies	-4.8%	-0.7%	-2.3%	7.3%
Manufacturing	-8.5%	-14.6%	-9.0%	-13.0%
Mining	9.3%	17.8%	4.2%	10.9%
Other Services	-9.0%	-1.0%	1.7%	4.5%
Professional and Technical Services	-4.8%	5.8%	-0.1%	4.2%
Real Estate and Rental and Leasing	-2.0%	0.4%	4.9%	-6.6%
Retail Trade	-4.9%	-2.8%	-1.2%	-0.4%
Transportation and Warehousing	-14.6%	-2.4%	-0.6%	-0.9%
Utilities	4.1%	-7.2%	-4.3%	5.2%
Wholesale Trade	-7.3%	-0.7%	-4.1%	-5.7%
Total	-5.9%	1.0%	0.0%	2.0%

in their metropolitan area. In the latter time period—2007-11—almost every city center saw its competitive position improve relative to the earlier time period. Only Kansas City, Los Angeles, Minneapolis, and San Diego saw their competitive positions deteriorate compared to 2002-07. While many cities managed only a reduction in their competitive disadvantage—meaning that they were still losing employment share to the periphery,

but a slower rate—fourteen cities had a positive competitive component in employment change—meaning that they were gaining market share compared to the periphery.

An industrial de-composition of the patterns of job change in large metropolitan areas shows that the relative competitive position of city centers has improved markedly in the past few years. The industrial composition of growth has

long favored more central locations, but through 2007, the declining competitive position of city centers more than offset that trend. From 2007 through 2011, the industrial composition of growth tilted more strongly in favor of relatively central industries, and city centers managed significant improvements in their competitive position.

Table 13: Competitive Effect, by City, 2002-07 and 2007-11

Industry	2002-07	2007-11
Atlanta	-7.9%	-1.8%
Austin	-7.0%	-4.3%
Baltimore	-10.5%	-2.5%
Birmingham	-13.0%	-1.6%
Buffalo	-3.9%	-3.5%
Charlotte	-9.8%	4.3%
Chicago	-4.2%	8.0%
Cincinnati	-13.3%	-5.8%
Cleveland	-10.5%	-3.7%
Columbus	-18.0%	-3.7%
Dallas	-7.9%	-5.4%
Denver	-6.4%	-3.9%
Hartford	0.2%	2.2%
Houston	-9.6%	-8.2%
Indianapolis	-0.1%	0.1%
Jacksonville	-19.4%	-3.5%
Kansas City	-6.4%	-6.7%
Las Vegas	-24.4%	-11.1%
Los Angeles	0.0%	-6.6%
Louisville	-8.6%	-4.5%
Miami	-16.8%	0.3%
Milwaukee	-4.7%	6.2%

Continued on next page

Table 13: Competitive Effect, by City, 2002-07 and 2007-11 (Cont.)

Metro	2002-07	2007-11
Minneapolis	2.7%	-2.5%
Nashville	-0.4%	-1.4%
New Orleans	-16.9%	8.0%
New York	2.7%	4.0%
Oklahoma City	-14.1%	5.5%
Orlando	-24.6%	6.1%
Philadelphia	-8.0%	4.5%
Pittsburgh	-5.5%	-1.1%
Portland	-6.7%	2.1%
Richmond	-9.2%	-8.0%
Rochester	-9.8%	-3.2%
Sacramento	-14.2%	-6.3%
San Antonio	-14.6%	-11.4%
San Diego	-3.4%	-5.9%
San Francisco	5.4%	4.4%
San Jose	-5.7%	-0.7%
Seattle	-3.9%	-2.7%
St. Louis	-9.7%	0.3%
Virginia Beach	-1.6%	-2.9%

What is the Future of City Center Job Growth?

