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Job Sprawl: Employment Location in U.S. Metropolitan Areas

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"In this survey we map the new American employment landscape."

Findings

A survey of the location of jobs in the 100 largest U.S. metropolitan areas finds that:

- **Across the largest 100 metropolitan areas, on average, only 22 percent of people work within three miles of the city center.** Over a third (35 percent) of people work more than ten miles from the city center.
- **Among U.S. regions, the Northeast has the least job sprawl, but several metropolitan areas in the West also have concentrated employment centers.** San Francisco, Portland, Tacoma, and even Las Vegas—one of the supposedly paradigmatic sprawl cities—are much more centralized by some measures than the bulk of America's cities. The South is the region with the most job sprawl.
- **Job sprawl is not a function of the age of a metropolitan area.** There is no statistically significant correlation between age of the major city in the metropolitan area and job decentralization. This fact belies the view that high-density cities exist solely because they are old, and they will eventually all be replaced by sprawl.
- **There is a significant relationship between political fragmentation and the degree of job decentralization.** In metropolitan areas with many political units, firms are more likely to locate far from the city center.

I. Introduction

People traditionally have lived close to one another to lower the costs of moving themselves, their goods, and their ideas. At the start of the last century, urban Americans lived and worked in city centers. Living and working at high densities enabled people to travel using only their feet and allowed firms to move goods using rail and water. As late as 1950, the typical city still had a high density core where most people worked, but a majority of these workers actually lived in the suburbs and commuted by car. As the costs of transport have fallen, people have been able to live—and, increasingly, work—a little less close to one another. The high-density walking city of 1900 has been replaced by the medium density driving city of 2000.

While we have long been able to measure where people live within metropolitan areas, we are only now getting finer data on the degree to which employment is located near the city center. In this paper, we use newly available zip-code employment files to map the new American employment landscape.[1]

II. Methodology

In the 1982 Economic Censuses Geographic Reference Manual, the Census Bureau polled local leaders and determined a geographic spot that is the work center of the metropolitan area—the Central Business District or CBD. For the 100 largest U.S. metropolitan areas, we calculate the share of overall metropolitan area employment that is within a three-mile ring of the Central Business District, the share of metropolitan area employment that is within a ten-mile ring of this spot, and the share that is beyond the ten-mile ring. We tend to think of the three-mile measure as capturing whether the metropolitan area has a well-defined employment center. The ten-mile measure captures the extent to which the metropolitan area is characterized by sprawl.

We then use these measures to categorize the 100 largest metropolitan areas. We group them into four categories based on the extent to which they have large employment centers (a high percentage of employment in the three-mile ring) and the extent to which they are characterized by sprawl (a high percentage of metropolitan employment outside the ten-mile ring).

Our primary source of data is the U.S. Department of Commerce's Zip Code Business Patterns 1996 data.[2] This data file provides firm counts by firm employment size by four-digit SIC level at the Zip Code level.[3] The Zip Code business patterns data are extracted from the Standard Statistical Establishments List, a file of all single and multi-establishment companies created by the Census Bureau. We use geographic information on each zip code and consider only zip codes that lie inside metropolitan areas. Throughout the paper, we will examine Primary Metropolitan Statistical Areas, rather than Consolidated Metropolitan Statistical Areas. Our results are quite robust to using alternative metropolitan area definitions.

III. Findings

A. Across the largest 100 metropolitan areas, on average, only 22 percent of people work within three miles of the city center.
We divided the 100 most populous metropolitan areas in the U.S. into four categories, two of which are based only on the share of employment within three miles of the city center, and two of which are based on both the three- and ten-mile shares. This allows us a clearer picture of the heterogeneity of metropolitan areas. The three-mile and ten-mile shares do not always paint exactly the same picture of whether a particular metropolitan area is centralized or decentralized. For example, Boston looks like a dense employment metropolitan area because more than a quarter of the metropolitan area's jobs are within three miles of the city center. Yet it also looks like a decentralized metro area, because 45 percent of area jobs are more than ten miles from the city center. However, it seems valuable to us to be able to look at both measures.

