

Leading, Lagging, and Left Behind:

Identifying Metropolitan Leaders and Labor Market Outcomes

Stuart Andreason

Federal Reserve Bank of Atlanta

Community and Economic Development Department

The Federal Reserve Bank of Atlanta’s Community & Economic Development Discussion Paper Series addresses emerging and critical issues in community development. Our goal is to provide information on topics that will be useful to the many actors involved in community development—governments, nonprofits, financial institutions, and beneficiaries. frbatlanta.org/commdev/

No. 04-15 • October 2015

Leading, Lagging, and Left Behind: Identifying Metropolitan Leaders and Labor Market Outcomes

Abstract: From 1990 to 2010, the United States underwent significant changes in the makeup of the population and its educational attainment. During the period, bachelor’s degree or higher attainment proportions rose significantly—7.9 percentage points—from 20.3 percent in 1990 to 28.2 percent in 2010. This growth happened unevenly, though. Of 283 metropolitan areas, only 78 were above the 7.9 percentage point increase, suggesting much more concentrated growth than would be expected if growth were experienced evenly. This paper documents the concentration of growth and examines four labor market outcomes in the 78 “leader metros.” Unexpectedly, labor market outcomes are not even or common across these metros, suggesting that growth in the proportion of the population holding a BA or higher degree will have different effects depending on local conditions. It also suggests that increasing BA+ attainment at the population level is not a solution to all labor market challenges equally. The analysis suggests that considering local products and their related demands for labor are important steps in developing human capital–based economic development strategies.

JEL Classification: J10, O21, R11

Keywords: educational attainment, labor markets, inequality, talent attraction and retention, metropolitan areas

About the Author: **Stuart Andreason** is the senior community and economic development adviser, specializing in human capital and workforce development, at the Federal Reserve Bank of Atlanta. His major fields of study are workforce and human capital development policy and economic development policy, with a specialization in labor market and socioeconomic conditions in metropolitan areas. Prior to joining the Atlanta Fed, Andreason was a research associate at the Penn Institute for Urban Research at the University of Pennsylvania (PennIUR). There, he helped develop a set of indicators of livable and sustainable communities for the U.S.

Department of Housing and Urban Development funded by the Ford Foundation. He was a predoctoral fellow of the Department of Education's Institute of Education Sciences at Penn and a Lincoln Institute of Land Policy C. Lowell Harriss dissertation fellow. Previously, he led two nonprofit organizations focused on economic revitalization in small towns in central Virginia and worked as a research associate for the Pew Partnership for Civic Change. He has bachelor's and master's degrees in urban and environmental planning from the University of Virginia and a doctorate in city and regional planning from the University of Pennsylvania.

Acknowledgments: The author would like to acknowledge Barbara Robles, senior economist at the Federal Reserve Board of Governors; Karen Leone de Nie, assistant vice president of community and economic development at the Federal Reserve Bank of Atlanta; Laura Wolf-Powers, research fellow at CUNY Graduate Center; Ned Hill, professor of public policy and economic development at Ohio State University; and Genie Birch, professor of urban studies and education at the University of Pennsylvania for their thoughtful guidance and suggestions on this research. The views expressed here are the author's and do not necessarily reflect those of the Federal Reserve Bank of Atlanta or the Federal Reserve System.

Comments to the authors are welcome at Stuart.Andreason@atl.frb.org.

Expanding college wage premiums and the numerous documented social benefits—such as improved health and increased life expectancy—have contributed to a focus on increasing the national level of bachelor’s degree or higher attainment (BA+ degrees). There has been significant concern from leaders, the educational policy community, and other policymakers that the United States has fallen and continues to fall behind the rest of the world in the rate of BA+ holding workers.

Increasing the rate of bachelor’s or higher degree attainment has been an important policy concern in the United States for at least the last 20 years. In 1990 the BA+ attainment rate stood at 20.3 percent. Over the following two decades, it would increase by 7.9 percentage points, to 28.2 percent. Presidents and Congress have used a number of incentives to support this goal, including restructuring primary education, expanding financing options for postsecondary education, and incentivizing efficiency in higher education. To this end, President Obama has pushed for college access by raising funding for the Pell Grant program as one of his central administrative initiatives (Carnevale 2010).

There is also a body of literature that suggests that differences in educational attainment and “human capital” explain differences in economic growth among countries (Romer 1986; Lucas 1988). This is in addition to a significant body of empirical work that shows that individuals with BA+ or higher degrees tend to do better financially (Goldin and Katz 2008; McKinsey and Company Social Sector Office 2009; Perna 2003). Newer on the scene is a growing literature on how BA+ attainment is related to place-based local and metropolitan economic outcomes (Wolf-Powers 2005; Wolf-Powers and Andreason 2012; Giloth and Meier 2012). Research findings suggesting that better-educated metropolitan areas tend to have higher economic growth rates and lower poverty and unemployment have driven both local governments and policymakers to assume that higher BA+ attainment growth will automatically lead to better labor market outcomes, but research has yet to confirm this (Andreason 2015).

To understand the relationship between BA+ attainment growth and labor market improvements, this paper tracks and analyzes bachelor’s degree or higher attainment trends over the last several decades in the United States, looking at both national and metropolitan statistical area rates. It uses simple correlations to test whether growth in educational attainment has had positive effects on earnings growth, unemployment, poverty, and income inequality.

In the past two decades, the United States has increased the proportion and number of the adult population with a BA+ at rates significantly higher than the overall rate of adult population growth. However, as I show here, high performance on an educational attainment growth metric is concentrated in just 78 metropolitan areas. These “leader” metropolitan areas are important to the nation’s economy. Based on analysis of Moody’s Economy.com data, in 2010, these 78 leader metros represented 58 percent of the national GDP.

This study originally expected that these “leader metros” would show significant improvement relative to national averages in their labor markets outcomes, measured by higher earnings per job, lower local unemployment and poverty rates, and lower growth in earnings inequality. The data do not support this hypothesis, however. Labor market improvement in the BA+ leader metros between 1990 and 2010 was uneven. Most of the 78 leader metros experienced improvement on just one or two labor market outcome measures. No metropolitan area sustained improvement on all four of the labor market outcome measures, and some leader metros experienced no positive changes in these outcome variables.

While these results call into question whether or not the individual benefits of increased educational attainment can be mapped onto all metropolitan areas, they do suggest that metros in which educational attainment has grown will experience some but not all of the positive labor market outcomes. Most important, they suggest that policymakers need to reconceptualize the role that increased metropolitan BA+ attainment plays in improving labor market conditions. The analysis in this paper suggests that BA+ attainment growth is not a universally positive treatment for distressed labor market conditions at the metropolitan level.

National Trends in Bachelor's Degree+ Attainment 1990–2010

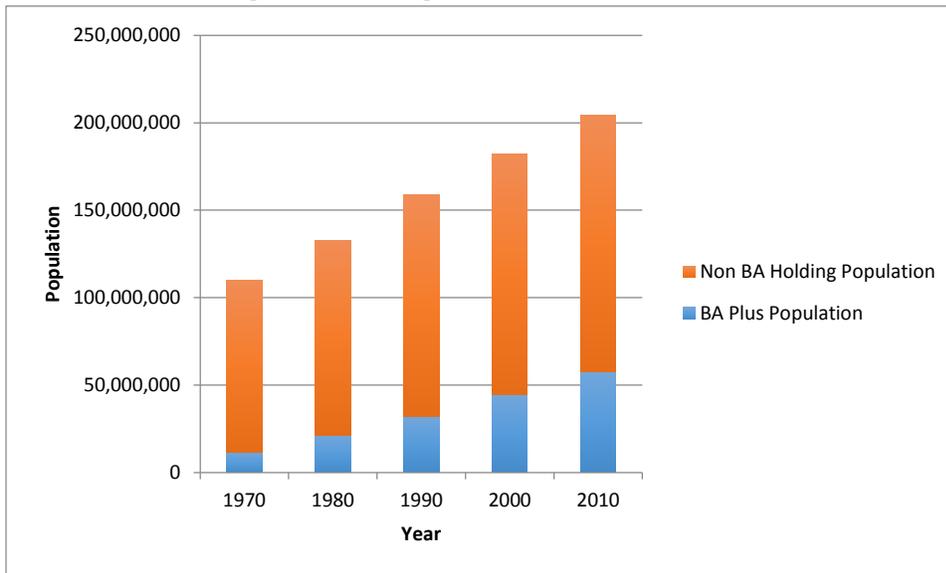
Historically, the United States has had the largest proportion of BA+ holding adults in the world, but, in recent years, other nations such as Korea, Japan, Canada, Russia, Ireland, and Norway have eclipsed it (Kolb 2011b; Organisation for Economic Cooperation and Development 2012). However, the trend may not be as much a cause for concern as it is sometimes made out to be.