The data presented here show that over the past few years, city centers have, for the first time in many decades, outperformed the more peripheral portions of metropolitan areas in job growth. Our analysis of the industrial composition of this data suggests that city centers are both benefitting from a continuing shift to the kinds of industries that have historically preferred more centralized locations, and are also more competitive for jobs within industries. All of these changes are masked by the disruption of the Great Recession. While some of this effect is undoubtedly tied to the economic cycle, there are a number of longer-term, structural reasons to be optimistic about city center job growth.

A Growing Preference for Urban Living

Young adults are showing an increasing preference for living in close-in urban locations. Between 2000 and 2012, the number of 25 to 34 year-olds with at least a four-year degree living in city centers increased twice as fast as in large

metropolitan areas as a whole. The number of well-educated young adults living in close-in urban neighborhoods increased in 49 of the nation's 51 largest metropolitan areas during this time. While well-educated young adults have always been disproportionately more likely to choose to live in urban centers than other metropolitan residents, this preference has increased over time. In 2010, college educated young adults were 126 percent more likely to live within three miles of the center of the central business district of a large metropolitan area than other metro residents, up from about 77 percent more likely in 2000 (Cortright, 2014).

Because well-educated young adults are an important source of labor for fast-growing, knowledge-based firms, it appears that companies are altering their growth or expansion plans to tap this labor pool. In the past several years, a number of companies in finance, software, biotechnology, and other industries have announced relocations or expansions in city center locations with the avowed intent of better competing for this labor force.

There also appears to be strong demand for people looking to live and work in dense urban centers. Levy and Gilchrist identify thirty-four major urban employment nodes in which 30 percent or more of the working residents living within these employment centers, or within the surrounding one-mile radius, also work within this area (2013).

The Consumer City

Another principal theory advanced for resurgent city center growth is the importance of cities as centers for consumption (Glaeser, Kolko, & Saiz, 2000). Cities are not economically important just as centers of production, but also as centers of consumption. The dense, diverse, convenient array of varied services and experiences in city centers is a core advantage and a growing sector of their economies. More vibrant cities support and encourage denser residential development, lower vehicle miles traveled, and reduced greenhouse gas production (Holian & Kahn, 2012).

Perhaps this is best illustrated by the strong performance of the “accommodation and food services” and “arts, entertainment, and recreation” industries. The competitive shift in favor of city centers over the past decade is evident in the shift share analysis. In the earlier period—2002-07—both accommodation and food services, and arts, entertainment, and recreation, had negative or weak competitive factors (-4.7 percent and +0.5 percent respectively). In the latter period, both of these sectors had positive competitive factors: +5.8 percent for accommodation and food services, and +4.6 percent for arts, entertainment, and recreation. These data suggest that city centers are now gaining an increasing share of metropolitan employment in these industries.

Knowledge-based industries

Finance and insurance, and professional and business services, like engineering, accounting, business management, advertising, public relations, and planning, as well as some high-tech services, are disproportionately concentrated in city centers. Finance and insurance have a location quotient of 1.66, and professional services have a location quotient of 1.61; this indicates that these industries are about 60 percent more important to city centers than the overall metropolitan economy. In the earlier period we examine, the central city advantage in these industries was ebbing, as indicated by competitive effects of -8.5 percent for finance and insurance and -4.8 percent for professional services. In the latter period, the competitive position of city centers improved to +3.1 percent for finance and insurance and -0.1 percent for professional services. Both of these knowledge-based sectors saw a substantial slowdown (professional services) or reversal (finance and insurance) in the tendency toward decentralization. Employment in the real estate industry follows a similar trend.

Entrepreneurship

There are some signs that entrepreneurship, particularly among high technology firms, is shifting in favor of city center locations. Dense urban environments have become increasingly popular locations for start-up firms in cities like Boston and San Francisco. Although our data don't allow us to directly and separately measure the growth in start-up employment, other analyses of the location of venture capital funded businesses suggests that start-ups are increasingly choosing central city locations. A majority of all

venture capital investments made in the eleven metropolitan areas that received the largest amounts of venture capital were located in more urbanized zip codes (Florida, 2014).