The metropolitan areas in the first group, listed in Table 1, have at least one-quarter of their metro area employment within three miles of the city center. We call these *dense employment metros.* There are 31 metropolitan areas in this set and they come from every region of the country. They include both older regions (New York and Providence) and those of newer vintage (Portland and Chattanooga). There is, in fact, considerable heterogeneity in the centralization of this group, from Fresno, California, which has 25 percent of its employment within three miles of the CBD, to New York City, which has 45 percent of its employment within three miles of the CBD, to Honolulu, Hawaii, which has 59 percent. By and large, these metropolitan areas have between 70 and 80 percent of their employment within ten miles of their city center, which is quite high relative to the country as a whole.

The second group of metropolitan areas are *centralized employment metros*, and they are defined as having between 10 and 25 percent of their employment within three miles of the city center; and *more than* 60 percent of their employment within ten miles of the city center (see Table 2). These areas generally have between 15 and 25 percent of their employment within three miles of the city center and between 60 and 75 percent of their employment within ten miles of the city center. Typical metropolitan areas in this group include Buffalo, Minneapolis-St. Paul, San Antonio, and Las Vegas. These cities have clearly defined downtowns, and they get much less dense on their fringes. Again, they include both old and new metropolitan areas from every region.

The third group of metropolitan areas, listed in Table 3, have between 10 and 25 percent of their employment within three miles of the city center (as does the previous group) and *less than* 60 percent of their employment within ten miles of the city center. They are labeled *decentralized employment metros.* These places have well defined city centers, but also quite considerable levels of employment decentralization. Washington D.C. is a perfect example of this type of metropolitan area. It has a very well defined central city with a very large employment base. However, it also has a great deal of employment sprawl. Philadelphia and Seattle also sit within this class. While there is heterogeneity, metropolitan areas in this group are often those with old central cities with old employment bases, and employment growth in recent decades mostly at the metropolitan fringe.

Comparing the second and third groups shows that there is considerable heterogeneity in ten-mile sprawl between the centralized and decentralized metropolitan areas. This is illustrates what we said above:

Table 1: Dense Employment Metros:
25 percent or more of metro employment within three miles of CBD

Name	Total employment within 35 miles	3-mile employment share	10-mile employment share	Share outside 10-mile ring
New York, NY PMSA	3,078,507	45.27%	77.42%	22.58%
Boston, MA-NH PMSA	1,536,970	25.67%	55.03%	44.97%
San Francisco, CA PMSA	828,775	44.51%	61.02%	38.98%
Pittsburgh, PA MSA	771,519	25.15%	63.25%	36.75%
Portland-Vancouver, OR-WA PMSA	645,904	30.26%	81.25%	18.75%
Salt Lake City-Ogden, UT MSA	483,332	27.94%	67.02%	32.98%
Louisville, KY-IN MSA	434,263	28.46%	78.05%	21.95%
New Orleans, LA MSA	431,649	32.06%	81.61%	18.39%
Rochester, NY MSA	376,649	26.97%	83.78%	16.22%
Jacksonville, FL MSA	364,110	29.45%	69.34%	30.66%
Akron, OH PMSA	310,597	27.60%	66.31%	33.69%
Honolulu, HI MSA	308,378	59.05%	87.55%	12.45%
Greenville-Spartanburg-Anderson, SC MSA	296,088	34.88%	56.97%	43.03%
Harrisburg-Lebanon-Carlisle, PA MSA	281,957	28.31%	59.46%	40.54%
Providence-Fall River-Warwick, RI-MA MSA	278,204	44.85%	79.86%	20.14%
Wilmington-Newark, DE-MD PMSA	262,210	27.42%	72.99%	27.01%
Syracuse, NY MSA	229,375	35.32%	78.44%	21.56%
York, PA MSA	214,939	39.17%	45.92%	54.08%
Des Moines, IA MSA	199,842	32.82%	93.17%	6.83%
Jersey City, NJ PMSA	199,010	41.76%	100.00%	0.00%
Wichita, KS MSA	193,042	40.85%	87.32%	12.68%
Fort Wayne, IN MSA	185,359	43.70%	81.87%	18.13%
Bridgeport, CT PMSA	184,402	26.23%	82.23%	17.77%
Springfield, MA MSA	183,003	42.00%	86.44%	13.56%
Fresno, CA MSA	182,728	25.00%	86.14%	13.86%
Columbia, SC MSA	178,756	35.15%	84.00%	16.00%
Lancaster, PA MSA	177,276	43.64%	60.08%	39.92%
Worcester, MA-CT PMSA	177,036	43.63%	82.56%	17.44%
Lexington, KY MSA	175,871	48.84%	74.53%	25.47%
Chattanooga, TN-GA MSA	169,235	30.61%	84.09%	15.91%
Lawrence, MA-NH PMSA	160,186	28.65%	70.50%	29.50%

