Regional Economies in Transition:
Analyzing Trends in Advanced Industries, Manufacturing, and the Service Sector to Inform Inclusive Growth Strategies

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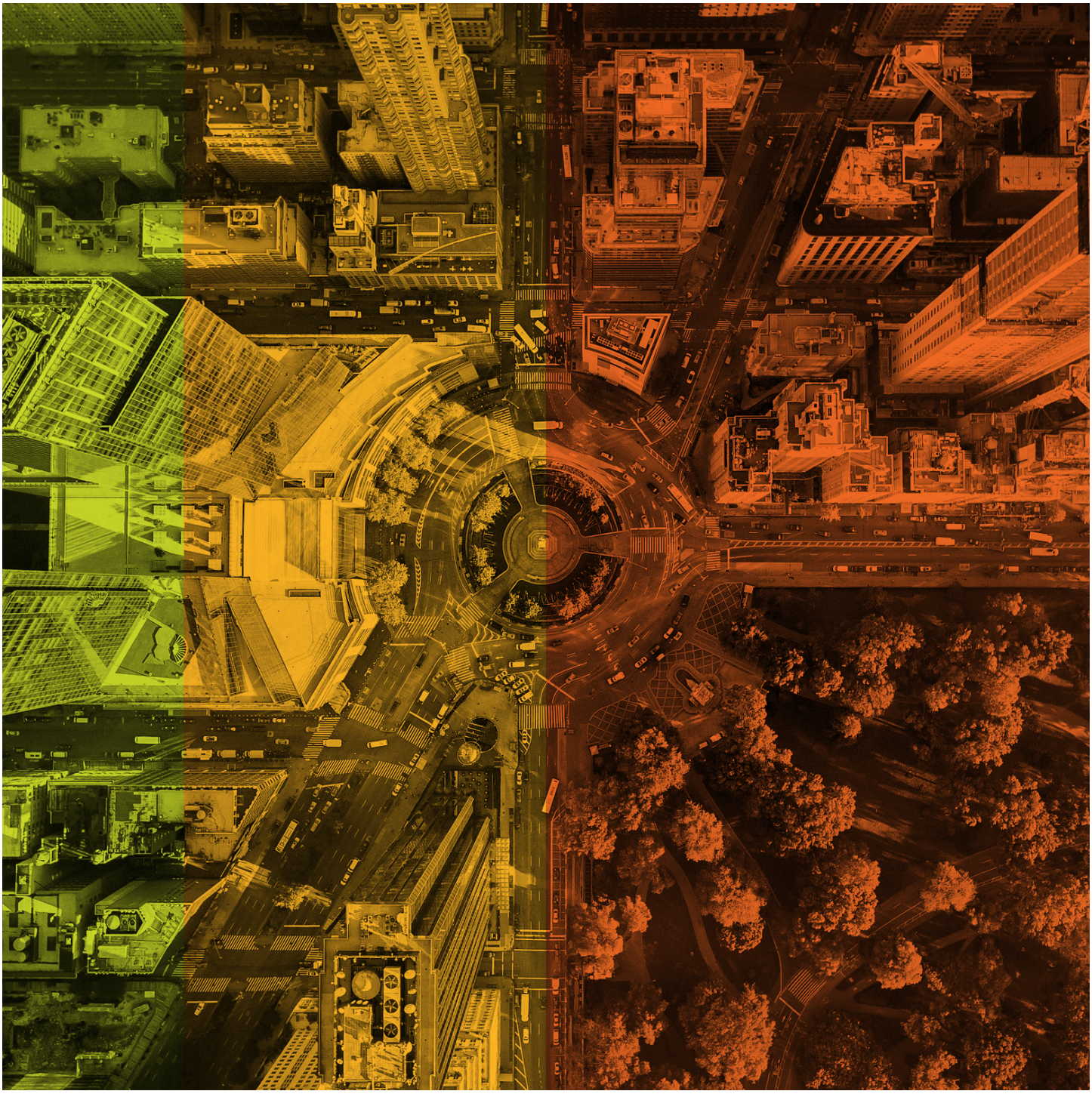

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Summary

The story of the United States economy in the early twenty-first century largely concerns three major dynamics that are still unfolding. First, the conjunction of globalization and technological advancement—outsourcing, offshoring, automation, and the rise of artificial intelligence, among other developments—has deeply altered the landscape of the U.S. economy. Second, inequality has ballooned to historic levels. The United States is the wealthiest nation on earth, yet as described in our companion analysis, *100 Million and Counting: A Portrait of Economic Insecurity in the United States*,[1] nearly **one in three** people are economically insecure, reflecting both the toxic polarization of wealth and income and the persistence of systemic inequities. Third, the face of the nation is changing. In 25 years, the United States will be a majority people-of-color nation, and with each passing decade the depth of racial economic exclusion poses a greater threat to our national prosperity. In 2015 alone, the United States missed out on an estimated $2.5 trillion in economic activity because of racial gaps in income.[2]

In the midst of these era-defining forces, it is important to understand the specific industry-level trends driving economic change and their implications for building solid pathways into the middle class. Regional economies matter—they play an important role in shaping the prospects for business development and the opportunities for low-income residents and people of color to achieve economic security. To examine changing regional economies, this report presents a typology classifying the 150 largest U.S. regions based on (1) the growth of advanced industries, such as computer systems design and chemical manufacturing; (2) the decline of manufacturing jobs; and (3) the quality of jobs in service-sector industries that generally do not require a BA degree and are therefore more accessible to economically insecure workers, such as business support services and investigation and security services (i.e., "accessible service industries").[3] Figure 1 below presents a summary of the seven regional types.

Our analysis of these trends in the 150 largest U.S. regions leads us to three conclusions.

1. Traditional manufacturing employment is on the decline in all but a handful of the 150 largest metro areas and is not likely to return anytime soon as a source of quality employment for the economically insecure. At the same time, wages in the manufacturing sector are increasing, buoyed by advanced manufacturing and productivity gains.
2. Advanced industries are the main source of growth within the manufacturing sector, but the relationship between growth in advanced industries and growth in traditional manufacturing jobs is not strong, suggesting that growth in the advanced industry sector is not likely to help "turn around" the traditional manufacturing sector.
3. There is a strong positive relationship between advanced industry growth and the quantity and quality of service jobs accessible without a BA degree, suggesting that regions experiencing growth in advanced industries are also seeing spillover effects that can help uplift the living standards of some economically insecure workers. Service-sector jobs continue to provide a growing source of employment for workers with less than a BA degree.

Figure 1.
Regional Typology Overview

Region Type	Decline in manufacturing	Rise in advanced industries	Quality of service jobs accessible without a BA degree	Number of metros
Leading Tech Hub	Slow	Most Rapid	High	7
High Prospects	Slow	Rapid	Moderate	24
Steady, Looking Up	Moderate	Above Moderate	High	10
Steady, Average	Moderate	Moderate	Moderate	66
Steady, Struggling	Moderate	Moderate	Low	13
Passed Over	Rapid	Slow	Moderate	24
Hardest Hit	Most Rapid	Slow	Low	6

Note: "Quality of service jobs accessible without a BA degree" refers to an index based on cost-of-living–adjusted average annual wages, wage growth, and employment growth in service industries in which the majority of entry-level jobs require less than a BA degree.

While advanced industries may help to lift wages in the service sector, even in regions with the strongest advanced industry growth the quality of accessible service industry jobs is generally not sufficient to achieve economic security for workers and their families. Given that advanced industries are largely inaccessible to economically insecure workers—particularly workers of color—these findings suggest that the development of advanced industries alone is an insufficient strategy for raising overall levels of economic security and reducing racial gaps therein. Transforming the majority of service jobs into good jobs that provide economic security for working families will require explicit strategies to build worker power, promote high-road business models, and advance equity—just and fair inclusion into a society in which all can participate, prosper, and reach their full potential.

To foster inclusive growth under continuously evolving economic conditions—whether growing or declining, fueled by tech or other sectors—American metros face the twin imperatives of nurturing the talents, potential, and capacity of their residents and dismantling barriers to economic participation.

Introduction

In the wake of the Great Recession and the still-unfinished economic recovery, the United States is at a critical juncture. Accelerating social and technological forces, including the spread of automation, the rise of artificial intelligence, globalization, and the international division of labor, are not only driving economic growth at an aggregate level but also contributing to widening inequalities in income and wealth.

These structural shifts are playing out alongside rapid demographic change: the United States was nearly 80 percent White in 1980, fell to 64 percent White in 2010, and is projected to become a majority people-of-color nation by 2044.[4] At the same time, entrenched inequities persist. For example, since 1980, the gap in the median hourly wage between full-time White workers and workers of color has remained stubbornly consistent, diminishing slightly in the 1990s but expanding again after 2000.[5] If current levels of racial inequity in education and job readiness, access to quality jobs, and income are not remediated, the result will be not only the deepening of economic exclusion and marginalization for people of color but also a weaker U.S. economy overall.

Despite the vast complexity of the global economy, the story of how globalization and technological change affect U.S. workers often boils down to three key trends: the decline in manufacturing, the growth in advanced industries, and the (often low) quality of service-sector jobs that are a primary source of employment for many people without higher education. Year after year, and quarter after quarter, jobs reports show growth at the top and bottom of the earnings distribution, and an ever-widening economic gulf between those who have skills that fetch high returns in the new economy and those who do not. The manufacturing sector is traditionally seen as providing "good jobs" for workers without formal education, but is the sector most exposed to global competition and automation. Analysts point to a decline in this sector as a key source of rising economic insecurity in the United States, which we define as having a household income below 200 percent of the federal poverty level. Offsetting this decline is a growing number of (often low-wage) service-sector jobs, and a rise in what are termed "advanced industries" by the Brookings Institution.[6] Advanced industries comprise the high-tech sector and other sectors that attract top talent, invest strongly in research and development, and have high levels of productivity. While these industries are a key source of economic prosperity in broad terms, they are often not accessible to economically insecure workers. So while these industries *can* benefit low-wage workers through the positive ancillary effect they have on service-sector wages, they often come with negative externalities, such as increased income inequality, rising rents, and displacement of low-income workers.