The OECD's *Education at a Glance* (2012) identified the United States as dropping to eighth in its national ranking of proportion of BA+ holding workers (Organisation for Economic Cooperation and Development 2012; Kolb 2011a). Nonetheless, as figure 1 demonstrates, in one generation, from 1970 to 2010, the United States improved its BA+ attainment levels dramatically. In 1970, 10 percent of the adult workforce had earned the equivalent of a college degree, but by 2010, 28.3 percent had attained a four-year degree.¹ These increases reflect the ability of the American postsecondary educational system to produce significant numbers of adults with a bachelor's degree or higher. The country has a significant capacity to teach postsecondary students—many associate's degrees are granted at institutions that are open to anyone who has graduated high school and many four-year-degree-granting institutions have access missions (Turner 2007).² In 2010 alone, U.S. institutions conferred more than 2.5 million degrees; 1.65 million were bachelor's degrees and 851,000 were higher degrees (Hussar and Bailey 2013).

¹ The U.S. Census tracked educational attainment by years of schooling completed, rather than degrees earned until 1990. Starting in 1990, the Census Bureau changed questions about educational attainment to focus on the degree or credentials that individuals had actually earned instead of years completed. Prior to 1990, completing four years of college is the closest proxy to earning a BA that is available from the Census data. This analysis uses the same proxy.

² Selective universities are those that deny entry to a significant number of applicants based on the quality of their academic background. Typically, selective universities are considered research intensive or research focused institutions (and ranked by organizations like Carnegie Mellon or *U.S. News & World Report*). The less/nonselective colleges and universities are focused on teaching and have "access missions" in that they aim to provide affordable, open-access postsecondary education to anyone with basic credentials such as a high school diploma.

Figure 1. Number of the Population Age 25 Years or Older Holding a Bachelor's Degree or Higher



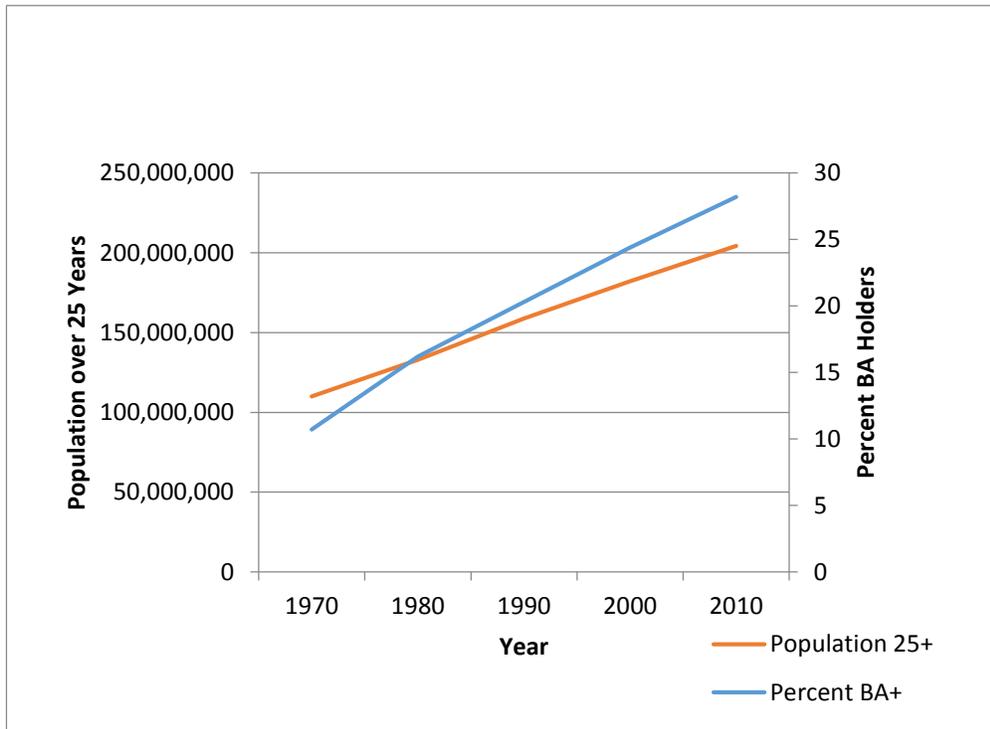
Source: U.S. Decennial Census and American Community Survey Data, downloaded from Social Explorer; calculations by the author

With advances in online education, efforts to increase the efficiency of teaching faculty, and increasing access to student loan financing, the postsecondary educational system in the United States in 2010 appeared prepared to fulfill the educational goals of qualified students. There were many places available for high school graduates to enroll in college, and over 65 percent of those graduates did enroll. However, less than half the students who enrolled in college ultimately attained a bachelor's degree (Turner 2007). While the gap between college participation and college degree attainment is concerning, the nation has built an educational infrastructure that is prepared to enroll and educate students who are interested in and able to work toward a college degree.

The near tripling of the BA+ attainment rate compares favorably to population and labor force growth rates. Between 1970 and 2010, the nation's adult population (those 25 years and older) grew by 86 percent (95 million people) while at the same time, BA+ degree attainment grew by 164 percent (47 million adults; see figure 2).

Although the United States has fallen behind Canada, Korea, and Norway in the percent of the workforce that holds a BA+ degree, it has a much higher population growth rate and larger base of workers than those countries. For example, between 1970 and 2010, the United States added more BA+ holding workers to its labor force than the entire 2011 Canadian population (OECD 2012).

Figure 2. Growth Trends of Total Population over 25 Years and BA+ Population Holders over 25 Years from 1970 to 2010



Source: U.S. Decennial Census and American Community Survey Data, downloaded from Social Explorer; calculations by the author

Notably, the majority of the growth in the U.S. labor force's BA+ attainment occurred in the past 20 years, as the proportion of workers with BA+ degrees rose from 20.3 in 1990 to 28.2 in 2010, a nearly 40 percent expansion. This recent growth may be due to the widespread understanding of the role that education credentials play in securing high-paying jobs. This change was distributed unevenly across the nation.

This following analysis of labor market trends has been adjusted to represent performance relative to national conditions. Between 1990 and 2010, three recessions took place—one early in the period from 1990–91, one in the middle of 2001, and notably the Great Recession from 2007–09. While technically the Great Recession ended in 2009, I chose to adjust the labor market indicators to be relative to national labor market conditions, because the effects of overall economy could make local indicators sensitive to outcomes that were more related to national, rather than metropolitan, conditions. Additionally, other significant changes occurred such as U.S. real GDP expanded by over \$6 trillion from \$8.91 trillion in 1990 to \$14.94 trillion in 2010 (Moody's 2013). Many of these trends affected local conditions, but the indicators presented in this paper have been adjusted to be relative to national conditions.

Trends in Metropolitan Areas

Between 1990 and 2010, 96 percent (or 273) of all metropolitan statistical areas increased BA+ attainment among their adult population.³ Only in 78, (28 percent) of the metros, however, did this increase exceed the national growth of 7.9 percentage points.⁴ Of the remaining MSAs, 195 (69 percent) increased their BA+ attainment rate but did not surpass the national growth. Finally, 4 percent (10) experienced an absolute decline in educated workers as a proportion of their working-age populations.

The descriptive analysis that follows investigates these three categories, referring to them respectively as:

- “Leader metros,” MSAs with over a 7.9 percentage point increase in BA+ attainment between 1990 and 2010
- “Lagging metros,” MSAs with less than a 7.9 percentage point increase in BA+ attainment between 1990 and 2010
- “Left-out metros,” MSAs where BA+ attainment change was below zero percent between 1990 and 2010.