“Eds and Meds”

Much has been made of “eds and meds”—education and health care—as potential drivers of job growth in cities, and particularly in metropolitan areas (Bartik & Erickcek, 2008). Both of these industries are somewhat more concentrated in the urban core than other industries (location quotients in Table 10 show education is about 14 percent more centralized, health care about 8 percent). Both of these industries have been consistently outperforming the overall economy in job growth: metropolitan health care employment grew 2.4 percent annually between 2002 and 2007 and accelerated to 3.5 percent annually between 2007 and 2011; education grew 1.7 percent annually and 2.5 percent annually in these periods. For comparison, overall metro job growth was 1.0 percent annually in 2002-07 and -0.02 percent in 2007-11.

The growth of eds and meds has contributed to city center job growth. Between 2007 and 2011, education employment in city centers increased by 85,000 and health care employment increased by 142,000.

While these have contributed to overall urban employment, the growth rate of both of these industries in city centers lagged the growth rate of the same industries in the balance of the metropolitan area, suggesting that city centers are seeing their competitive position in these industries lag. The shift share analysis shows a negative competitive effect for both education (-1.1 percent) and health care (-2.9 percent), suggesting

that these industries are growing relatively faster in the periphery. In short, the sheer size of these industries and their continued growth nationally in the face of a weak economy has produced some additional jobs in city centers—but city centers have seen an erosion in their share of these industries as they have continued to decentralize.

Manufacturing and Distribution

The forces of decentralization appear to continue to be strong in goods producing and goods moving industries. Manufacturing, wholesale trade, and distribution industries continue to decline in city centers. Manufacturing employment within three miles of the center of central business districts declined by 22 percent between 2007-11, following a 19 percent decline in the preceding five years. Wholesale trade declined by 10 percent, and transportation and warehousing employment declined by about 1 percent in city centers between 2007 and 2011. To date, the national expansion has been characterized by limited growth in manufacturing employment. City center economies are less affected by the relatively weak prospects for manufacturing growth because manufacturing has become so decentralized.

Transportation

Regional economists have long maintained that changes in transportation technology and investments in transportation, particularly highways, have propelled the decentralization of people and jobs in metropolitan areas. Over the past two decades, the pace of new highway construction has slowed to a crawl. While we have added some road capacity, we’ve largely stopped building new radial freeways that were

strongly associated with the decline of city center population and employment.

In addition, a key difference between the 2002-07 period and the 2007-11 period was the significant increase in gas prices that occurred in the later period. The economic effect of the rise in gas prices is felt disproportionately by suburban households, who in general tend to drive greater distances. Because these households have to spend more on gasoline, they have less to spend on other consumer purchases. This may have the effect of causing household expenditures to fall faster in less dense neighborhoods; and falling consumer expenditures may ultimately impact the number of jobs in suburban locations.

These factors—the growing preference of well-educated young adults for urban living, the shift of companies to city centers to tap this labor pool, the growing pull of the “consumer city”, the growth of “eds and meds,” the continuing relative decline of manufacturing and distribution, and the waning of major investments in new highway infrastructure—all give us reason to believe that the shift toward city center growth is not a temporary anomaly.

To what extent these trends reflect idiosyncratic effects of the Great Recession—the worst economic downturn in eight decades—are difficult to discern. The LEHD data reveal the sub-metropolitan patterns through 2011, but data for the three years since then are still being processed by the Census Bureau. When these data become available, they will shed additional light on the resurgence of the nation’s city centers.

The nation’s urban cores play a vital economic role as centers of commerce, culture, and civic life. We’ve seen a growing interest in urban living and renewed population growth in urban neighborhoods in the past few years. This report

provides some tangible evidence that the tide of employment decentralization, which has been flowing outwards from city centers, has ebbed, and may in fact be reversing. If this trend continues, it points to a brighter economic future for the nation’s cities.

References

Balk, G. (2014, February 24). Seattle growing faster than suburbs, first time in 100 years. Retrieved February 1, 2015, from <http://blogs.seattletimes.com/fyi-guy/2014/02/24/seattle-growing-faster-than-suburbs-first-time-in-100-years/>

Bartik, T. J., & Erickcek, G. A. (2008). “Eds & Meds” and Metropolitan Economic Development. *Employment Research Newsletter*, 15(1), 1.