These trends are exacerbating economic inequality generally and racial economic gaps in particular. While this puzzle of inequity has many pieces, the sectoral changes outlined above are crucial to understanding the picture it forms. As such, it is important to understand how different regional expressions of the new economy are shaping the opportunities (or lack thereof) available to people without a BA degree who are working in the service sector.

In recent years, economists, social scientists, and advocates have laid out compelling evidence about the accelerating polarization of the U.S. job market (and the parallel polarization of wealth); the outsized productivity of the tech sector and advanced industries more broadly; the centrality of regional economies in advancing not only economic growth but also equity; and the widespread decline in U.S. manufacturing employment, which fell by 5.8 million jobs between 2000 and 2010.[7,8,9,10,11] Debate continues regarding the causes for this decline (ranging from automation and increased productivity to offshoring to shifting trade balances), and the implications and sustainability of the manufacturing sector's recent resurgence are similarly contested.[12]

David Autor and David Dorn found that the rapid overall growth in low-wage occupations since 1980 has been largely driven by *service* occupations, as employment in low-wage "production and craft occupations, operative and assembler occupations, and transportation, construction, mechanical, mining, and farm occupations" has declined.[13] At the other end of the wage distribution, driven by rapid technological change, employment in advanced industries has outpaced average job growth in the United States, driven by strong growth in motor vehicle parts manufacturing; computer systems design and related services; and management, scientific, and technical consulting services.[14] Enrico Moretti's research has brought together insights on the increasing importance of advanced industries as engines of growth and their uneven geographical distribution to describe a great divergence between regions. In *The New Geography of Jobs,* Moretti describes this divergence as giving rise to "three Americas": highly educated, tech- and innovation-driven economies at one extreme; declining markets with low-skilled labor forces at the other; and, in the middle, the balance of communities whose "future could go either way."[15]

Despite the broad consensus that these trends are real, powerful, and bound to continue, it has been less clear how they are related, and how they are unfolding across America's metro regions. People live and work in regions, so policy and programmatic strategies should be grounded in an understanding of the regional economic context and how it is changing. This report seeks to contribute to our understanding of how manufacturing decline, advanced industry growth, and job quality in accessible service industries are related, and how changing regional economic structures might inform efforts to improve economic security in regions.

In what follows, we begin by outlining these trends and describing how they are related. We then present a regional economic typology that classifies the nation's 150 largest metropolitan areas by their experience with each trend between 2005 and 2015. Next, we provide a comparative analysis examining what these trends mean for the prospect of reaching economic security for workers in different regions, and for the prospect of racial equity. We close with policy implications.

Defining terms/metrics for three regional economic trends

Decline in manufacturing: Percent change in manufacturing employment from 2005 through 2015.

Rise in advanced industries: Percent change in advanced industry employment from 2005 through 2015.

Quality of accessible service industries: Index of job quality in accessible service industries based on cost-of-living–adjusted average annual wages in 2015, and percent change in average annual wages and employment from 2005 through 2015.

Data and methods

To examine the decline of manufacturing, the rise in advanced industries, and the quality of rapidly growing service-sector jobs, we gathered data on employment and wages by industry from Moody's Analytics, covering the 10-year period from 2005 through 2015, aggregated for the 150 largest metropolitan areas in the United States.

We defined manufacturing per the standard definition, including all industries falling under the two-digit North American Industrial Classification System (NAICS) codes 31–33.[16] Advanced industries are defined as a set of 50 four-digit NAICS industries identified by the Brookings Institution as having a high level of research and development spending per worker, and in which a large share of workers are in occupations that require a relatively high degree of science, technology, engineering, and mathematical knowledge.[17] The majority (35) are in the manufacturing sector, 12 are in the service sector, and three are in natural resources and utilities. They include manufacturing industries, such as computer equipment and pharmaceuticals; service industries, such as software products and architecture and engineering; and natural resource and utilities industries, such as oil and gas extraction and power generation and supply.

We measured the decline in manufacturing and growth in advanced industries as the percent change in employment in these sectors between 2005 and 2015. Because a large share of manufacturing jobs (49 percent among the 150 largest metros) *are* advanced industry jobs, for many of the comparisons below we show data both for *all manufacturing* and for what we refer to as *traditional manufacturing* (or manufacturing excluding advanced industries).

To capture the quality of service-sector jobs that do not require a BA degree (and are therefore more accessible to the economically insecure population), we developed an index of job quality and growth for a set of detailed service-sector industries in which, according to data from the Bureau of Labor Statistics, the vast majority of entry-level jobs (at least 80 percent) require less than a BA degree.[18] We defined these industries as service-sector jobs accessible to the economically insecure population, or "accessible service industries," because the vast majority (86 percent) of the working-age economically insecure population have less than a BA degree.[19]

The index mostly reflects cost-of-living–adjusted average annual wages in 2015, but also considers wage and employment growth between 2000 and 2015. The quality of these jobs is critical for increasing economic security in the United States because they are the jobs the economically insecure tend to be in (if working) or are likely to be able to access (if not working). The reasons are twofold: first, these industries account for a large portion of all jobs, and second, they tend to have lower educational and training requirements for entry. They include jobs in food services, retail stores, nursing care facilities, the personal care industry, and childcare, to name a few, and are notable for both their impressive growth in recent decades and for their generally low job quality.[20]

The Big Picture:
Trends in Manufacturing, Advanced Industries, and Accessible Service Industries

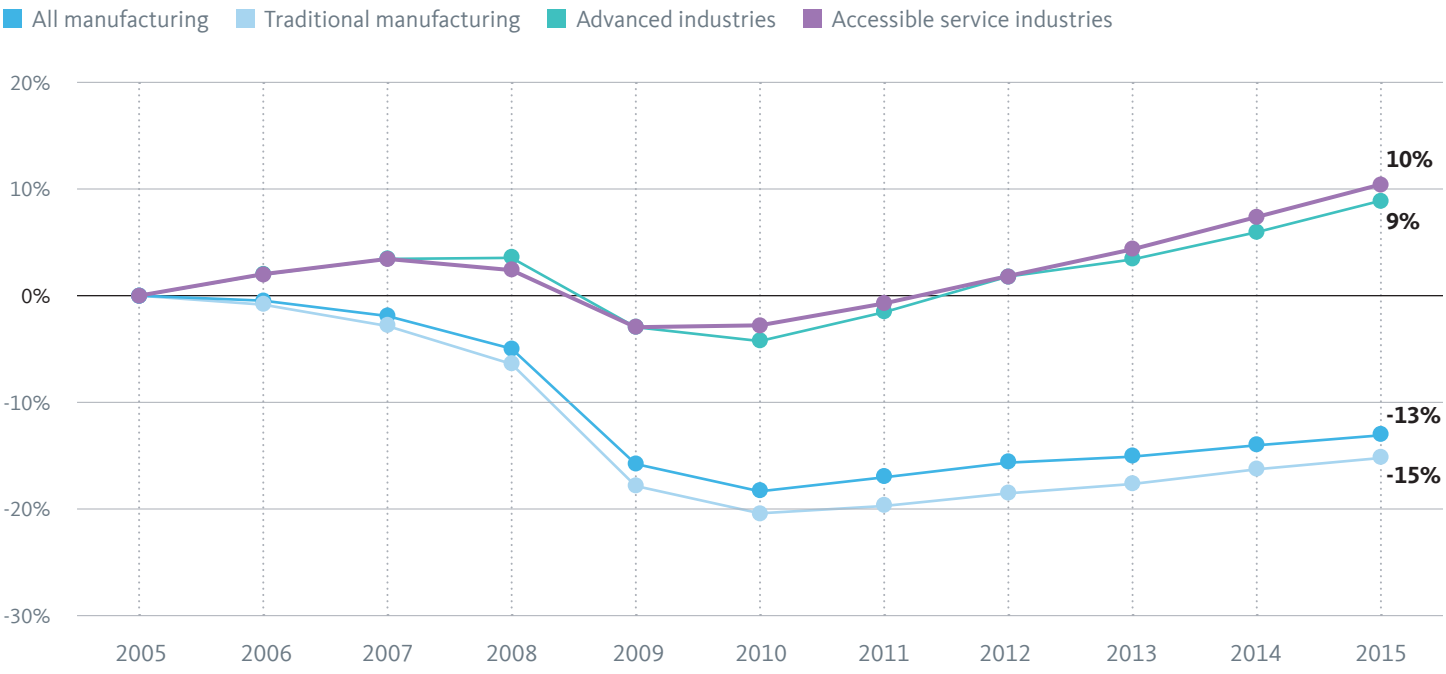
In 2015, across the 150 largest U.S. metros areas, accessible service industries accounted for nearly half (48 percent) of all private-sector employment, while advanced industries accounted for 11 percent, and traditional manufacturing (i.e., excluding advanced industries) accounted for only 4 percent. The decline in manufacturing and rise in advanced industries and low-wage service-sector jobs has been long in the making. Focusing on shifts since 2005, we find that manufacturing jobs overall fell by 13 percent. Removing advanced industries from the manufacturing tally, we find an even greater decline in traditional manufacturing of 15 percent. Advanced industries and accessible service industries, on the other hand, have grown by 9 and 10 percent since 2005, respectively, outpacing overall private-sector job growth (8 percent). This increasingly bifurcated job market has contributed to widening wage inequality for workers.