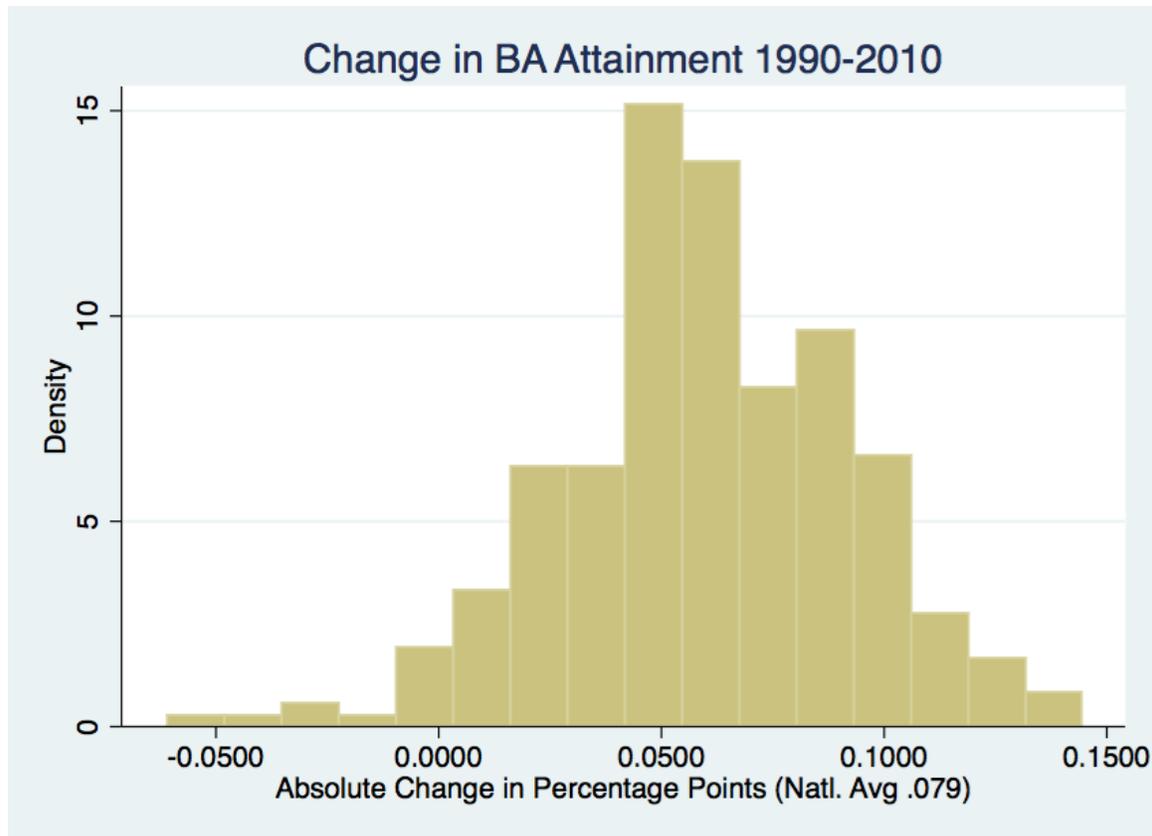
Leader metros come in many different forms—ranging from university towns to high-tech metros like San Francisco. Some leader metros were also older industrial communities that are going through economic restructuring. Left-out metros are largely located in Texas and the South and are places that saw large-scale, low-skill foreign immigration during the period analyzed. The left-out metros have high growth of non-BA+ holders, not actual losses in their number of BA+ holders in the adult population. This portion of the analysis also shows that the positional rank of metropolitan areas in terms of BA+ attainment is slow to change.

Relatively high rates of BA+ attainment growth are concentrated in fewer metropolitan areas than would be expected based on the assumption that metropolitan areas are normally distributed on this variable. If the gains were perfectly normally distributed, 50 percent of regions would have been above the mean. The distribution of gains (and losses) in BA+ attainment from 1990 to 2010 is skewed to the left. The histogram in figure 3 shows that, as expected for a skewed distribution, the center of the distribution of BA+ attainment change is below the mean.

³ This analysis considered all MSAs that were designated by the Office of Budget and Management in 1990.

⁴ This is the change in the national average—not the average of all MSAs. The nation moved from 20.3 percent in 1990 to 28.2 percent in 2010 of the adult workforce holding a BA+, resulting in a 7.9 percentage point change.

Figure 3. Histogram of Absolute Percentage Changes in BA+ Attainment in 283 Metropolitan Areas from 1990 to 2010



Source: Author's analysis of ACS data (see also Andreason 2013)

BA+ Leader Metros

An explanation for the small number of metros in the leader category might lie in the unique conditions of individual MSAs. The size of the labor force, the character of the economic base, the presence of strong anchor institutions or of pro-business climate (as is the case in the Sunbelt or South) likely influence BA+ attainment growth.

Simple difference in means analysis, however, suggests that of these factors, only labor force size appears to differentiate leader metros from non-leaders in a statistically significant way. Leader metros are, on average, more populous than the others. Leader metros mean workforce population is roughly 1 million adult workers while the mean workforce size for all metropolitan areas is just over 500,000. Also, the population range of leader metros varies greatly. The most populous leader metropolitan area is the New York City area with an adult workforce of over 12 million and the smallest is Dubuque, with just under 62,000 workers.

The main metric that I used in this analysis to determine leader metropolitan areas is the percent of the adult population (those over 25 years old) that held a bachelor's degree or higher. This metric has its merits and flaws. One important consideration is that the metric does not directly

consider who holds those degrees, making it sensitive to labor migration. This paper does not consider what cohorts or populations in a given metro drove increases in the proportion of the adult population’s BA+ attainment—it only captures the change in the overall proportion (see table 1).

Table 1. 10 Largest and Smallest Gains in BA+ Attainment from 1990 to 2010

Largest Gains (Leader Metros)	Smallest Gains (Lagging Metros)
San Jose, CA (14.46%)	Iowa City, IA (1.58%)
Manchester, NH (13.61%)	Yuma, AZ (1.44%)
Fort Collins, CO (13.42%)	Victoria, TX (1.40%)
Charleston, SC (12.98%)	Beaumont, TX (1.27%)
Charlotte, NC (12.57%)	Salinas, CA (1.24%)
San Francisco Bay, CA (12.49%)	Terre Haute, IN (1.22%)
Columbia, MO (12.45%)	Lebanon, PA (1.06%)
Boston, MA (12.35%)	Monroe, LA (0.80%)
Johnson City, TN (11.98%)	Oxford, AL (0.57%)
Bloomington, IL (11.46%)	Bangor, ME (0.37%)
Lawrence, KS (11.45%)	Merced, CA (0.33%)
Dubuque, IA (11.32%)	Abilene, TX (0.16%)

Source: U.S. Decennial Census and American Community Survey Data, downloaded from Social Explorer; based on analysis by the author presented in Andreason 2013

Leader metros are located in all parts of the country. Table 2 shows the metropolitan distribution among the four U.S. Census regions: Northeast, Midwest, South, and West.

Table 2. Geographic Distribution of BA+ Leader Metros by Census Region

Region	Number of BA+ Leader Metros
Northeast	21
Midwest	26
South	19
West	12

Source: U.S. Census Data; calculations by the author

While there are slightly fewer leader metros in the West than in other regions of the country, this is partially due to the fact that metropolitan areas in the West are geographically larger; the counties they are built from are extensive and encompass areas that might be individual metros in other regions of the country with geographically smaller counties.

A review of the other characteristics shows that there are few systematic differences between BA+ leader metros and metropolitan areas that did not exceed the national rate of growth in BA+ attainment. As demonstrated earlier, geographic location does not appear to be a factor, and neither does the character of the economic base. That suggests that qualitative differences among metropolitan areas may be more explanatory.

For example, many leader metros (including Charlottesville, Columbia, and Lawrence) have strong university anchor institutions. But having a university is not necessarily a guarantee of success: Iowa City and Bangor also host universities yet fell into the lagging metro category, while College Station, home to Texas A&M University, is a left-out metro. In each of these university-centered metros, the school is one of the major employers in the local economy, and university graduates are likely to be the major metropolitan export.

BA+ leader metros' economic bases had no common characteristics. They were not dominated by high-skill industries, nor were they all in metros with high concentrations of creative industries. One way to better understand the type of economic history and legacy that each of the leader metros had is to create a descriptive classification of their economies. I classify BA+ attainment growth leader metros into four categories.

- **University metros** are smaller metros dominated by universities. The university is the metro's major employer.
- **Older, or postindustrial, metros** are metropolitan economies that have histories of manufacturing, warehousing, or transportation. Many have either begun to or largely have completed an economic restructuring away from these industries.
- **New economy** metros are ones that are founded on newer industries. Many of these metros are in the West, including San Jose and San Francisco.
- **Other** metros are not easily classified into one of the other groups. Some of these metros have natural resources, some are popular for retirees, and others sit as former transportation links between larger metros.

Overall, the leader regions include 15 new economy metros, 28 older or postindustrial metros, 25 university-driven metros, and 10 that cannot be classified. Table 3 summarizes the categories.