Baum-Snow, N. (2007). Did highways cause suburbanization? *The Quarterly Journal of Economics*, 775–805.

Cortright, J. (2014, October). The Young and Restless and the Nation’s Cities. *City Observatory*. Retrieved from <http://cityobservatory.org/ynr/>

Ehrenhalt, A. (2012). The great inversion and the future of the American city. Alfred a Knopf Incorporated. Retrieved from <http://books.google.com/books?hl=en&lr=&id=zXx7F8M0yGQ-C&oi=fnd&pg=PA3&dq=great+inversion&ots=11V-FUB2tt0&sig=Fw4bw3FF9GvOwx8lNrx19lRtE9Q>

Fee, K., & Hartley, D. (2012). The relationship between city center density and urban growth or decline. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2072258

Florida, R. (2014). *Startup City: The Urban Shift in Venture Capital and High Technology* (p. 68).

Toronto: Martin Prosperity Institute.

Glaeser, E. L., & Kahn, M. E. (2001). Decentralized employment and the transformation of the American city. National Bureau of Economic Research. Retrieved from <http://www.nber.org/papers/w8117>

Glaeser, E. L., Kolko, J., & Saiz, A. (2000). *Consumer City*. NBER Working Paper, 7790.

Holian, M. J., & Kahn, M. E. (2012). The Impact of Center City Economic and Cultural Vibrancy on Greenhouse Gas Emissions from Transportation. Retrieved from <http://www.sjsu.edu/faculty/matthew.holian/vibrancy.pdf>

Holmes, T. J., & Stevens, J. J. (2003, June 27). *Spatial Distribution of Economic Activities in North America*. University of Minnesota.

Kneebone, E. (2009). *Job Sprawl Revisited: The Changing Geography of Metropolitan Employment* (p. 24). Washington, D.C.: Brookings Institution.

Kneebone, E. (2013). *Job Sprawl Stalls: The Great Recession and Metropolitan Employment Location*. Retrieved from <http://trid.trb.org/view.aspx?id=1250302>

Levy, P., & Gilchrist, L. (2013). *Defining Downtown: Documenting the Live-Work Dynamic in 21st Century US Cities*. Washington, D.C.: International

Downtown Association. Retrieved from <http://definingdowntown.org/report/>

Mills, E. S. (1972). *Urban Economics*. Glenview, IL: Scott, Foresman & Company.

Niedercorn, J. H., & Kain, J. F. (1963). *Suburbanization of Employment and Population 1948-1975*. Highway Research Record, (38). Retrieved from <http://trid.trb.org/view.aspx?id=134004>

Wolf-Powers, L. (2013). *Predictors of Employment Growth and Unemployment in US Central Cities, 1990-2010*. Retrieved from http://research.upjohn.org/up_workingpapers/199/

Appendix:

Methodology

& Technical Notes

Methodology: This study is based on data from the Census Bureau’s Local Employment and Housing Dynamics (LEHD) series. We divided the available LEHD sample into two nearly equal time periods. LEHD data were available for a large fraction of US metropolitan areas for the period 2002 through 2011. December 2007 corresponds with the peak of the US economy, so the five-year period 2002-07 period captures the economic expansion, while the latter period 2007-11 covers the recession and the early years of the subsequent recovery.