sometimes the ten-mile employment share measure, which suggests "sprawl," and the three-mile employment share measure of centralization say different things about a metropolitan area. For example, both Oakland and New Haven-Meriden have reasonably dense central city employment centers—13 percent of Oakland's employees work within three miles of their city center as do 11 percent of New Haven-Meriden's employees. However, more than two-thirds of Oakland's labor force works more than ten miles from the city center. Less than 35 percent of New Haven's labor force works that far from the city center.

The final group of metropolitan areas, the *extremely decentralized employment metros,* includes those with small employment centers (less than 10 percent of employment within three miles of the city center) and significant shares of employment far from the CBD, as shown in Table 4. This category of extremely decentralized cities includes Los Angeles, but also Detroit and St. Louis, where job sprawl seems to be a response to acute urban distress. Baton Rouge is an exception in this category. While a very small amount of employment, 5 percent, is within a three-mile radius of the CBD, 80 percent is found within ten miles of the CBD. In some ways, it may be better described as a centralized employment metropolitan area.

These cities are much less regionally diverse. Only three of these cities are in the West—all in California (Riverside, Vallejo, and Los Angeles). The remainder of these cities are in the Midwest and the South. None are in the Northeast.

Table 2: Centralized Employment Metros:

10-25 percent of metro employment within three miles of CBD, more than 60 percent within ten miles of CBD

Name	Total employment within 35 miles	3-mile employment share	10-mile employment share	Share outside 10-mile ring
Minneapolis-St Paul, MN-WI MSA	1,271,320	12.63%	63.39%	36.61%
Anaheim, CA PMSA	952,993	13.72%	70.56%	29.44%
San Jose, CA PMSA	855,494	10.75%	70.52%	29.48%
Denver, CO PMSA	852,018	18.31%	67.08%	32.92%
Miami, FL PMSA	768,029	14.85%	64.46%	35.54%
Milwaukee-Waukesha, WI PMSA	712,692	20.96%	65.12%	34.88%
Columbus, OH MSA	667,539	19.78%	62.61%	37.39%
Indianapolis, IN MSA	624,363	17.65%	63.54%	36.46%
Orlando, FL MSA	570,423	18.43%	66.68%	33.32%
Fort Lauderdale, FL PMSA	511,547	14.86%	77.88%	22.12%
San Antonio, TX MSA	501,180	17.29%	78.85%	21.15%
Sacramento, CA PMSA	458,185	20.08%	61.48%	38.52%
Memphis, TN-AR-MS MSA	421,534	18.75%	63.27%	36.73%
Las Vegas, NV-AZ MSA	413,832	15.12%	95.96%	4.04%
Richmond-Petersburg, VA MSA	397,935	16.60%	75.71%	24.29%
Buffalo-Niagara Falls, NY MSA	392,451	20.09%	80.72%	19.28%
Dayton-Springfield, OH MSA	392,011	20.48%	72.71%	27.29%
Birmingham, AL MSA	385,724	23.04%	69.79%	30.21%
Austin-San Marcos, TX MSA	384,831	23.89%	77.98%	22.02%
Grand Rapids-Muskegon-Holland, MI MSA	379,426	24.75%	69.47%	30.53%
Oklahoma City, OK MSA	349,008	18.27%	77.67%	22.33%
Omaha, NE-IA MSA	316,447	22.53%	94.60%	5.40%
Albany-Schenectady-Troy, NY MSA	292,790	22.79%	63.71%	36.29%
Tulsa, OK MSA	277,096	17.85%	81.77%	18.23%
New Haven-Meriden, CT PMSA	272,445	10.47%	65.84%	34.16%
Toledo, OH MSA	250,240	15.48%	83.70%	16.30%
Allentown-Bethlehem-Easton, PA MSA	235,366	18.45%	72.42%	27.58%
Little Rock-North Little Rock, AR MSA	230,313	18.66%	77.93%	22.07%
Albuquerque, NM MSA	217,649	21.43%	99.32%	0.68%
Tucson, AZ MSA	214,414	18.72%	93.88%	6.12%
Tacoma, WA PMSA	172,735	20.58%	82.98%	17.02%
Madison, WI MSA	171,947	24.01%	82.94%	17.06%
El Paso, TX MSA	164,919	20.52%	77.62%	22.38%
Colorado Springs, CO MSA	162,392	17.23%	96.13%	3.87%
Canton-Massillon, OH MSA	155,012	21.12%	76.56%	23.44%