Table 3. Descriptive Grouping of BA+ Leader Metros

University Metros	Older or Postindustrial Metros	New Economy Metros	Other Metros
<ul style="list-style-type: none"> ○ Asheville, NC ○ Athens-Clarke County, GA ○ Bellingham, WA ○ Charlottesville, VA ○ Colorado Springs, CO ○ Columbia, MO ○ Columbus, OH ○ Dubuque, IA ○ Eau Claire, WI ○ Fargo, ND-MN ○ Fort Collins, CO ○ Harrisburg, PA ○ Johnson City, TN ○ Knoxville, TN ○ La Crosse, WI ○ Lawrence, KS ○ Madison, WI ○ Manchester-Nashua, NH ○ Omaha, NE-IA ○ Providence-New Bedford RI-MA ○ Provo-Orem, UT ○ State College, PA ○ Wilmington, NC ○ Worcester, MA 	<ul style="list-style-type: none"> ○ Albany-Schenectady, NY ○ Allentown-Bethlehem, PA-NJ ○ Baltimore, MD ○ Boston, MA ○ Buffalo, NY ○ Chicago, IL ○ Cleveland, OH ○ Detroit, MI ○ Duluth, MN-WI ○ Greenville, SC ○ Hartford, CT ○ Indianapolis, IN ○ Johnstown, PA ○ Kansas City, MO-KS ○ Cincinnati, OH-KY ○ Louisville/Jefferson County, KY ○ Milwaukee, WI ○ Minneapolis-St. Paul, MN ○ New York, NY ○ Norwich-New London, CT ○ Philadelphia, PA ○ Pittsburgh, PA ○ Rochester, NY ○ Savannah, GA ○ Scranton, PA ○ Springfield, MA ○ St. Louis, MO-IL ○ York-Hanover, PA 	<ul style="list-style-type: none"> ○ Charleston, SC ○ Charlotte, NC ○ Jacksonville, FL ○ Los Angeles, CA ○ Miami, FL ○ Naples, FL ○ Nashville-Davidson, TN ○ Portland, OR-WA ○ San Diego, CA ○ San Francisco Bay, CA ○ San Jose, CA ○ Seattle, WA ○ Tampa, FL ○ Virginia Beach, VA ○ Washington, DC-VA-MD-WV 	<ul style="list-style-type: none"> ○ Appleton, WI ○ Billings, MT ○ Bismarck, ND ○ Bremerton, WA ○ Des Moines, IA ○ Hagerstown, MD ○ Peoria, IL ○ Roanoke, VA ○ Sioux Falls, SD ○ Springfield, IL

The diversity of BA+ leader metropolitan areas indicates that there is no one labor market condition or economic base that is needed to increase the adult population that holds a bachelor’s degree or higher. While there are not universal characteristics of leader metros, it is clear that there are potentially combinations of characteristics that encourage above-national-average growth in the proportion of the adult population holding a bachelor’s degree or higher. These characteristics may include a threshold population size, the historic economic base, the current economic base, the population mix (age, race, and immigration levels), the number of students, and the presence and

capacity of institutions of higher education. Identifying the different characteristics of leading and lagging metropolitan areas is difficult. There is no one easily identifiable causal factor.

BA+ Lagging Metros

The group of metropolitan areas that lagged the nation in BA+ growth is the most difficult from which to draw any conclusions because the group most closely resembles the range of metro areas in the country. BA+ growth below the national mean was the modal outcome in metropolitan areas. Since the lagging metropolitan areas make up the majority of all U.S. metro areas, they reflect the universe of metropolitan economies and their corresponding demographics.

There are a number of dynamics that differentiate lagging metropolitan areas from leading ones. Some lagging metros, such as Atlanta, that otherwise saw large numbers of BA+ holding workers move there also saw significant overall population growth, which lowered the proportional share of BA+ holders. That was not the case in all fast-growing metros, though. Miami and Charlotte were leader metros but had population growth rates that were similar to cities such as Atlanta. Many lagging metro areas did not have the same density of national universities or R-1 university status, but there was not a statistically significant difference in means between the groups.

As noted above, the only statistically significant difference in means between leading and lagging metros was in the total population size. That suggests that larger metropolitan areas have had a long-standing history of high demand for labor and robust job markets that draw BA+ holding workers. The scale of larger metropolitan areas allows for labor force pooling, creating a local competitive advantage for high-skill work and industries, implying that BA+ attainment growth is driven not by individual metropolitan conditions but by combinations of metropolitan characteristics.⁵

The overall growth in BA+ attainment in U.S. metropolitan areas between 1990 and 2010 suggests that the nation has made significant progress in becoming a knowledge-based economy. The drawback is that the preponderance of lagging metros suggests that there are significantly fewer labor markets that are attractive for, or demanding of, large proportions of BA+ holding workers.

Metros Left Out of BA+ Gains

Only 10 metropolitan areas in America were “left-out” metros, having lower BA+ attainment rates in 2010 than in 1990. These places were predominantly in the South or were small metropolitan areas. Many of the places, especially in the South and in Texas, were attractors of immigration from Mexico and Latin America (see table 4).

⁵ These findings need to be further tested through creating an explanatory model of what drives metropolitan BA+ attainment change.

Table 4. List of Metropolitan Areas with Negative Growth in BA+ Attainment from 1990 to 2010

MSAs with Declining BA+ Attainment
Longview, TX (-.23%)
Lafayette, IN (-.26%)
Lawton, OK (-.61%)
Albany, GA (-.69%)
Pine Bluff, AR (-.76%)
Springfield, OH (-1.95%)
Casper, WY (-2.34%)
Riverside-San Bernadino, CA (-2.41%)
College Station, TX (-3.75%)
Midland, TX (-6.07%)

Source: U.S. Decennial Census and American Community Survey Data, downloaded from Social Explorer; based on analysis by the author presented in Andreason 2013

For the metro areas that were attractors of new foreign-born residents, the negative change in BA+ attainment is driven by growth in the population of non-BA+ holders rather than losses of BA+ holders. For example, the College Station metro area in Texas is home to Texas A&M University. Texas A&M is one of the largest universities in the country and College Station had well above the national average BA+ attainment in 1990 with 35.8 percent of the population holding a degree. That rate dropped to 32.1 percent in 2010. This negative change is not too alarming because College Station's attainment rate remained above the 2010 national average of 28.2 percent. This can be understood as a population change effect rather than an economic change. The losses in BA+ attainment in the 10 left-out metro areas were small as well. The small number of metropolitan areas with losses in the proportion of BA+ holders reinforces the finding that the United States has been successful in increasing national college degree attainment.

Stability of Rankings of BA+ Attainment over Time

In addition to identifying leading, lagging, and left-out metros as of 2010, it is important to understand the changes in the rank order of metropolitan areas with respect to the proportion of the adult population holding a bachelor's degree or higher. A significant finding here is that the positional rank of metropolitan areas in terms of BA+ attainment is slow to change. That suggests that there may be path dependencies with respect to the level of demand for high educational attainment workers.

The stability of metropolitan rank with respect to the proportion of the adult population with BA+ attainment is an important aspect of how changes in the labor market may happen in conjunction with BA+ attainment growth. Changing rank in BA+ attainment is not common. Between 1990 and 2010, movement from below average to above average or vice versa occurred in only 39 metropolitan areas (14 percent); and of these, 67 percent (26) were leader metros; the remaining 33 percent (13) were

lagging metros (see table 5). Leader metropolitan areas are especially stable in terms of classification as above or below average with respect to the proportion of the adult population holding a BA+ degree.

Table 5. Metropolitan Statistical Areas That Changed BA+ Attainment Rank from 1990 to 2010

	Below U.S. Average 2010	Above U.S. Average 2010	Totals
Below U.S. Average 1990	157	13	170
Above U.S. Average 1990	26	87	113
Totals	183	100	283

Source: Author’s analysis based on U.S. Decennial Census and American Community Survey Data, downloaded from Social Explorer

Leader metros that started out below or above average in terms of the percent of the workforce with high levels of educational attainment (BA+) in the distribution in 1990 tended to stay in that category; 59 percent (46) started above average and remained so, while 24 percent (19) started below average in 1990, experienced above average growth, but remained below average in 2010. The remaining 17 percent (13) started below average and moved to above average. The stability of the distribution reflects a tendency of metropolitan areas with a high supply of skills to attract or grow other high-skills demanding firms and thus their likelihood to increase the demand for skilled workers over the time period studied (see table 6).