The trend reflects what economists call skill-biased technological change—a characteristic of developed economies in which advances in technology raise the premium for workers who are able to leverage such technologies, fetching extraordinarily high levels of compensation. Since 2005, annual wages have increased by 18 percent to almost $105,000 in 2015 for advanced industries but by only 2 percent in accessible service industries, which paid an average annual wage of less than $37,000 in 2015.

Manufacturing jobs, historically viewed as a route to economic security for workers with lower levels of formal education and training, continue to pay wages that can provide economic security and have experienced wage growth since 2005; but the number of such jobs has fallen dramatically and conventional wisdom suggests that they will not return anytime soon. Overall, they paid an average annual wage of about $73,500 in 2015, which reflects an inflation-adjusted increase of 9 percent since 2005. As noted above, however, about half of manufacturing jobs are in advanced industries, and if we exclude those jobs to focus on traditional manufacturing, the average annual wage falls to less than $56,000 (reflecting wage growth of 6 percent since 2005). Thus, it is clear that advanced manufacturing is driving growth within the broader manufacturing sector, securing higher wages and wage growth for workers by virtue of greater productivity.

The rise in advanced industries is accompanied by a rise in accessible service jobs and a decline in manufacturing

Figure 2.
Percent Change in Employment by Sector for the 150 Largest Metros, 2005–2015

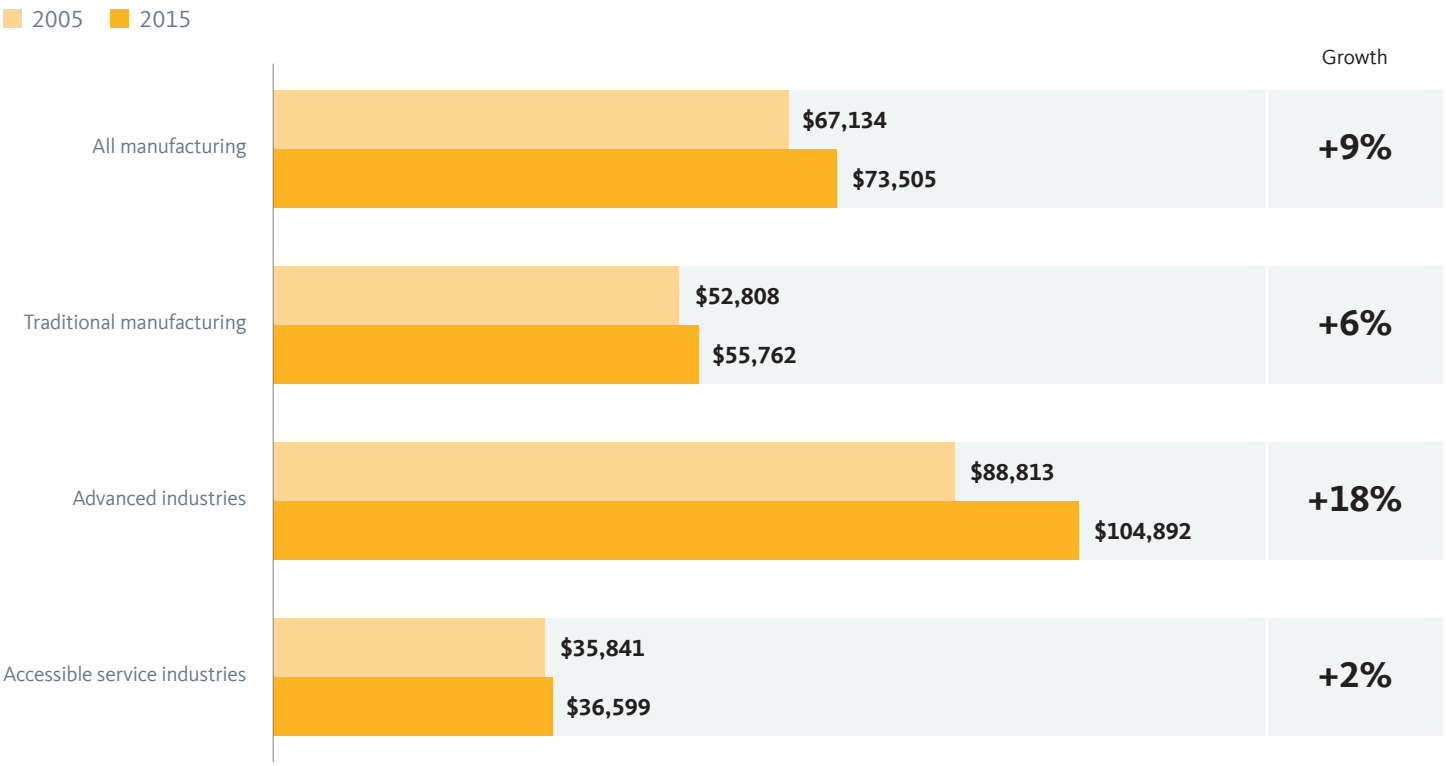


Source: PolicyLink/PERE analysis of data from Moody's Analytics.
Note: Data in each year are for the month of December.

However, jobs in advanced industries are also likely to require higher levels of education and training for entry and are thus less accessible to the economically insecure—especially economically insecure people of color. Half of all advanced industry jobs require a BA degree or higher, but only 10 percent of economically insecure people of color have that level of education, along with 19 percent of economically insecure Whites. While the education requirements of entry-level jobs in traditional manufacturing suggest that those jobs are far more accessible to the economically insecure, the jobs are already scarce at only 4 percent of private employment and the number is dwindling. Where then, do economically insecure workers turn for employment? To accessible service industries, of course, where their general educational profile is more than sufficient to meet job requirements.

The past decade shows uneven wage growth in manufacturing, advanced industries, and accessible service industries

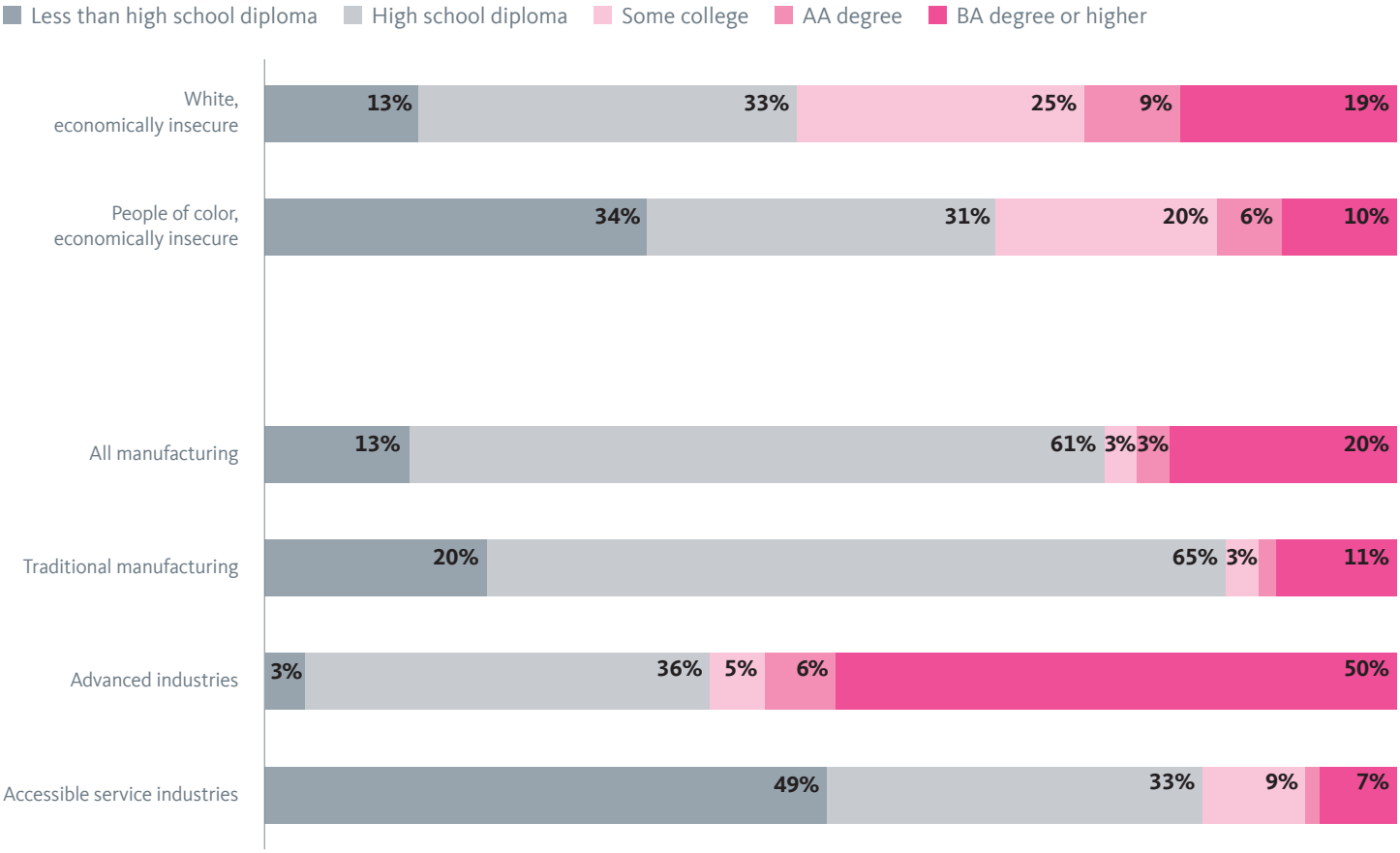
Figure 3.
Average Annual Wage and Growth by Sector for the 150 Largest Metros, 2005–2015



Source: PolicyLink/PERE analysis of data from Moody's Analytics.
Note: Data in each year are for the month of December and are in inflation-adjusted December 2015 dollars.