Table 3: Decentralized Employment Metros:
10-25 percent of metro employment within three miles of CBD, less than 60 percent within ten miles of CBD

Name	Total employment within 35 miles	3-mile employment share	10-mile employment share	Share outside 10-mile ring
Chicago, IL PMSA	2,814,162	18.67%	36.39%	63.61%
Philadelphia, PA-NJ PMSA	1,869,688	16.55%	40.37%	59.63%
Washington, DC-MD-VA-WV PMSA	1,515,563	18.85%	52.66%	47.34%
Atlanta, GA MSA	1,457,958	11.33%	38.09%	61.91%
Houston, TX PMSA	1,419,485	11.96%	49.73%	50.27%
Dallas, TX PMSA	1,399,951	11.40%	42.14%	57.86%
Phoenix-Mesa, AZ MSA	1,045,178	19.30%	59.20%	40.80%
Seattle-Bellevue-Everett, WA PMSA	1,006,815	22.48%	50.46%	49.54%
Baltimore, MD PMSA	890,673	17.60%	56.46%	43.54%
Oakland, CA PMSA	887,725	12.98%	30.62%	69.38%
Cleveland-Lorain-Elyria, OH PMSA	871,505	15.34%	56.25%	43.75%
Newark, NJ PMSA	817,762	15.40%	51.66%	48.34%
San Diego, CA MSA	794,613	13.08%	48.27%	51.73%
Cincinnati, OH-KY-IN PMSA	727,947	21.46%	59.20%	40.80%
Kansas City, MO-KS MSA	710,881	12.28%	54.86%	45.14%
Charlotte-Gastonia-Rock Hill, NC-SC MSA	560,330	17.83%	57.50%	42.50%
Fort Worth-Arlington, TX PMSA	540,615	14.10%	50.71%	49.29%
Norfolk-Virginia Beach-Newport News, VA-NC MSA	439,752	13.84%	54.76%	45.24%
Hartford, CT MSA	352,247	13.36%	29.30%	70.70%
Oxnard, CA PMSA	281,324	12.91%	32.57%	67.43%
Knoxville, TN MSA	251,399	13.34%	54.75%	45.25%
Scranton—Wilkes-Barre—Hazleton, PA MSA	217,362	22.48%	37.18%	62.82%
Youngstown-Warren, OH MSA	202,792	15.47%	49.71%	50.29%

Table 4: Extremely Decentralized Employment Metros:
less than 10 percent of metro employment within three miles of CBD