Table 6. BA+ Leader Metros That Changed BA+ Attainment Rank 1990 to 2010

	Below U.S. Average 2010	Above U.S. Average 2010	Totals
Below U.S. Average 1990	19	13	32
Above U.S. Average 1990	0	46	46
Totals	19	59	78

Source: Author’s analysis based on U.S. Decennial Census and American Community Survey Data, downloaded from Social Explorer

The list of leader metros that moved from below national average to above it with respect to the proportion of the adult workforce with a bachelor’s degree or higher includes metros of varying sizes, locations, and characteristics. Table 7 lists the 13 leader metros (17 percent) that started below national average in 1990 and moved above national average in 2010. Some of the smaller metros include Asheville, Bremerton, Harrisburg, and Savannah. This group also includes postindustrial legacy metros such as Pittsburgh, Cincinnati, and Buffalo. These metros show that changing from below

average to above average happened near the “average” cut point—the metro that started furthest from the 1990 average, Savannah, was less than 3 percentage points from average to start the period, and moved to just above the 2010 average of 28.2 percent.

Table 7. BA+ Attainment Growth Leader Metropolitan Areas That Went from below to above Average (under 20.3 percent in 1990; over 28.2 percent in 2010)

Metropolitan Area	1990 BA+ Rate	2010 BA+ Rate
Savannah, GA	17.5%	28.4%
Harrisburg, PA	18.0%	28.7%
Buffalo, NY	18.8%	28.7%
Pittsburgh, PA	18.9%	29.1%
Charleston, SC	18.9%	31.9%
Springfield, MA	19.0%	29.1%
Asheville, NC	19.1%	29.4%
Knoxville, TN	19.2%	28.8%
Charlotte, NC	19.6%	32.2%
Providence, RI	19.6%	28.5%
Bremerton, WA	19.8%	28.7%
Virginia Beach, VA-NC	20.1%	28.5%
Cincinnati, OH	20.2%	29.3%

Source: Author’s analysis based on U.S. Decennial Census and American Community Survey Data, downloaded from Social Explorer

Charlotte and Charleston are notable here as being among the MSAs that experienced the largest absolute gains in BA+ attainment in the nation. Charleston and Charlotte saw the fourth (13 percent) and the fifth (12.6 percent) highest growth in BA+ attainment between 1990 and 2010. Charlotte’s ranking jumped 76 places from 125th in 1990 to 49th in 2010. Charleston jumped 87 places from 140th to 53rd, representing the two greatest changes in rank in the 20-year period. The growth of the financial sector in Charlotte and the overall growth of the South and the Sunbelt likely contributed to these increases. However, these gains did not result in positive changes in key metrics in the metropolitan labor market, namely on measures of poverty, unemployment, and income inequality growth, as I discuss below.

The literature on metropolitan economic growth suggests that demand shocks drive changes in the skill level of metropolitan areas more than labor supply changes (Partridge and Rickman 2003). That suggests that labor migration—rather than the conferral of new degrees on incumbent residents—is the central driver of change in BA+ attainment rates. High attainment workers are likely to migrate to metros that offer the best job opportunities. Rothwell (2012) finds wide variations in skill demands across metropolitan areas, which may also suggest path dependency. Further supporting path dependency, others find that high levels of attainment promote future growth of attainment (Berry and Glaeser 2005).

Movement at the Top and Bottom of Rankings

While the positional rank of metropolitan areas in terms of the proportion of BA+ attainment in the adult population is slow to change for those MSAs at the extremes of the distribution, there is some movement.⁶ Table 8 shows the metropolitan areas that had the lowest BA+ attainment in 1990 and 2010. Two leader metros can be found among the absolute lowest attainment level metros in 1990—Johnstown and Hagerstown. Both places have relatively small populations and are exurbs of Pittsburgh and Washington DC, respectively. Likely, both metros have benefited from the growth of their larger neighboring metropolitan areas. People may have chosen to live in Johnstown and Hagerstown because housing is more affordable yet within commuting distance to the more expensive markets where they work.⁷

Table 8. Metropolitan Areas with Lowest BA+ Attainment in 1990 and 2010 (Percent with BA+)

	1990	2010
1	Steubenville, OH (9.5%)	Merced, CA (12.3%)
2	Houma-Bayou Cane, LA (9.7%)	Houma-Bayou Cane, LA (13.0%)
3	Danville, VA (9.9%)	Odessa, TX (13.2%)
4	Johnstown, PA (10.2%)***	Visalia-Portersville, CA (13.4%)
5	Altoona, PA (10.5%)	Yuma, AZ (13.8%)
6	Lima, OH (11.0%)	Pine Bluff, AR (13.9%)
7	Laredo, TX (11.1%)	Brownsville, TX (14.3%)
8	Muskegon-North Shores, MI (11.2%)	Steubenville, OH (14.4%)
9	Hagerstown, MD (11.4%)***	Danville, VA (14.5%)
10	Odessa, TX (11.4%)	Mansfield, OH (14.6%)

***BA+ leader metro (MSAs with over a 7.9 percentage point increase in BA+ attainment between 1990 and 2010)

Source: Author's analysis based on U.S. Decennial Census and American Community Survey Data, downloaded from Social Explorer

⁶ This mirrors work on population size rank (O'Sullivan 2007, 39–61).

⁷ Ultimately, this type of residential dynamic could have an influence over the type of labor market outcomes that each BA+ leader metro undergoes. The poverty, unemployment, and earnings inequality outcomes are residentially based and collected. The earnings per job measure is one of the economic activities of the area and is based on place of work, not the economic position of the residents.

Table 9. Metropolitan Areas with Highest BA+ Attainment in 1990 and 2010 (Percent with BA+)

	<u>1990</u>	<u>2010</u>
1	Iowa City, IA (44.0%)	Lawrence, KS (49.9%)***
2	Washington, DC (38.5%)***	Columbia, MO (49.0%)***
3	Lawrence, KS (38.4%)***	Washington, DC (46.8%)***
4	Columbia, MO (36.5%)***	Fort Collins, CO (45.8%)
5	College Station, TX (35.8%)	Iowa City, IA (45.6%)
6	Santa Fe, NM (35.7%)	San Jose, CA (45.3%)***
7	Madison, WI (34.2%)***	San Francisco, CA (43.4%)***
8	Champaign-Urbana, IL (34.1%)	Madison, WI (43.3%)***
9	Charlottesville, VA (33.3%)***	Boston, MA (43.0%)***
10	Burlington, VT (33.2%)	Charlottesville, VA (42.2%)***

***BA+ Leader Metro (MSAs with over a 7.9 percentage point increase in BA+ attainment between 1990 and 2010)

Source: Author's analysis based on U.S. Decennial Census and American Community Survey Data, downloaded from Social Explorer

At the high end of the distribution, it is easier to find BA+ leader metros. In 1990 five leader metropolitan areas were among the top 10 in overall BA+ attainment. After the 20-year period, nine of the top 10 BA+ attainment metro areas were also BA+ growth leader metros. That suggests path dependencies—places with high proportions of BA+ attainment in the adult population are predisposed to further growth in BA+ and those with low BA+ attainment face difficulty in improving their attainment rate (see table 9).

Labor Market Outcomes in the Leader Metros

As noted above, a guiding assumption of both national and regional policy is that a high growth rate in BA+ attainment is an important step toward desired labor market outcomes. But attaining status as a “leader” in BA+ attainment growth is only weakly associated with positive labor market outcomes, namely, lower unemployment, lower poverty, higher earnings per job, and lower income inequality. This section begins by elaborating on the selection of four labor market outcome metrics, which were hypothesized to be related to positive change in BA+ attainment. It then explains that, contrary to expectation, more than half of the leader metros see little positive change and some even experience negative changes. Finally, this section provides a discussion of the metros that succeeded on each labor market outcome benchmark.

Labor Market Outcome Metrics

This analysis considers four labor market outcome metrics—earnings per job change, the unemployment rate, the poverty rate, and relative performance in inequality growth. These labor market metrics are indicators of several important aspects of the labor market and economic conditions in a metropolitan area. The earnings per job indicator is largely indicative of the economic activity,

productivity, and wages. The unemployment rate measures the percentage of the labor force that is unable to find work.⁸ The poverty rate is a labor market indicator that is more targeted toward lower-skill and lower-education work because individuals with lower educational attainment are more likely to work in jobs that pay a poverty wage (or experience unemployment). The earnings inequality metric shows whether economic growth is shared or if the benefits of economic growth are concentrated at the top of the earnings distribution.

The “growth in earnings per job” metric is at odds with the other three. Growth in earnings tend to be unevenly distributed across the earnings spectrum and often its benefits are concentrated among the top 5 or 1 percent of earners (Saez 2013). In some cases, increasing income inequality may be expected and desirable if there is measurable progress on the other labor market indicators—particularly poverty and unemployment. If conditions for the unemployed and poor improve, this should be seen as a positive labor market improvement, even if the gap between the rich and poor becomes larger. Decreasing inequality could be seen as a second-order policy goal to reducing poverty and unemployment, but the following analysis shows that improvements on poverty and unemployment tend to happen in conjunction with low (not high) inequality growth.