Half of all jobs in advanced industries require at least a bachelor's degree

Figure 4.
Educational Attainment of Economically Insecure Population Ages 25–64 and Entry-Level Education Requirements by Industry, 150 Largest Metros, 2015



Source: PolicyLink/PERE analysis of data from Moody's Analytics, the U.S. Bureau of Labor Statistics, and the IPUMS 2015 5-year American Community Survey.
Note: Data in each year are for the month of December. Data on entry-level education requirements by industry are from 2016, and reflect a weighted average across more detailed industries within each category shown, weighted by the total number of jobs in December 2015. Data on educational attainment for the economically insecure population reflect a 2011 through 2015 average.

Going Regional: Manufacturing Decline, Advanced Industry Growth, and Job Quality in Accessible Service Industries in the 150 Largest Metro Regions

The national trends are clear, but the national economy is an agglomeration of hundreds of regional economies, with different industrial histories and drivers. To understand how these broad trends vary across regions, we examined the trends across the 150 largest metropolitan areas. Are the regions seeing rapid advanced industry growth also the most likely to experience a slower decline in manufacturing jobs? Is there evidence that accessible service-sector jobs tend to be of better quality in regions with more robust advanced industry growth?

The link between manufacturing and advanced industries is weak

As noted above, nearly half of all manufacturing jobs in the 150 largest metros are in advanced industries; conversely, about 39 percent of all advanced industry jobs are in manufacturing. Thus, these two sectors have a lot of overlap, so it would not be surprising to find that the same regions that have seen a rapid manufacturing decline have also seen a decline (or only modest growth) in advanced industry employment. When we exclude advanced industries from manufacturing, we find little evidence that regions with the most rapid growth in advanced industries have also seen recovery in traditional manufacturing industries. While there is some overlap between the top 20 regions in terms of advanced industry growth and the top 20 in terms of traditional manufacturing growth—with five of the 20 being the same regions—there is little overlap among the bottom 20 regions on both measures. More revealing perhaps is that the 20 regions that have done the worst in traditional manufacturing growth actually had higher average advanced industry growth (7 percent) than the 20 regions that have done the best (5 percent).

Regions that demonstrate the weak relationship between traditional manufacturing and advanced industries include the Naples-Marco Island, Florida metro area, which ranked second worst in terms of growth in traditional manufacturing but second best in terms of advanced industry growth. On the other end of the spectrum, we see that the Santa Rosa, California, Modesto, California, and New Orleans, Louisiana metros all made the top 20 in terms of growth in traditional manufacturing, but the bottom 20 in terms of advanced industry growth. These are regions where, somehow, manufacturing jobs are showing signs of life—but they are not the sort of advanced industry jobs that bring greater economic rewards to the region. Overall, the weak relationship between growth in advanced industries and traditional manufacturing indicates quite different regional growth patterns, and suggests that a strong advanced industry sector is not likely to help "turn around" traditional manufacturing.

Growth in other manufacturing jobs is not dependent on growth in advanced industries

Figure 5.
Top and Bottom 20 Regions by Job Growth in Manufacturing and Advanced Industries, 150 Largest Metros, 2005–2015

Top 20

by Change in Manufacturing Jobs (Excluding Advanced Industries)

Metro Name	Rank	Change in jobs, 2005–2015: Manufacturing (excluding advanced industries)	Change in jobs, 2005–2015: Advanced industries
Baton Rouge, LA	1	31%	13%
Houston-Baytown-Sugar Land, TX	**2**	**18%**	**29%**
Vallejo-Fairfield, CA	3	17%	13%
Anchorage, AK	**4**	**15%**	**30%**
Bakersfield, CA	5	14%	23%
Ogden-Clearfield, UT	**6**	**11%**	**25%**
Santa Rosa-Petaluma, CA	7	8%	-23%
Tulsa, OK	8	7%	8%
Beaumont-Port Arthur, TX	9	6%	21%
Visalia-Porterville, CA	10	4%	-1%
Austin-Round Rock, TX	**11**	**4%**	**34%**
Reno-Sparks, NV	12	3%	-9%
Lansing-East Lansing, MI	13	3%	-8%
Des Moines, IA	**14**	**2%**	**26%**
Columbia, SC	15	2%	6%
New Orleans-Metairie-Kenner, LA	16	1%	-14%
Deltona-Daytona Beach-Ormond Beach, FL	17	0%	-6%
Flint, MI	18	0%	-46%
Boise City-Nampa, ID	19	-0%	-7%
Modesto, CA	20	-2%	-15%
Average		*7%*	*5%*

Source: PolicyLink/PERE analysis of data from Moody's Analytics.
Note: Data in each year are for the month of December. Regions that appear in the top 20 or bottom 20 on both lists are in bold.

Figure 5, continued

Top 20

by Change in Advanced Industry Jobs

Metro Name	Rank	Change in jobs, 2005–2015: Advanced industries	Change in jobs, 2005–2015: Manufacturing (excluding advanced industries)
Mobile, AL	1	48%	-2%
Naples-Marco Island, FL	2	48%	-47%
Charleston-North Charleston, SC	3	48%	-10%
Madison, WI	4	44%	-15%
San Antonio, TX	5	43%	-18%
Provo-Orem, UT	6	43%	-2%
Savannah, GA	7	40%	-6%
San Francisco-Oakland-Fremont, CA	8	39%	-15%
Raleigh-Cary, NC	9	37%	-24%
Seattle-Tacoma-Bellevue, WA	10	36%	-11%
Austin-Round Rock, TX	**11**	**34%**	**4%**
Salt Lake City, UT	12	33%	-3%
Kansas City, MO-KS	13	33%	-21%
Denver-Aurora, CO	14	30%	-10%
Anchorage, AK	**15**	**30%**	**15%**
Charlotte-Gastonia-Concord, NC-SC	16	29%	-11%
San Jose-Sunnyvale-Santa Clara, CA	17	29%	-3%
Houston-Baytown-Sugar Land, TX	**18**	**29%**	**18%**
Des Moines, IA	**19**	**26%**	**2%**
Ogden-Clearfield, UT	**20**	**25%**	**11%**
Average		*36%*	*-7%*

Source: PolicyLink/PERE analysis of data from Moody's Analytics.
Note: Data in each year are for the month of December. Regions that appear in the top 20 or bottom 20 on both lists are in bold.

Figure 5, continued

Bottom 20

by Change in Manufacturing Jobs (Excluding Advanced Industries)

Metro Name	Rank	Change in jobs, 2005–2015: Manufacturing (excluding advanced industries)	Change in jobs, 2005–2015: Advanced industries
Pensacola-Ferry Pass-Brent, FL	150	-50%	19%
Naples-Marco Island, FL	149	-47%	48%
Tallahassee, FL	148	-45%	13%
Durham, NC	147	-36%	3%
Youngstown-Warren-Boardman, OH-PA	**146**	**-35%**	**-13%**
Ocala, FL	145	-35%	0%
Richmond, VA	144	-34%	11%
Fayetteville, NC	143	-33%	9%
Bridgeport-Stamford-Norwalk, CT	142	-33%	-1%
Salinas, CA	141	-32%	6%
Winston-Salem, NC	140	-32%	6%
Cape Coral-Fort Myers, FL	139	-32%	21%
Baltimore-Towson, MD	138	-30%	15%
Syracuse, NY	137	-30%	-7%
Hickory-Lenoir-Morganton, NC	136	-29%	-3%
Virginia Beach-Norfolk-Newport News, VA-NC	135	-29%	3%
Washington-Arlington-Alexandria, DC-VA-MD-WV	134	-28%	12%
Providence-New Bedford-Fall River, RI-MA	133	-28%	-11%
Colorado Springs, CO	132	-27%	-7%
Montgomery, AL	131	-27%	20%
Average		*-34%*	*7%*

Source: PolicyLink/PERE analysis of data from Moody's Analytics.
Note: Data in each year are for the month of December. Regions that appear in the top 20 or bottom 20 on both lists are in bold.

Figure 5, continued

Bottom 20

by Change in Advanced Industry Jobs

Metro Name	Rank	Change in jobs, 2005–2015: Advanced industries	Change in jobs, 2005–2015: Manufacturing (excluding advanced industries)
Flint, MI	150	-46%	0%
Shreveport-Bossier City, LA	149	-34%	-26%
Eugene-Springfield, OR	148	-31%	-25%
Poughkeepsie-Newburgh-Middletown, NY	147	-25%	-7%
Santa Rosa-Petaluma, CA	146	-23%	8%
South Bend-Mishawaka, IN-MI	145	-22%	-9%
Rochester, NY	144	-21%	-8%
New Haven-Milford, CT	143	-20%	-25%
Oxnard-Thousand Oaks-Ventura, CA	142	-20%	-9%
Dayton, OH	141	-19%	-15%
Fresno, CA	140	-18%	-2%
Ann Arbor, MI	139	-18%	-3%
Stockton, CA	138	-17%	-9%
Modesto, CA	137	-15%	-2%
New Orleans-Metairie-Kenner, LA	136	-14%	1%
Albuquerque, NM	135	-13%	-8%
Youngstown-Warren-Boardman, OH-PA	**134**	**-13%**	**-35%**
Riverside-San Bernardino-Ontario, CA	133	-12%	-17%
Springfield, MA	132	-12%	-22%
Scranton--Wilkes-Barre, PA	131	-12%	-18%
Average		*-20%*	*-12%*

Source: PolicyLink/PERE analysis of data from Moody's Analytics.
Note: Data in each year are for the month of December. Regions that appear in the top 20 or bottom 20 on both lists are in bold.