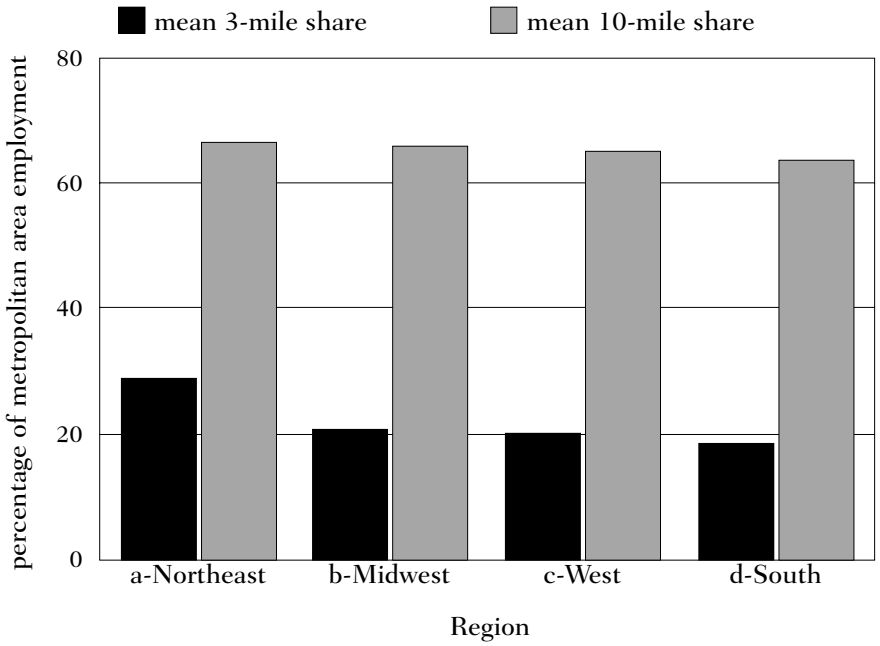
Name	Total employment within 35 miles	3-mile employment share	10-mile employment share	Share outside 10-mile ring
Los Angeles-Long Beach, CA PMSA	3,229,154	6.92%	38.06%	61.94%
Detroit, MI PMSA	1,604,527	5.20%	21.95%	78.05%
St Louis, MO-IL MSA	993,487	8.12%	41.98%	58.02%
Tampa-St Petersburg-Clearwater, FL MSA	742,944	5.56%	24.87%	75.13%
Riverside-San Bernardino, CA PMSA	486,629	8.41%	33.31%	66.69%
Greensboro—Winston-Salem—High Point, NC MSA	395,393	9.43%	42.70%	57.30%
West Palm Beach-Boca Raton, FL MSA	368,262	6.61%	41.10%	58.90%
Raleigh-Durham-Chapel Hill, NC MSA	358,388	9.06%	58.05%	41.95%
Gary, IN PMSA	215,758	9.04%	52.21%	47.79%
Vallejo-Fairfield-Napa, CA PMSA	161,899	9.41%	21.66%	78.34%
Baton Rouge, LA MSA	208,424	5.09%	79.67%	20.33%

B. Among U.S. regions, the Northeast has the least job sprawl, but several metropolitan areas in the West also have concentrated employment centers.

We now turn to a more systematic consideration of differences in job sprawl across regions. Figure 1 compares the mean levels of employment decentralization for the four different regions. Unsurprisingly, the metropolitan areas in the Northeast are fairly centralized, using either the three-mile or ten-mile employment share as a measure—on average, 28.9 percent of employment is within three miles of the city center, and 66.6 percent of employment is within 10 miles. Also unsurprisingly, the booming metropolises of the south are quite decentralized, with an average three-mile employment share of just 18.8 percent and a ten-mile share of 63.9 percent.

However, the West is something of a surprise. Citing L.A. (three-mile share of 6.9 percent, ten-mile share of 38 percent) as the prototypical example of a West Coast metropolitan area, at least as far as employment location is concerned, is clearly erroneous. On average, western metros have 20.1 percent of their employment within three miles of the city center, and 65.2 percent of their employment within ten miles. Phoenix's and Sacramento's employment distribution exemplify the regional averages. Tacoma and Las Vegas are a more common type of Western city than Los Angeles, and they are much more centralized. On average, the Midwest has roughly the same degree of job sprawl as the West. The average metropolitan area in the Midwest has 21.1 percent of its employment within three miles and 66.1 percent within 10 miles of downtown. However, some Midwest metropolitan areas have a significant amount of job sprawl. Detroit, for example, is the second-most decentralized metropolitan area in this survey. It has 78.05 percent of its employment beyond the ten-mile ring.