Performance across All Metrics

As table 10 demonstrates, none of the leader metropolitan areas experienced positive outcomes in all four metrics, and 81 percent (63) had success on only one or two metrics. Eleven or 14 percent of the leader regions that experienced three positive labor market outcomes are somewhat smaller regions, except for San Diego, which has a population of over 3.2 million and concentrations of military and high-tech industries. The metros with three positive labor market outcomes include university-driven metros such as Colorado Springs, Roanoke, and Johnson City. The majority of leader metropolitan areas experienced two positive labor market outcomes and ranged from the smallest BA+ leader metros to the largest metropolitan areas in the country. The leader metros that experienced only one positive labor market outcome included leading high-tech metros. San Francisco and San Jose make up the core of the Silicon Valley economy and both only experience one positive labor market outcome—significant increases in earnings per job. These two metropolitan areas have some of the highest absolute growth (and levels of) BA+ attainment growth in the nation, yet they do not see some of the expected positive labor market outcomes.

Table 10. Leader Region Labor Market Outcomes

Four of Four Positive Labor Market Outcomes	Three of Four Positive Labor Market Outcomes	Two of Four Positive Labor Market Outcomes	One of Four Positive Labor Market Outcomes	No Positive Labor Market Outcomes
0 (0%)	11 (14%)	43 (55%)	20 (26%)	4 (5%)

Source: Author’s analysis based on U.S. Decennial Census and American Community Survey Data downloaded from Social Explorer and data from Moody’s Analytics

⁸ The unemployment rate does not capture the number of discouraged workers or the number of underemployed workers.

These results suggest that metropolitan areas should not expect universal improvement across these four labor market outcome indicators with BA+ attainment growth.

Frequency of Individual Labor Market Outcomes

Certain labor market outcomes are more common than others. Table 11 shows the number of metropolitan areas that experienced each labor market outcome. Lower growth in income inequality is the most common labor market outcome among leader metros (46 metros had lower than national average inequality growth). Reductions in unemployment are close behind with 45 metros. Poverty reduction is the least common labor market outcome with only 17 metropolitan areas experiencing reduction relative to the nation.⁹ The other measures are more common, but they are far from guaranteed in each BA+ leader metro.

Table 11. Number of Metropolitan Areas That Experienced Each Positive Labor Market Outcome

<u>Labor Market Outcome</u>	<u>Number of Metro Areas</u>
Earnings per Job Growth	31
Low Relative Earnings Inequality Growth	46
Unemployment Reduction	45
Poverty Reduction	17

Source: Author’s analysis based on U.S. Decennial Census and American Community Survey Data downloaded from Social Explorer and data from Moody’s Analytics

Metros with High Growth on the “Earnings per Job” Measure

The metropolitan areas that saw increasing earnings per job spanned the country, but were generally larger metropolitan areas. The economic bases of the places ranged from government in Washington, DC, to the finance, insurance, and real estate industry in Hartford. San Diego has a military employment base and is unique in this list of metropolitan areas because it experienced a different combination of the positive labor market outcomes than others in this group. San Diego experienced earnings growth, low growth in income inequality, and reductions in unemployment.

Other metropolitan areas that experienced positive growth in earnings per job experienced fewer positive changes on the other labor market outcome variables. Table 12 lists the BA+ leader metropolitan areas that experienced positive earnings per job change.

⁹ I do not adjust the poverty measure for metropolitan differences in the cost of living.

Table 12. Metropolitan Areas That Experienced Relative Earnings per Job Growth (31 Metropolitan Areas)

Metropolitan Areas		
Baltimore, MD	Jacksonville, FL	Norwich-New London, CT
Bloomington-Normal, IL	Kansas City, MO	Peoria, IL
Boston, MA	Los Angeles, CA	Philadelphia, PA
Bremerton, WA	Manchester-Nashua, NH	Portland, OR
Charlotte, NC	Miami-Fort Lauderdale, FL	San Diego, CA
Chicago, IL	Milwaukee, WI	San Francisco, CA
Cincinnati, OH	Minneapolis-St. Paul, MN	San Jose, CA
Colorado Springs, CO	Naples, FL	Seattle, WA
Columbus, OH	Nashville-Davidson, TN	Tampa, FL
Des Moines, IA	New York City, NY-NJ-PA	Washington, DC-VA-MD
Hartford, CT		

Source: Author’s analysis based on data from Moody’s Analytics

Of the 31 metropolitan areas in this group, 10 saw only the earnings per job growth, 14 saw one other labor market improvement, and seven experienced a total of three positive changes in labor market outcomes. Of these seven, all saw earnings per job increases, decreases in unemployment, and lower than average inequality growth. Aside from San Diego, changes in either earnings or income inequality growth were marginal. For example, Peoria saw earnings per job increase by \$90 and change in inequality that was 2.3 percent lower than the national average.

Metros with Reductions in Unemployment

Reductions in unemployment appear to be one of the more common outcomes among metros with rising BA+ attainment. The majority of metros, 58 percent, saw decreases in unemployment with BA+ attainment growth. While common, this outcome is far from guaranteed, as there is a sizable group (33) that did not see reductions in unemployment. Table 13 shows the metros that experienced reductions in unemployment.

Table 13. Metropolitan Areas That Experienced Relative Unemployment Reduction (45 Metropolitan Areas)

Metropolitan Areas		
Albany, NY	Eau Claire, WI	Omaha, NE
Appleton, WI	Fargo, ND	Peoria, IL
Athens, GA	Fort Collins, CO	Pittsburgh, PA
Baltimore, MD	Harrisburg, PA	Provo, UT
Billings, MT	Johnson City, TN	Roanoke, VA
Bismarck, ND	Johnstown, PA	Rochester, NY
Bloomington, IL	Kansas City, MO	San Diego, CA
Boston, MA	Knoxville, TN	Savannah, GA
Buffalo, NY	La Crosse, WI	Scranton, PA
Charlottesville, VA	Lawrence, KS	Springfield, IL
Colorado Springs, CO	Madison, WI	Springfield, MA
Columbia, MO	Manchester, NH	St. Louis, MO
Des Moines, IA	Minneapolis, MN	State College, PA
Dubuque, IA	New York City, NY	Virginia Beach, VA
Duluth, MN	Norwich-New London, CT	Washington, DC

Source: Author’s analysis based on U.S. Decennial Census and American Community Survey Data downloaded from Social Explorer

The other interesting outcome with reductions in unemployment is that every metropolitan area (11) that experienced three positive labor market outcomes experienced reductions in unemployment—no other labor market improvement was experienced by every one of these metros.

Metros with Reductions in Poverty

Poverty reduction was the least common positive labor market outcome. Additionally, the improvements in the poverty rate, when de-trended (to remove macroeconomic and national increases in poverty) and indexed to the national poverty rate (to capture local conditions), were very small. The average improvement on poverty among these 17 metropolitan areas was only 0.71 percentage points (see table 14).

Table 14. Metropolitan Areas That Experienced Reductions in Relative Poverty (17 Metropolitan Areas)

Metropolitan Areas	
Allentown, PA	Johnson City, TN
Asheville, NC	Providence, RI
Athens, GA	Roanoke, VA
Bellingham, WA	Rochester, NY
Charlotte, NC	Scranton, PA
Columbus, OH	Springfield, IL
Greenville, SC	Springfield, MA
Hartford, CT	York, PA
Indianapolis, IN	

Source: Author’s analysis based on U.S. Decennial Census and American Community Survey Data downloaded from Social Explorer

The metropolitan areas that experienced these small reductions in poverty usually had at least one other positive labor market outcome. Only two metros—Greeneville and Indianapolis—experienced only reductions in poverty. Four metros experienced three labor market improvements, 11 had two.

Metros with Low Inequality Growth

Lower than national average growth rate in income inequality is the most common labor market outcome among leader metros. Lower inequality growth does not mean that conditions became more equal in the metropolitan area. Inequality growth in this analysis was indexed to the change in income inequality nationally from 1990 to 2010. These 46 metropolitan areas had less than the national average growth in inequality. Only one leader metropolitan area in this study reduced inequality between 1990 and 2010: Johnstown. Its Gini coefficient went down by 2.3 percent—a small but notable change from 1990 to 2010 (see table 15).