The link between advanced industries and service-sector job quality is strong

Growing manufacturing employment has long been touted as a winning strategy for regional economic development because of the high "multiplier effect" that manufacturing jobs can have within a region. That is, because manufacturing employment is tied to the growth of export (or traded) industries, which produce goods that are largely sold outside of the region (both domestically and internationally), manufacturing operations bring new income *into* a region and thus spur demand for services, support the creation of new service-sector jobs, and improve the quality (i.e., the pay) of existing jobs. Now, as manufacturing is declining in the vast majority of regions, many are looking to attract advanced industries to spur new economic energy and regional growth.

The majority of advanced industry jobs are in the service sectors of professional, scientific, and technical services, information, and health care, with a smaller number in natural resources and utilities. While service-sector jobs have traditionally been thought of as serving the local regional economy and not export industries, in an increasingly digital and global world there is a greater ability for services to be traded across regions (both domestically and internationally), so it is reasonable to suspect that their multiplier effect is larger than it used to be. This increases the importance of advanced service-sector jobs as drivers of growth in regions. For this reason, and because of the higher levels of productivity, pay, and relationships with other businesses, advanced service-sector jobs have a much larger multiplier effect than the average job in the U.S. economy.

The Brookings Institution report from which we derive our definition of advanced industries found that, nationwide, each advanced service-sector job supports 1.8 other jobs while each advanced manufacturing job supports 2.4 other jobs.[21] Thus, while advanced manufacturing clearly has a larger multiplier than advanced services, both are far more stimulating to the economy than the average job overall, which only supports about one other job. Interestingly, while advanced manufacturing jobs have a larger overall job multiplier than advanced service jobs, more of the jobs created by the latter are in the local regional economy (1.0 out of 1.8 vs 0.6 out of 2.4). Thus, advanced service jobs may actually be more important to a region's own economy than advanced manufacturing jobs.[22]

Developing rigorous estimates of the multiplier effect of advanced industries is beyond the scope of this report. However, a simple correlation analysis of job changes across the 150 largest metro areas between 2005 and 2015 suggests that each additional advanced industry job is associated with 3.3 additional other service jobs in the regional economy, with about 1.8 of them requiring less than a BA degree and 1.5 of them requiring a BA degree or higher.[23] While these estimates are imperfect, they do suggest that advanced industry jobs are supportive of a healthy service sector.

Advanced industry growth spurs the creation of new service-sector jobs

Figure 6.
Relationship between Change in Advanced Industry Jobs and Change in Service-Sector Jobs by Entry-Level Education Requirement

Source: PolicyLink/PERE analysis of data from Moody's Analytics. Universe includes the 150 largest U.S. metro areas.
Note: Job changes are calculated as estimated job counts in December 2015 minus estimated job counts in December 2005.

Another way to understand the impact of advanced industries on service-sector job quality, with a focus on jobs that are accessible to the economically insecure, is to look at whether the regions that rank best on our index of job quality in accessible service industries tend to be the same regions that have done well on advanced industry growth. Among the 20 regions that rank highest in terms of job quality in accessible service industries, seven of them are also on the top 20 list for advanced industry job growth, and even those that do not make the top 20 list for advanced industry growth tend to have relatively strong employment growth in advanced industries. For example, the average employment growth for advanced industries across the 150 largest U.S. metro areas is about 6 percent, but it is triple that (18 percent) for the 20 regions ranked highest in terms of job quality in accessible service industries.[24]

Job quality in accessible service industries is linked to strong advanced industry growth

Figure 7.
Top and Bottom 20 Regions by Index of Job Quality in Accessible Service Industries, 150 Largest Metros, 2015

Top 20	Service jobs for the economically insecure						
Metro Name	Rank	Index value	Average annual wage, 2015	Cost-of-living–adjusted average annual wage, 2015	Real growth in average annual wage, 2005–2015	Percent change in jobs, 2005–2015	Percent change in advanced industry jobs, 2005–2015
Killeen-Temple-Fort Hood, TX	1	3.22	$45,550	$50,133	-5%	17%	-7%
Houston-Baytown-Sugar Land, TX	**2**	**2.13**	**$40,702**	**$40,326**	**21%**	**26%**	**29%**
San Jose-Sunnyvale-Santa Clara, CA	**3**	**1.62**	**$50,094**	**$37,784**	**31%**	**13%**	**29%**
Charlotte-Gastonia-Concord, NC-SC	**4**	**1.59**	**$37,506**	**$40,488**	**3%**	**22%**	**29%**
Peoria, IL	5	1.50	$37,442	$41,628	9%	-1%	-4%
Atlanta-Sandy Springs-Marietta, GA	6	1.26	$38,573	$40,319	-1%	13%	16%
Memphis, TN-MS-AR	7	1.24	$37,552	$41,772	-5%	3%	21%
Nashville-Davidson--Murfreesboro, TN	8	1.22	$35,959	$38,579	4%	22%	16%
Dallas-Fort Worth-Arlington, TX	9	1.14	$38,206	$38,141	3%	24%	15%
Des Moines, IA	**10**	**1.01**	**$36,094**	**$38,141**	**6%**	**13%**	**26%**
Kansas City, MO-KS	**11**	**1.00**	**$35,853**	**$38,752**	**4%**	**9%**	**33%**
Fayetteville, NC	12	0.96	$37,217	$41,742	-14%	2%	9%
Columbus, OH	13	0.96	$35,419	$38,486	3%	11%	4%
Oklahoma City, OK	14	0.86	$32,250	$35,578	20%	12%	18%
Mobile, AL	**15**	**0.85**	**$32,586**	**$38,156**	**9%**	**2%**	**48%**
San Francisco-Oakland-Fremont, CA	**16**	**0.80**	**$47,899**	**$37,241**	**6%**	**12%**	**39%**
Minneapolis-St. Paul-Bloomington, MN-WI	17	0.75	$38,674	$37,458	7%	6%	8%
Louisville, KY-IN	18	0.75	$33,711	$37,678	2%	10%	19%
Hartford-West Hartford-East Hartford, CT	19	0.71	$38,950	$38,280	1%	4%	3%
Baton Rouge, LA	20	0.69	$33,554	$36,458	8%	12%	13%
Average			*$38,189*	*$39,357*	*6%*	*12%*	*18%*

Source: PolicyLink/PERE analysis of data from Moody's Analytics.
Note: Data in each year are for the month of December. Regions that appear in the top 20 or bottom 20 on both the above lists and the earlier lists of regions ranked by change in advanced industry jobs between 2005 and 2015 are in bold. See the Methods document for more detail on cost-of-living adjustment and index construction.[25]