Figure 1: Job Sprawl by U.S. Region, 1996



C. Job sprawl is not a function of the age of a metropolitan area.

The simplest theory of urban sprawl across metropolitan areas is that centralized cities represent the past and sprawl represents the future. In Figure 2, we look at the relationship between housing structure age and the level of employment sprawl in the city. On the vertical axis, we have plotted the share of the city's housing stock that was built before 1939. We have grouped metropolitan areas into four categories based on the share of metropolitan employment within three miles of the CBD, and three mile employment share is on the horizontal axis. There is a clear positive relationship. Cities with more job sprawl (e.g. a lower three-mile employment share) have more recent building (e.g. a lower percentage of pre-1939 housing). Of course, this isn't that surprising—building at lower densities was much rarer 60 years ago.

A better test of the historical determinism hypothesis is to look at the overall age of the city. Here we measure age by the founding date of the primary city in the metropolitan area. In Figure 3, we look at the relationship between this founding date and the degree of employment sprawl. We have again grouped the metropolitan areas by three-mile employment share, and we look at the mean age of the metro area's largest city for each of the different groups. In this case, there is no relationship. No matter how we cut the data, we see no significant relationship between employment sprawl and the age of the primary city.

Putting together Figures 2 and 3 shows that job sprawl means recent building, but there is no sense that age determines urban outcomes. There are many decentralized older cities and several newer cities that are quite centralized in terms of employment. We think this means that job sprawl is the result of economic choices, not historical determinism, and therefore needs to be understood with a much richer model.

D. There is a significant relationship between political fragmentation and the degree of job decentralization. We hypothesized that, when there is only one political unit in the metropolitan area, there is no political incentive for firms to move towards the edges. However, in metropolitan areas with large amounts of decentralization, firms may move to the suburbs to avoid the taxes or governments that are perceived as unfriendly to businesses in the central city.

We found that there is indeed a significant relationship across metropolitan areas between political fragmentation and the degree of job decentralization, suggesting that employment sprawl is driven by politics as much as by economics. In metropolitan areas with many political units, firms are more likely to locate far from the city center. The connection between political decentralization and job sprawl becomes even stronger if we look within regions. Because the most politically fragmented region (the Northeast) has the least job sprawl, this means that once we look within regions, the connection gets stronger.

Figure 4 shows the relationship between fragmentation and the level of job sprawl. Along the horizontal axis, we have grouped metropolitan areas by the number of jurisdictions within their boundaries. Along the vertical axis, we show the level of sprawl using the share of employment within ten miles of the city center. In the most politically concentrated metropolitan areas, the average employment share within ten miles is 75 percent. In the least politically concentrated areas, the average employment share within ten miles is 57 percent. There is a statistically significant relationship between political fragmentation and job sprawl.