GIS calculations: We relied upon the LEHD’s integrated Geographic Information System (GIS) tools to conduct our radius analysis. We entered the latitude and longitude of the center point of each region’s central business district using the “Import GIS” in the On the Map website. We selected data for primary jobs, and obtained a workplace report. Output was downloaded as spreadsheet files and tabulated by geographic radius (within 3 miles, within 10 miles, and metropolitan area), and tabulated as summary files. Typical specifications for the analysis were as follows:

Analysis Type	Area Profile
Selection area as	Work
Year(s)	2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002
Job Type	Primary Jobs
Labor Market Segment	All Workers
Selection Area	Denver-Aurora-Broomfield, CO from Metropolitan/Micropolitan Areas (CBSA)
Selected Census Blocks	53,831
Analysis Generation Date	04/20/2014 19:16 - OnTheMap 6.2
Code Revision	a12f12cf37f990b17ae7dd6623f608d9384e8f29
LODES Data Version	20130430

City Centers and Central Business Districts: We used the central business districts identified by the Census Bureau as part of the census of retail trade in 1982. We calculated the center point or major street intersection nearest the center point of each of these tracts, and used this latitude and longitude to construct a three-mile radius around that point. Unlike Kneebone, we constrained our analysis to a single central business district in each metropolitan area, corresponding to the CBD of the most populous city in each metro area.

Local Employment and Housing Dynamics

Data: Data for the LEHD are assembled from census, tax and administrative records, as explained by the Census Bureau. The LEHD program has evolved over the years as additional states have joined the program, and as additional sources of data have been added. In preparing this report, we have focused on metropolitan areas for which data is available on a consistent basis for the period 2002 to 2011. While they offer fine geographic detail, the coverage and definitions used in LEHD differ in ways that make it difficult to directly compare these statistics with other data sources, like the Bureau of Labor Statistics Census of Employment and Wages (CEW) or the Census Bureau's County Business Patterns data.

Data omitted: Data collection under the LEHD program began on a comparable, nationwide basis in 2002. Several metropolitan areas and some industries have not been covered by this program on a comparable basis during this time. The data in this report excludes data for metropolitan areas that have not been participants for the entire period and for industries that have been added since 2002.

Metropolitan Areas: This study focuses on U.S. metropolitan areas with a population of 1 million

or more. Ten of the 51 largest U.S. metropolitan areas are omitted from our tabulations. Boston and Providence have not been included in the LEHD program because Massachusetts and Rhode Island have not been participants in LEHD until recently. Consistent data for the Washington, D.C. and Phoenix metropolitan areas is not available for our full sample. Our review of the data for five metropolitan areas identified series breaks or other potential data quality issues, so the following metropolitan areas were excluded from our tabulations: Detroit, Memphis, Raleigh-Cary, Salt Lake City, and Tampa-St. Petersburg.

Public Administration: Prior to 2010, LEHD did not contain data for federal employees. In 2010, data for many federal civilian employees was included in LEHD. We adjusted for this series break by excluding public administration employment from our tabulations. See "Federal Employment in LODES/OnTheMap" <http://lehd.ces.census.gov>.

Differences in Methodology: Our totals of employment within three miles of the center of the central business district differ from those reported by Glaeser and Kneebone for several reasons. Our sample of metropolitan areas is smaller (41 metropolitan areas) and the included metropolitan areas are, on average larger. Geographically smaller and less populous metropolitan areas tend to have a larger share of their employment within a three mile radius than do larger metropolitan areas. Kneebone (2013) also uses multiple central business districts for several metropolitan areas (including, in our sample, Los Angeles, Miami, Minneapolis-St. Paul, Nashville, San Jose, Seattle and Virginia Beach. This increases the total area and number of jobs in the "center" of these metropolitan areas, both relative to metro areas with only a single CBD, and in the aggregate. Finally, there are differences in the way in which

data are geocoded in the two datasets. LEHD data are geocoded to the block level, while Zip Code Business Pattern data are tabulated by zip code.

We compared our estimates of the proportion of metropolitan employment located within the three-mile radius to those generated by Kneebone (2013) for metropolitan areas with a single CBD. The simple correlation between these estimates of the share of metro employment within 3 miles was .85. Our analysis focuses on “primary” jobs in LEHD, and so may differ from the “total employment” counted in zip code business patterns, which is not adjusted for multiple job holding. Kneebone used a “population-weighted” sum to allocate employment within zip codes that spanned boundaries (Kneebone 2009, page 6).

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