Figure 7, continued

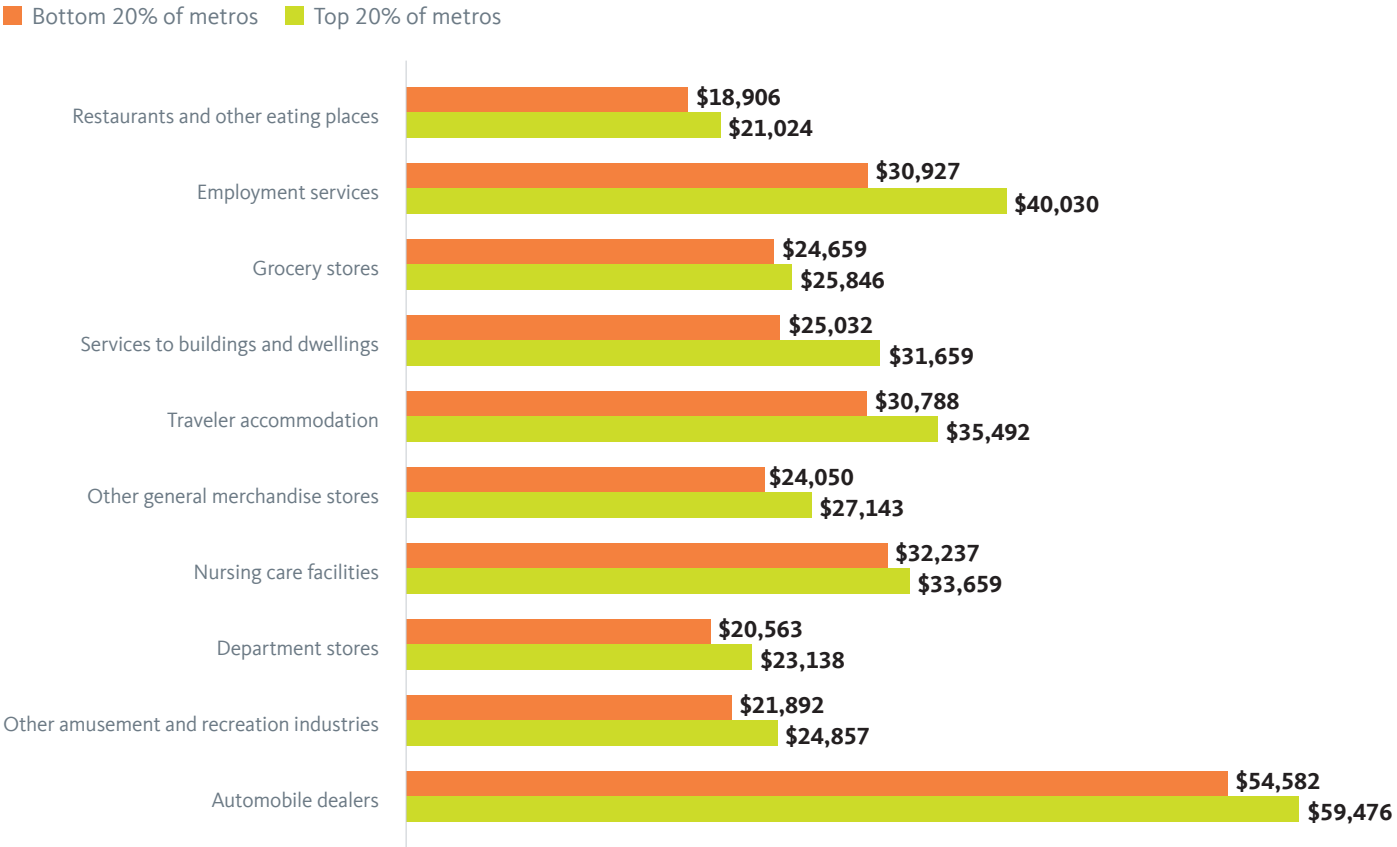
Bottom 20	Service jobs for the economically insecure						
Metro Name	Rank	Index value	Average annual wage, 2015	Cost-of-living–adjusted average annual wage, 2015	Real growth in average annual wage, 2005–2015	Percent change in jobs, 2005–2015	Percent change in advanced industry jobs, 2005–2015
Trenton-Ewing, NJ	150	-1.65	$30,497	$26,897	-9%	13%	17%
Poughkeepsie-Newburgh-Middletown, NY	**149**	**-1.61**	**$32,134**	**$27,491**	**-7%**	**8%**	**-25%**
Tallahassee, FL	148	-1.57	$25,862	$27,970	-9%	7%	13%
Honolulu, HI	147	-1.48	$34,791	$26,616	4%	8%	8%
Ann Arbor, MI	**146**	**-1.28**	**$30,076**	**$29,142**	**-6%**	**6%**	**-18%**
Richmond, VA	145	-1.28	$26,806	$27,838	-5%	18%	11%
Virginia Beach-Norfolk-Newport News, VA-NC	144	-1.27	$28,169	$28,491	3%	1%	3%
Deltona-Daytona Beach-Ormond Beach, FL	143	-1.19	$28,179	$29,532	-4%	3%	-6%
Durham, NC	142	-1.07	$28,144	$29,584	-6%	12%	3%
New Haven-Milford, CT	**141**	**-1.05**	**$34,705**	**$30,858**	**-6%**	**0%**	**-20%**
Vallejo-Fairfield, CA	140	-1.03	$36,327	$30,664	-4%	0%	13%
Sarasota-Bradenton-Venice, FL	139	-0.96	$31,947	$31,927	-15%	6%	15%
Lancaster, PA	138	-0.95	$29,724	$30,061	-3%	9%	-3%
Salem, OR	137	-0.93	$28,837	$30,663	-6%	8%	1%
Asheville, NC	136	-0.89	$27,360	$29,624	-3%	16%	0%
Eugene-Springfield, OR	**135**	**-0.87**	**$30,157**	**$30,690**	**-3%**	**7%**	**-31%**
York-Hanover, PA	134	-0.87	$29,177	$30,602	-4%	9%	-11%
Lansing-East Lansing, MI	133	-0.83	$28,523	$30,912	2%	-1%	-8%
Tucson, AZ	132	-0.80	$30,350	$31,569	-6%	5%	-7%
Port St. Lucie-Fort Pierce, FL	131	-0.76	$30,319	$31,649	-8%	10%	19%
Average			*$30,104*	*$29,639*	*-5%*	*7%*	*-1%*

Source: PolicyLink/PERE analysis of data from Moody's Analytics.
Note: Data in each year are for the month of December. Regions that appear in the top 20 or bottom 20 on both the above lists and the earlier lists of regions ranked by change in advanced industry jobs between 2005 and 2015 are in bold. See the Methods document for more detail on cost-of-living adjustment and index construction.[26]

A more tangible way to understand the impact that advanced industries have on service-sector quality for the economically insecure is to look at wages for specific industries. For example, wages for workers in the employment services industry are more than $9,000/year higher in regions that rank in the top 20 percent in terms of advanced industry growth than in regions that rank in the bottom 20 percent. The pay differential is not quite as large in other major service industries accessible to the economically insecure, but is often substantial: well over $6,000 per year for workers in services to buildings and dwellings, nearly $5,000 per year for those in traveler accommodations, and about $2,000 per year for workers in restaurants and other eating places.

Stronger advanced industry growth means better pay in service jobs accessible without a BA degree

Figure 8.
Average Annual Wage (2015) by Growth in Advanced Industries (2005–2015) for the Top 10 Accessible Service Industries in Terms of Total Employment, 150 Largest Metros



Source: PolicyLink/PERE analysis of data from Moody's Analytics.
Note: Data in each year are for the month of December. The differences between metros with high and low advanced industry growth are somewhat smaller when examining cost-of-living–adjusted average annual wages.

Putting it All Together: A Typology of Regional Economies by Manufacturing Decline, Advanced Industry Growth, and Job Quality in Accessible Service Industries

Examining changing industry structure across the 150 largest metropolitan areas, we find three key trends. First, traditional manufacturing jobs are on the decline in all but a handful of the metros and are not likely to return anytime soon as a source of quality employment for the economically insecure. Second, advanced industries are the main source of growth within manufacturing, but are not likely to help traditional manufacturing make a comeback in regions that have been at the forefront of nationwide declines. Third, there is a strong positive relationship between advanced industry growth and the quality of service jobs accessible without a BA degree, suggesting that regions experiencing this growth are also seeing notable spillover effects that can help uplift the living standards of economically insecure workers.

To gain a better understanding of how these three broad trends are playing out in each particular region, we created a regional typology to classify the 150 largest regions based on the sectoral metrics of manufacturing decline, advanced industry growth, and the quality of accessible service-sector jobs.

Considering each of these factors separately, we placed the 150 largest metros into three groups (low, middle, and high) based on the number of standard deviations a region's value fell from the mean across all 150 metros. We then cross-tabulated the three groups that were created for each factor with each other, to create more detailed categories. A description of the seven resulting regional types and summary information on the three factors considered is included in Figure 9, and further details can be found in the Methods document.[27]

The regional typology summary table provides a description of each region type in terms of performance across the three factors considered: percent change in manufacturing jobs, percent change in advanced industry jobs, and the index of job quality for accessible service industries. Also included in the table are data on the three metrics that feed into the index of job quality for accessible industries (cost-of-living–adjusted average annual wage, wage growth, and job growth).

At the top, we classified seven regions as "Leading Tech Hubs." These metros, such as the San Jose-Sunnyvale-Santa Clara, California metro and the Charlotte-Gastonia-Concord, North Carolina-South Carolina metro, have a slow decline (or even growth) in manufacturing along with the most rapid growth in advanced industries, and the quality of accessible service industries is relatively high. Also included among Leading Tech Hubs are regions not often considered tech hubs, such as the Mobile, Alabama metro and the Des Moines, Iowa metro—with Mobile making the cut because of strong growth in the advanced industries of ship building, iron and steel mills, and foundries, and Des Moines earning its place because of strong growth in computer system design and architecture and engineering services. The 24 regions classified as "High Prospects" mainly differ from Leading Tech Hubs in that jobs in accessible service industries are of lower quality. Regions with strong tech sectors, such as the Austin, Texas metro and the Denver-Aurora, Colorado metro, fall into this category because, despite strong advanced industry growth, accessible service industries are of lower quality, paying average annual wages of about $36,000 and $33,000, respectively, on a cost-of-living–adjusted basis.

At the bottom, we identified six regions as "Hardest Hit" and 24 as "Passed Over." These are all metros that have seen rapid declines in manufacturing, slow growth in advanced industries, and moderate-to-low quality of accessible service industries. The Hardest Hit regions stand out from Passed Over regions for their even more severe declines in manufacturing and lower quality of accessible service industries. The Hardest Hit and Passed Over regions include many Rust Belt metros, such as Ann Arbor, Michigan, Dayton, Ohio, and Youngstown-Warren-Boardman, Ohio-Pennsylvania, and also regions less known for industrial decline, such as the Oxnard-Thousand Oaks-Ventura, California, Albuquerque, New Mexico, and Colorado Springs, Colorado metros.

The middle three categories of metros are regions that have seen moderate declines in manufacturing and moderate growth in advanced industries, and differ mainly in terms of the quality of accessible service industries. The "Steady, Looking Up" regions tend to have the highest quality of accessible service industries of the three groups—with an average index value of 1.29, matching that for Leading Tech Hubs—while "Steady, Average" regions have moderate quality and "Steady, Struggling" regions have low quality of accessible service industries. The regional typology map (Figure 10) shows the category that each of the 150 largest metro areas falls into, highlighting the three regions for which we conducted case studies to accompany this report. These studies are available online.

Clearly there is a positive relationship between the quality of service jobs accessible to workers without a BA degree and the growth of advanced industries in a given region. Average annual wages in accessible service jobs, adjusted for cost of living, are lowest among the Hardest Hit and Steady-Struggling regions—in the range of $29,000 to $30,000. This is about $10,000 less than in the two region types with the highest average wages: in the Leading Tech Hub and Steady-Looking Up regions, service jobs accessible to workers without a BA degree pay about $39,000 to $40,000 per year.