Table 15. Metropolitan Areas That Experienced Lower Relative Growth in Income Inequality (46 Metropolitan Areas)

Metropolitan Areas		
Albany, NY	Fargo, ND	Peoria, IL
Allentown, PA	Fort Collins, CO	Pittsburgh, PA
Appleton, WI	Hagerstown, MD	Portland, OR
Asheville, NC	Harrisburg, PA	Providence, RI
Bellingham, WA	Jacksonville, FL	Provo, UT
Billings, MT	Johnson City, TN	Roanoke, VA
Bismarck, ND	Johnstown, PA	San Diego, CA
Bloomington, IL	Knoxville, TN	Scranton, PA
Bremerton, WA	La Crosse, WI	Sioux Falls, SD
Buffalo, NY	Lawrence, KS	Springfield, IL
Colorado Springs, CO	Madison, WI	State College, PA
Columbia, MO	Manchester-Nashua, NH	Virginia Beach, VA
Des Moines, IA	Miami, FL	Wilmington, NC
Dubuque, IA	Naples, FL	Worcester, MA
Duluth, MN-WI	Norwich-New London, CT	York-Hanover, PA
Eau Claire, WI		

Source: Author’s analysis based on U.S. Decennial Census and American Community Survey Data downloaded from Social Explorer

Most of the success on the “low inequality” outcome were relatively sizable. Many metros had very notable performance on this metric. Provo experienced 85 percent lower income inequality growth than the nation; San Diego experienced 39 percent lower income inequality growth. Many metros had between 40 and 50 percent lower income inequality growth. Only four of the 46 metros had marginally lower income inequality growth. That suggests that when BA+ attainment growth generates lower income inequality, the impact is relatively significant. The metropolitan areas that experienced lower income inequality growth seem to be smaller to medium-sized metros, with some of the largest metros that experienced low income-inequality growth being Buffalo, Miami, Pittsburgh, and San Diego. The others are often smaller cities that had a major university like Provo and Lawrence.

Summing Up Changes in Labor Market Outcomes

While higher levels of BA+ attainment are likely to make an individual worker more employable and less likely to live in poverty, increased BA+ attainment does not automatically result in quick improvements in the overall metropolitan labor market. Since many people do not hold BA+ degrees even in metros with high attainment levels and high attainment growth, the benefits may not trickle down. Many have assumed that growth in the proportion of the adult population holding a bachelor’s degree or higher will create more work and higher wages for non-BA holders through induced demand for services (Moretti 2004; Florida 2009). But their analysis finds this effect in places that have high

levels of educational attainment at a single point in time. In contrast, this analysis suggests that high growth in bachelor's degree holders in the working-age population does not seem to have the expected effect, at least not immediately.

In assessing the labor market outcomes of relative growth in BA+ attainment, one limit to the data is timing. Some measures lag behind others. While this study covers a 20-year period, an argument can be made that positive labor market outcomes may not be evident until some period of time after the BA+ growth takes place because it takes time for increased demand for labor to trickle down to other workers or for the labor market to shift enough to be visible in metropolitan statistics. Previous studies that found positive influences on BA+ attainment used a 20-year horizon to capture benefits (Gottlieb and Fogarty 2003). But Gottlieb and Fogarty's (2003) analysis might also simply capture existing high-demand conditions and high-attainment path dependencies.

Another, and perhaps more likely, explanation as to why no metros experience all of these improved labor market outcomes is that these labor market policy goals (and their associated measures) are at odds with one another. Tradeoffs exist between earnings growth and reducing income inequality. Similarly, policymakers confront tradeoffs between decisions that focus resources on supporting job creation and earnings growth at the higher end of the labor market and decisions focused on improving conditions for earners making less. Metropolitan areas that are working to increase demand (and subsequent growth) for BA+ workers may not be able to address the needs of non-BA+ holding workers or their potential employers at the same time. Either they do not have the resources or the two aims are inherently at odds. For example, recruiting a new technology firm may not bring many new jobs to locals, since the short-term effect consists mainly of in-migration of knowledge workers from outside of the metropolitan area (Persky, Felsenstein, and Carlson 2004; Bartik 1993; Bartik 1991).

These different interactions among the labor market outcomes are difficult to predict and model. Most studies have focused on a single outcome, rather than a combination of them (GDP growth: Gottlieb and Fogarty 2003; Glaeser and Saiz 2003; Income: Moretti 2004). Further, as public policy is not an exact science, even the best-intentioned policy may have unintended consequences.

Measuring Growth Rather Than Point-in-Time Relationships

This analysis examined metropolitan labor markets based on growth in BA+ attainment among adults and change in the labor market (on the four labor market outcome variables). While some studies have shown that BA+ attainment at a particular point in time predicts growth over time, for example, BA+ attainment in 1990 as a predictor of economic outcomes in 2010 (Glaeser and Saiz 2003), there are few studies that look at how growth in BA+ attainment changes the metropolitan area's labor market outcomes. Those who have taken this approach have obtained mixed results, finding growth in employment and unemployment (Wolf-Powers, 2013).

The "point-in-time correlation" studies of BA+ attainment, including Moretti (2004) and Glaeser and Saiz (2003), are potentially misleading in metropolitan areas that have lower levels of BA+ attainment. It is true that San Francisco and San Jose have had impressive economic growth and also have high levels of BA+ attainment. The common finding from the point-in-time correlation studies is that, in general, increasing levels of BA+ attainment will ultimately lead to better economic outcomes. These studies typically conclude or imply that public policies that promote increased levels of educational attainment will improve conditions in a metropolitan area's labor market. This paper's

examination of leader metros—those metropolitan areas in which BA+ attainment growth exceeded the national average—suggests that the hypothesized labor market benefits do not occur universally. In addition to raising questions about the commonly accepted idea that increasing BA+ attainment will improve the labor market, this analysis suggests that growth in BA+ attainment may follow economic health and economic growth more than it drives it. This is in line with econometric studies of the labor market that identify labor demand as a stronger driver of economic changes than labor supply (Partridge and Rickman 2003). These findings do not support creative class theories that imply that increasing the number of BA+ holding workers can be a viable strategy for economic revitalization (Florida 2002; Florida 2009). Like other recent studies, this work suggests that considering traditional measures of economic health and competitiveness such as the demand conditions and labor market indicators will provide clearer guidance about the health of the metropolitan economy and labor market than measures of creativity (Donegan et al. 2008). This analysis suggests that creating higher stocks of talent alone will not create new demand for labor across the labor market. Potentially contrary to Say's law, this study suggests that labor supply does not create demand on its own.

As can be seen in this analysis, a full understanding of place-based education, workforce development, and human capital policy is lacking. Especially in the context of economic development and social policy, far too many assumptions have been made about how summing individual benefits leads to place-based benefits. There are fledgling theories like the creative class theory, which despite its popularity in practice has little rigorous testing. The debate and ideas around metropolitan BA+ attainment (or other educational attainment programs at the municipal or subnational level) often use the individual benefits of increased education as a proxy for what the metropolitan benefits will include (McKinsey and Company Social Sector Office 2009; Auguste et al. 2011). This is an example of the ecological fallacy and is a faulty method of estimating the benefits of increasing place-based educational attainment. At the individual level there will continue to be a benefit of moving toward the top of the labor market by investing in one's education. Based on dual labor market theory, this may even be seen as jumping to a different and stronger labor market.

The demand for labor in metropolitan markets also is linked to the local economic activity and industrial base and because of this have widely varying skill requirements—sometimes below the BA+ level (Rothwell 2012). In these places increasing BA+ attainment is likely to create fewer labor market benefits than in other metropolitan areas. The differential skill requirements of metropolitan areas is not directly considered in this paper, but is at least partially captured through the economic base variables.

To further highlight dual labor market theory, within each metropolitan labor market are different sets of workers who are eligible for different skill levels of work. Increasing BA+ attainment does not appear to improve job prospects for all. At the metropolitan level, practitioners should hope to see ripple effects across the entire labor market. This analysis shows that these ripples may dampen quickly.

This analysis suggests a need for a clearer discussion about metropolitan area level benefits to increased educational attainment. It also suggests that the individual benefits are a weak proxy for place-based benefits.

Beyond the scope of this research is the question of what drives growth in the proportion of the population holding a BA+ degree. Growth may be driven by increases in the existing population's

educational attainment, the in-migration of well-educated new residents, or the out-migration of residents with lower levels of education. Each of these different drivers could be reflected in the same way in the top-line BA+ proportion numbers that are used in this analysis, but may lead to different labor market outcomes. Also beyond the scope of this paper is what may drive the divergent labor market outcomes. My related work (Andreason 2015) shows that high total factor productivity in a metro area is associated with growing earnings and growing income inequality. A number of other characteristics, including educational segregation, military employment, restrictive residential land use regulations, and growth in the proportion of the population aged 25 to 34 were also associated with these outcomes. Interestingly, there were not specific industries that drove labor market changes. The role that total factor productivity plays suggests that the stage of a product cycle—not the type of product—may drive labor market outcomes in these metro areas. Metros with early-stage and growth-stage products may be more likely to see earnings and inequality changes, while labor-intensive later-stage and mature-product metros are likely to see the other labor market changes (Andreason 2015). This may call for a new way of assessing metropolitan product portfolios, rather than aggregate employment by industrial sector, as there can be wide variation in product cycle within an industry (Hill, Kinahan, and Stewart 2015).