Figure 2: Job Sprawl and Housing Age

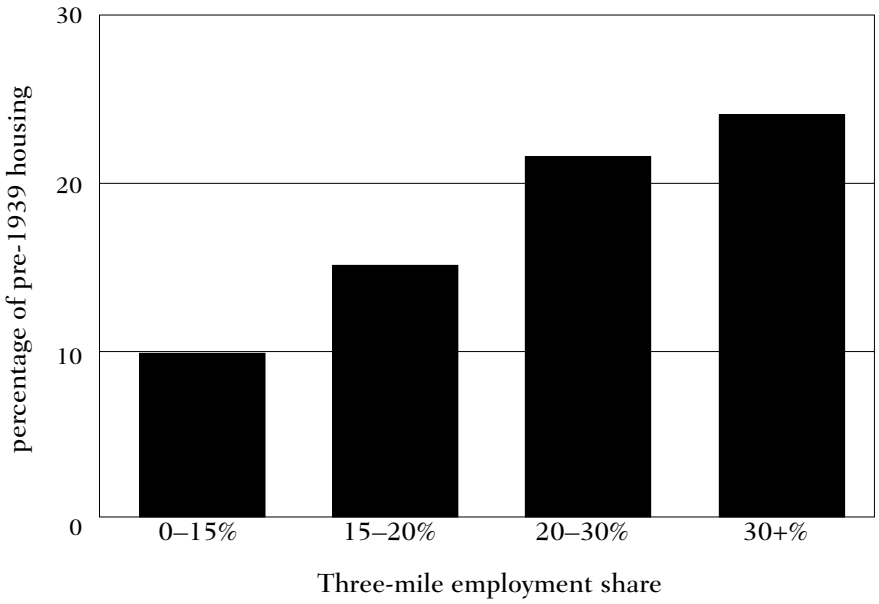


Figure 3: Job Sprawl and City Age

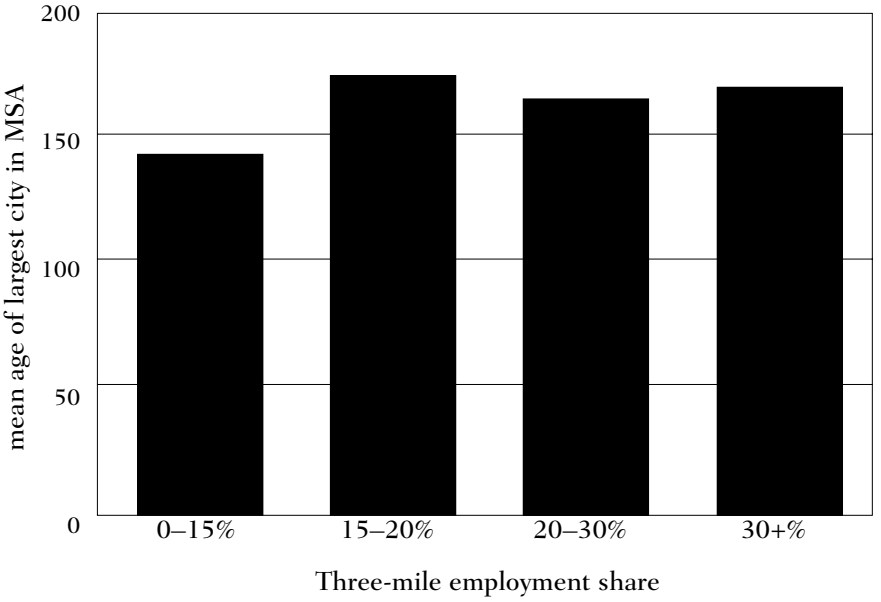


Figure 4: Job Sprawl and Political Fragmentation

IV. Conclusion

This survey has attempted to detail the determinants of employment decentralization. To understand "job sprawl," we need to focus on the forces that drive the demand for the medium-to-low densities of most of the metropolitan areas in the U.S. Generally, we believe that there may be a case for fighting sprawl, but it needs to be seriously debated and not assumed. Understanding what kinds of places have significant job sprawl, and what factors may drive it is, we believe, an important element of this debate.

Endnotes

1 This paper is a condensed version of a more detailed study called "Decentralized Employment and the Transformation of the American City," which is the lead article in the 2001 edition of the Brookings-Wharton Papers on Urban Affairs, published in July 2001. For more information, please see **www.brookings.edu/urban**.

2 The locations of the CBDs are given by the 1982 Economic Censuses Geographic Reference Manual, which identifies the CBDs by tract number. Chu (2000) provides us with the distance between each zip code and the CBD of its metropolitan area. The GIS (geographic information systems) software package ArcView is used to calculate the distance from the centroid of each ZIP code to the centroid of the corresponding CBD. ZIP code centroid data are from the *ESRI Data and Maps* CD-ROM (Environmental Systems Research Institute, Inc., 1999) and the MARBLE geocorrelation engine (www.ciesin.org). Zip codes are certainly not ideal in many respects, but they offer the best micro-geographic evidence on employment location in the U.S. to date. See Chu, Chenghuan (2000) "Employment Suburbanization in U.S. Cities," Harvard University, Undergraduate Thesis.

3 Taking the midpoint of employment within each size category and using an employment level of 1200 for firms that are top coded at 1000, we calculate a zip code's total employment by SIC code. We aggregate industry employment up to the three digit SIC level.

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