Regional typology summary

Figure 9.
150 Largest Metros Classified into Seven Types of Regions by Manufacturing Decline, Advanced Industry Growth, and Quality of Accessible Service Industries

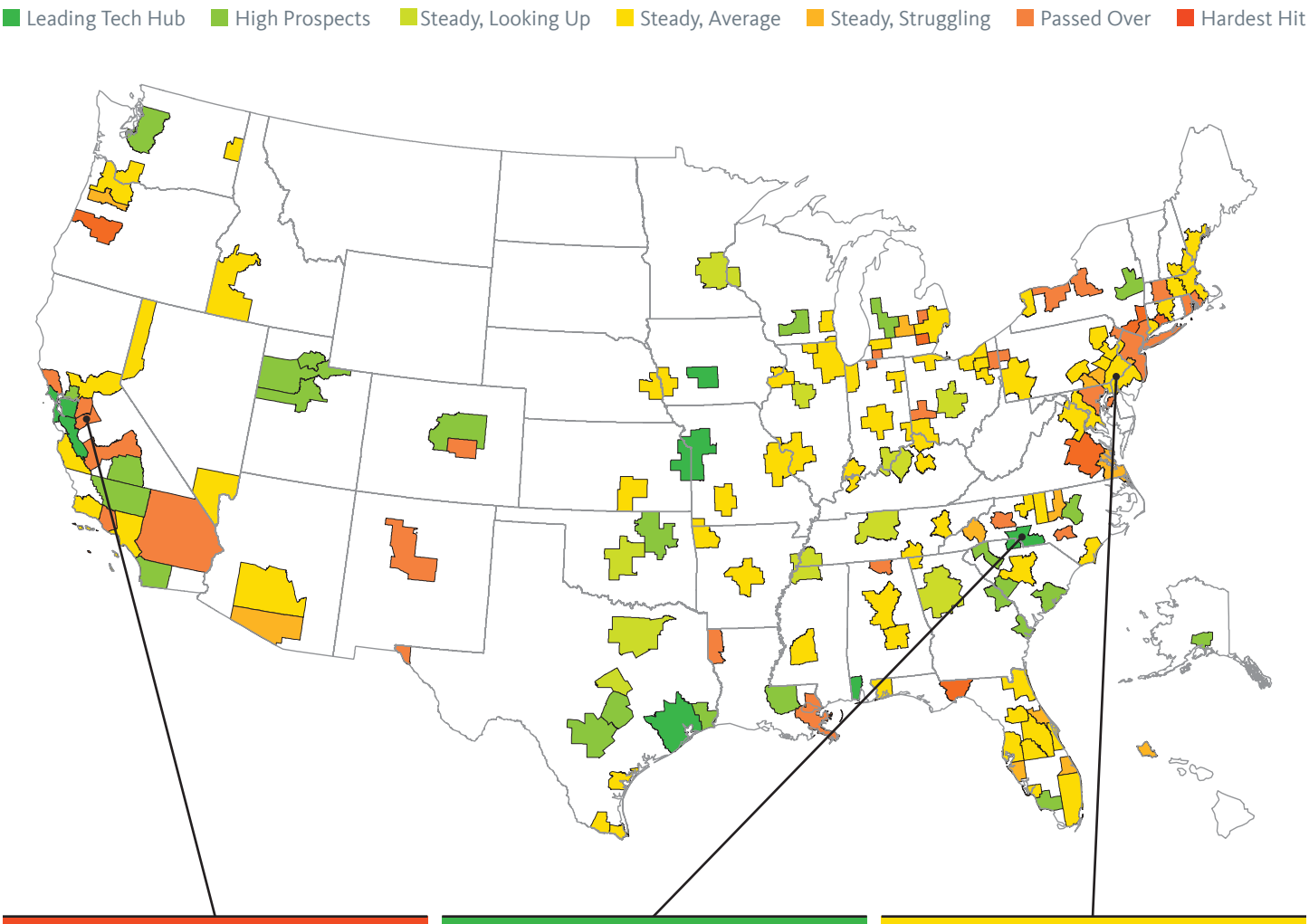
		Industry growth		Measures of job quality for accessible service industries			
Description	**Number of metros**	Percent change in manufacturing jobs, 2005–2015	Percent change in advanced industry jobs, 2005–2015	Cost-of-living–adjusted average annual wage, 2015	Real growth in average annual wage, 2005–2015	Percent change in jobs, 2005–2015	Index value
Leading Tech Hub: most rapid growth in advanced industries, slow decline (or growth) in manufacturing jobs, and high quality of accessible service jobs.	7	**3.9%**	**33.5%**	$38,698	9.3%	13.9%	**1.29**
High Prospects: rapid growth in advanced industries, slow decline (or growth) in manufacturing jobs, and moderate quality of accessible service jobs.	24	**6.0%**	**27.7%**	$34,176	4.3%	15.5%	**0.17**
Steady, Looking Up: above-moderate growth in advanced industries, moderate decline in manufacturing jobs, and high quality of accessible service jobs.	10	**-10.4%**	**10.6%**	$39,977	4.9%	11.6%	**1.29**
Steady, Average: moderate growth in advanced industries, moderate decline in manufacturing jobs, and moderate quality of accessible service jobs.	66	**-14.0%**	**2.7%**	$34,513	1.5%	7.4%	**-0.02**
Steady, Struggling: moderate growth in advanced industries, moderate decline in manufacturing jobs, and low quality of accessible service jobs.	13	**-12.3%**	**2.5%**	$29,856	-1.2%	7.7%	**-1.05**
Passed Over: slow growth in advanced industries, rapid decline in manufacturing jobs, and moderate quality of accessible service jobs.	24	**-23.1%**	**-12.3%**	$33,803	2.3%	6.8%	**-0.14**
Hardest Hit: slow growth in advanced industries, most rapid decline in manufacturing jobs, and low quality of accessible service jobs.	6	**-30.2%**	**-11.6%**	$28,998	-3.8%	7.4%	**-1.28**

Source: PolicyLink/PERE analysis of data from Moody's Analytics and the U.S. Bureau of Labor Statistics.
Note: Data in each year are for the month of December. Values other than the number of metros reflect unweighted averages of each measure across the regions of each type. The three factors used to construct the typology are outlined in bold. See the Methods document for more information on how regions are classified.

But is this regional wage premium enough to lift workers out of economic insecurity? As the following chart illustrates, average cost-of-living–adjusted wages in five of the seven region types are high enough to lift a single parent and child out of economic insecurity—that is, wages are above the threshold of twice the federal poverty level (about $32,000 for a family of two). However, only two region types (Steady-Looking Up and Leading Tech Hub) boast average wages in accessible service industries sufficient to provide economic security for a family of three (about $38,000).

Regional typology map

Figure 10.
150 Largest Metros Classified into Seven Types of Regions by Manufacturing Decline, Advanced Industry Growth, and Quality of Accessible Service Industries



Stockton, CA metro (Passed Over)	
Change in manufacturing jobs:	**-11.1%**
Change in advanced industry jobs:	**-17.4%**
Index of job quality for accessible service industries:	**0.35**

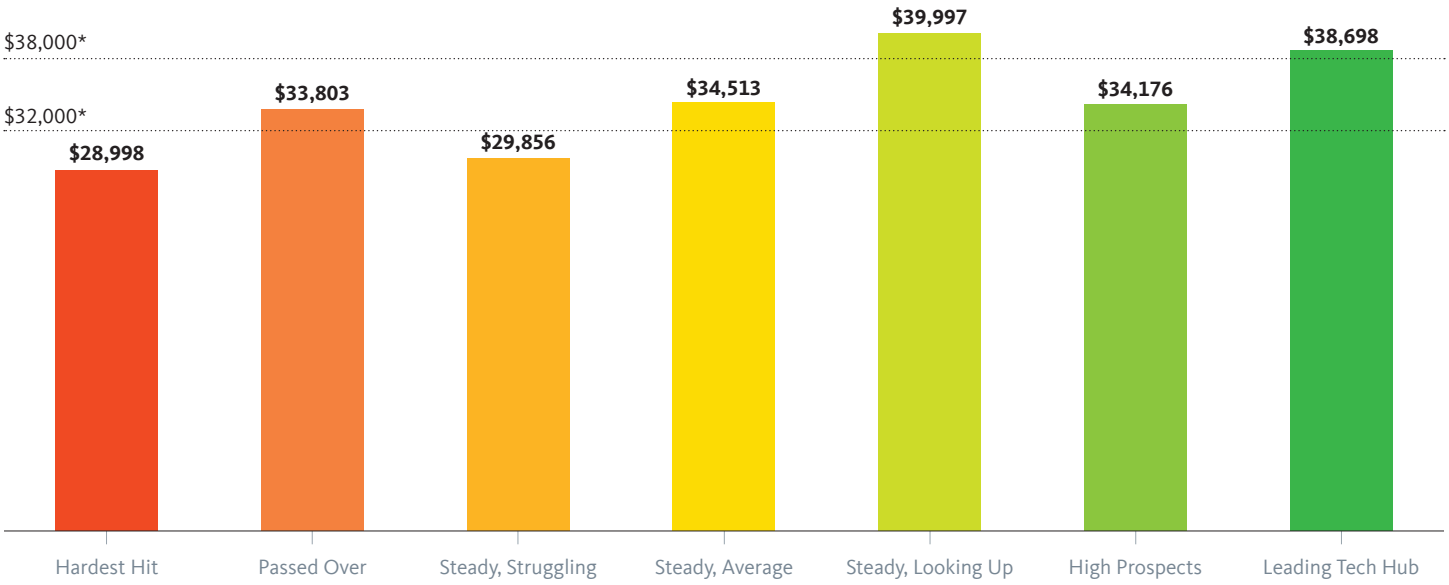
Charlotte, NC-SC metro (Leading Tech Hub)	
Change in manufacturing jobs:	**-9.6%**
Change in advanced industry jobs:	**+29.5%**
Index of job quality for accessible service industries:	**1.59**

Philadelphia, PA-NJ-DE-MD metro (Steady, Average)	
Change in manufacturing jobs:	**-22.0%**
Change in advanced industry jobs:	**-7.1%**
Index of job quality for accessible service industries:	**-0.20**

Source: PolicyLink/PERE analysis of data from Moody's Analytics and the U.S. Bureau of Labor Statistics. Note: All change measures reported are calculated between December 2005 and December 2015. See the Methods document for more information on how regions are classified.