Policy Implications

This analysis does more to confuse policy responses to local labor market conditions than it does to provide a clear path forward. The work provides a deeper understanding that the current strategies that many community leaders and policymakers pursue—to increase local BA+ degree attainment—will not necessarily provide the broad “silver-bullet” returns to the lower end of the labor market that many hope. Growth in BA+ attainment is not a tide that lifts all ships.

Local policymakers may consider the contexts that are presented in the paper. Communities with different economic bases see certain types of outcomes. Larger metropolitan areas that see growth in bachelor’s or higher degree attainment tend to see growth in earnings, but not on other labor market outcomes, suggesting that the gains in these places are concentrated at the top of the labor market. These places may best direct their attention toward supporting lower-skilled work and developing local product portfolios that include more “mature-industry” products that are lower-skill labor intensive (Malizia and Feser 1999).

The opposite is true of a second group of metropolitan areas. Places that are smaller, such as university-driven metropolitan areas, may be more successful in promoting early-stage-growth-related industries and products to promote earnings expansion. These communities tend to have labor-intensive jobs—potentially driving the lower unemployment, low inequality growth, and lower poverty labor market outcomes that places like these see (Andreason 2015).

Ultimately, metropolitan and municipal leaders need to better understand the labor needs of their local economy. While there are significant individual returns to education, the place-based returns are less clear. The individual benefits of increased educational attainment do not map as clearly onto places, and do not map onto all places equally. Policymakers should take their local context, particularly their size and local economic characteristics, into account when considering human capital and educational interventions.

References

- Andreason, Stuart T. 2013. "We Got More Educated, We Are Doing Better... Right?" presented at the 2013 Federal Reserve Community Development Research Conference, Washington, DC, April.
- . 2015. "Will Talent Attraction and Retention Improve Metropolitan Labor Markets?" Federal Reserve Bank of Atlanta Working Paper 2015-4. Atlanta, GA: Federal Reserve Bank of Atlanta. <http://papers.ssrn.com/abstract=2595899>.
- Auguste, Byron, Adam Cota, Kartik Jayaram, and Martha C.A. Laboissiere. 2011. "Winning by Degrees: The Strategies of Highly Productive Higher-Education Institutions." New York: McKinsey and Company.
- Bartik, Timothy J. 1991. *Who Benefits from State and Local Economic Development Policies?*. W E Upjohn Institute.
- . 1993. "Who Benefits from Local Job Growth: Migrants or the Original Residents?" *Regional Studies* 27 (4): 297.
- Berry, Christopher R., and Edward L. Glaeser. 2005. "The Divergence of Human Capital Levels across Cities*." *Papers in Regional Science* 84 (3): 407–44.
- Carnevale, Anthony P. 2010. "Postsecondary Education and Training As We Know It Is Not Enough: Why We Need to Leaven Postsecondary Strategy with More Attention to Employment Policy, Social Policy, and Career and Technical Education in High School." Washington, DC: The Urban Institute.
- Donegan, Mary, Joshua Drucker, Harvey Goldstein, Nichola Lowe, and Emil Malizia. 2008. "Which Indicators Explain Metropolitan Economic Performance Best? Traditional or Creative Class." *Journal of the American Planning Association* 74 (2): 180–95. doi:10.1080/01944360801944948.
- Florida, Richard. 2002. *The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community and Everyday Life*. Basic Books.
- . 2009. *Who's Your City?: How the Creative Economy Is Making Where to Live the Most Important Decision of Your Life*. Reprint. Basic Books.
- Giloth, Robert P., and Jillien Meier. 2012. "Human Capital and Legacy Cities." In *Rebuilding America's Legacy Cities: New Directions for the Industrial Heartland*, edited by Alan Mallach, 189–222. New York: The American Assembly.
- Glaeser, E. L, and Albert Saiz. 2003. "The Rise of the Skilled City." *National Bureau of Economic Research Working Paper Series* No. 10191 (December). <http://proxy.library.upenn.edu:3313/papers/w10191>.
- Goldin, Claudia, and Lawrence F. Katz. 2008. *The Race between Education and Technology*. Cambridge, MA: Belknap Press.
- Gottlieb, Paul D., and Michael Fogarty. 2003. "Educational Attainment and Metropolitan Growth." *Economic Development Quarterly* 17 (4): 325.
- Hill, Edward W., Kelly Kinahan, and Fran Stewart. 2015. "Product-Based Long Waves and Regional Product Portfolios." presented at the Urban Affairs Association National Meeting, Miami, FL.

- Hussar, William J., and Tabitha M. Bailey. 2013. "Projections of Educational Statistics." Washington, DC: National Center for Education Statistics, U.S. Department of Education.
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2013008>.
- Kolb, Charles. 2011a. "Reforming American Postsecondary Education." *Huffington Post*, January 11.
http://www.huffingtonpost.com/charles-kolb/reforming-american-postse_b_805216.html.
- . 2011b. "Educational Success: America's New Industrial Policy." *Huffington Post*. April 5.
http://www.huffingtonpost.com/charles-kolb/educational-success-ameri_b_810464.html.
- Lucas, R. E. 1988. "On the Mechanics of Economic Development." *Journal of Monetary Economics* 22 (1): 3–42.
- Malizia, Emil E., and Edward J. Feser. 1999. *Understanding Local Economic Development*. Center for Urban Policy Research.
- McKinsey and Company Social Sector Office. 2009. "Detailed Findings on the Economic Impact of the Achievement Gap in America's Schools." New York: McKinsey and Company.
- Moretti, Enrico. 2004. "Human Capital Externalities in Cities." In *Handbook of Regional and Urban Economics*. Amsterdam: North Holland-Elsevier.
- Organisation for Economic Cooperation and Development. 2012. "Education At A Glance." Paris: Organisation for Economic Cooperation and Development.
- O'Sullivan, Arthur. 2007. *Urban Economics*. Boston: McGraw-Hill/Irwin.
- Partridge, Mark D., and Dan S. Rickman. 2003. "The Waxing and Waning of Regional Economies: The Chicken-egg Question of Jobs versus People." *Journal of Urban Economics* 53 (1): 76–97.
doi:10.1016/S0094-1190(02)00501-6.
- Perna, Laura W. 2003. "The Private Benefits of Higher Education: An Examination of the Earnings Premium." *Research in Higher Education* 44 (4): 451–72. doi:10.1023/A:1024237016779.
- Persky, Joseph, Daniel Felsenstein, and Virginia Carlson. 2004. *Does "Trickle Down" Work?: Economic Development Strategies and Job Chains in Local Labor Markets*. W. E. Upjohn Institute.
- Romer, P. M. 1986. "Increasing Returns and Long-Run Growth." *The Journal of Political Economy* 94 (5): 1002–37.
- Rothwell, J. 2012. "Education, Job Openings, and Unemployment in Metropolitan America." Brookings Institution. <http://www.news-press.com/assets/pdf/A4194042829.PDF>.
- Saez, Emmanuel. 2013. "Striking It Richer: The Evolution of Top Incomes in the United States (Updated with 2012 Preliminary Results)." Berkeley, CA: University of California, Berkeley.
- Turner, Sarah E. 2007. "Higher Education Policies Generating the 21st Century Workforce." In *Reshaping the American Workforce in a Changing Economy*, edited by Harry J. Holzer and Demetra Smith Nightingale. Washington, DC: Urban Institute Press.
- Wolf-Powers, Laura. 2005. "The Workforce Infrastructure: Issues and Challenges for Policy Makers." In *Moving People, Goods, and Information in the 21st Century*, edited by Richard E. Hanley, 245–59. London: Routledge.
- Wolf-Powers, Laura, and Stuart T. Andreason. 2012. "Aligning Secondary and Postsecondary Credentialization with Economic Development Strategy, or 'If Low Educational Attainment = Poor Metropolitan Competitiveness, What Can Be Done About It?'" In *Preparing Today's Students for Tomorrow's Jobs in Metropolitan America*, edited by Laura W. Perna, 224–44. Philadelphia: University of Pennsylvania Press.