In most region types, average wages in accessible service jobs cannot lift a family of three out of economic insecurity

Figure 11.
Average Annual Wages (Cost-of-Living Adjusted) for Service-Sector Jobs Accessible Without a BA Degree, by Region Type, 2015



Source: PolicyLink/PERE analysis of data from Moody's Analytics, the U.S. Bureau of Labor Statistics, and the U.S. Census Bureau.
Note: Data on wages are for December 2015 and reflect unweighted averages across the regions of each type. *The dotted lines approximate double the weighted average federal poverty thresholds in 2015 for a family of two with a householder under 65 years old ($31,904) and a family of three with a householder of any age ($37,742).

This underscores an important point: while joblessness and underemployment are major drivers of economic insecurity for many households, low wages are also a critical factor. Even in regions with the strongest job and wage growth in accessible service industries, raising wages and improving job quality remains an essential priority for advancing economic equity.

Policy Implications

The regional typology described in this report leads us to suggest three priority areas for public and private policy solutions to foster equitable growth in America's changing metro regions.

- Improve the quality of service-sector jobs
- Promote the revitalization of good manufacturing jobs
- Develop economic strategies tailored to regional and inter-regional conditions

Priority 1:
Improve the quality of service jobs to expand economic security and foster racial equity.

According to projections from the Bureau of Labor Statistics, service industries (including government) will account for nine of the 10 industries adding the greatest number of jobs to the U.S. economy from 2016 to 2026. Health care and social assistance, professional and businesses services, and leisure and hospitality top the list.[28] Our analysis shows that while strong growth in advanced industries exerts a measurable upward pull on wages in accessible service jobs, this effect is not strong enough to lift most workers out of economic insecurity. Local policymakers have an important role to play in raising the floor on low-wage work by increasing the minimum wage, ensuring workers have access to paid sick leave, protecting workers from erratic and unpredictable scheduling, and supporting community benefits agreements for new development projects. Research has shown that poor working conditions lead to increased employee turnover with high costs for businesses. Policies to reduce barriers to employment—such as fair-chance hiring laws that ban questions about criminal conviction from job applications—are an important complement.

Cities that are preempted by state law from passing local labor laws related to wages, benefits, and other worker protections can increase standards by instituting a living-wage ordinance and other job-quality and job-access measures for public employees. They may also be able to establish higher labor standards for companies that contract with public agencies and promote high-road business practices through economic development policy and work with local partners—especially anchor institutions—to increase equitable standards in hiring practices and job quality.

Finally, city and county governments can support state- and federal-level efforts to improve wages, benefits, and working conditions and develop local policies to preserve and expand housing affordability, protect renters from displacement, and ensure that public transportation provides equitable access to jobs for workers throughout the region.

Priority 2:
Promote the revitalization of manufacturing by supporting labor organizing and the development of worker-ownership structures.

Manufacturing jobs have historically provided a pathway to the middle class for working people of color and workers without a college degree. The recent rebound in U.S. manufacturing employment is a promising sign that this pathway can be stabilized, even if manufacturing employment levels never return to their previous zenith. Yet there are also signs that the wages and quality of manufacturing jobs are not what they used to be: while wages in manufacturing are still higher than most accessible service industries, they are growing at just half the rate of average American wages,[29] reflecting the declining power of labor unions amid the expansion of right-to-work laws.

Local policymakers can help support labor organizing in manufacturing and other sectors by supporting the development of worker centers and other innovative organizing models outside the traditional union system that can build workers' power to improve wages, benefits, and working conditions.

Policymakers can also stem the loss of small- and mid-sized manufacturing firms by fostering transitions to worker-ownership models. As owners of manufacturing businesses and related companies near retirement, public- and private-sector leaders can facilitate succession planning to convert those businesses into worker-owned cooperatives. Cooperative enterprises can boost job quality for disadvantaged workers; provide wealth-building mechanisms, especially for people of color; generate additional economic activity in their communities; and mitigate the impact of firm closures on the regional economy.

Priority 3:

Develop tailored and coordinated economic development strategies.

While advanced manufacturing constitutes the bulk of the advanced industries, advanced services occupations (such as computer software and computer systems design) are among some of the fastest growing within that cluster. This suggests that even regions without a strong manufacturing base can share in the multiplier effect of advanced industry jobs by promoting business development in advanced services, which are likely to be less capital and infrastructure intensive than advanced manufacturing operations.

Such economic development efforts should be coupled with equitable workforce training systems designed to increase access to and readiness for good jobs in advanced services and alleviate educational bias in the labor market for these positions. In addition to expanding access to traditional workforce training pathways, local leaders can pull down career ladders for low-income workers and people of color by initiating innovative, scalable approaches to human capital development. In Chicago, an employer-driven apprenticeship network partnered with community-based organizations and community colleges to develop supportive career pathways in occupations that have not traditionally engaged in apprenticeship training. Aon and Accenture are among the corporate partners demonstrating the feasibility and success of apprenticeship training in consulting and professional services.

Figure 12.
Selected Strategies to Advance Inclusive Prosperity, By Region Type

	Strategies by Region Type		
	Leading Tech Hub → Hardest Hit		
Results			**All Region Types**
Grow good jobs	**Ensure economic development subsidies provide targeted benefits and protections.** When public funds are used to incentivize business development, strong standards should be included to ensure strong benefits are delivered to local workers and neighborhoods. Business incentives conditioned on high job quality standards, local hiring targets, and shared investment in infrastructure can spur the growth of good jobs.	**Use cluster-based strategies to support the region's strongest sectors.** City and regional leaders can promote inclusive prosperity by focusing business supports in traded clusters—those that export goods and services outside of the region and can effectively leverage the assets of core cities. **Invest in public infrastructure** to spur good job creation and support region-wide economic development.	**Adopt equitable contracting and procurement processes.** City and regional governments and school districts can foster economic equity by establishing diversity targets and helping businesses owned by people of color access public contracting and procurement dollars. This is a win-win proposition, as these businesses are more likely to hire people of color than other firms and generate increased economic activity in communities of color.
Create career pathways	**Expand pre-apprenticeship, apprenticeship, and other on-the-job training programs.** "Earn and learn" apprenticeship programs in skilled trades as well as nontraditional sectors can create strong workforce pipelines for regional employers, while reducing the opportunity gap for workers with college degrees and create accessible career ladders for people of color and other disadvantaged workers.	**Engage anchor institutions to create targeted employment strategies.** Given their large economic footprints, regional anchor institutions are important partners in implementing strategies to expand access to economic opportunities through targeted hiring and training. **Invest in retraining for displaced workers,** which can help former manufacturing workers transition to new careers in growing sectors.	**Design wraparound supports for disadvantaged workers.** Aligning job training efforts with career coaching and social service supports can foster strong career pathways for economically insecure workers. **Remove barriers for the most impacted workers.** Pairing core skills training with policies to remove barriers for workers facing systemic barriers (such as those with criminal records) supports inclusive prosperity.
Support entrepreneurs	**Cultivate industry partnerships to help small businesses grow.** Partnerships between start-up businesses and established corporations can be mutually beneficial, helping entrepreneurs access mentorship, information, and critical networks and helping larger businesses innovate, adapt, and operate more efficiently.	**Work with anchor institutions to establish inclusive sourcing policies.** Large organizations like hospitals, universities, and other institutions anchored in place can accelerate racial equity by developing inclusive supply chains and contracting practices, to support and sustain local enterprises owned by people of color, women, and other disadvantaged business owners.	**Invest in the growth of small businesses and worker cooperatives owned by women and people of color.** Policymakers and business leaders can provide small-business supports including training, grants, affordable loans and banking, and access to contracting and subcontracting opportunities, all of which support a strong and racially equitable entrepreneurial ecosystem.
Improve job quality			**Raise the floor on low-wage work.** Local leaders can improve job quality by increasing wages, ensuring fair scheduling, improving worker benefits and protections, and supporting worker-owned cooperatives. Where local policymakers are preempted by state law and unable to improve job quality through public policy, government and private-sector partners can promote voluntary high-road business certification programs.

Conclusion

Advanced industries hold the promise of bringing outsized gains in productivity and jobs to the regions where they are growing, which have also tended to see slower declines in manufacturing employment. Economic growth in these regions seems to be at least somewhat more broadly shared with workers in service industries that are accessible without a BA degree—partly because a larger share of GDP in such regions goes to wages. However, even in the regions with the strongest advanced industries and manufacturing sectors and highest quality of service-sector industries accessible to workers without a BA degree, median wages in those industries are barely high enough to lift a family of three out of economic insecurity. And while the highest performing regions tend to be more racially diverse than others, they are no less segregated, indicating that different racial groups may not be sharing equally in the benefits.

At the same time, as regional economies continue to transform and diverge, several metros that have experienced a rapid decline in manufacturing jobs and slow growth in advanced industries provide comparable (or higher) job quality in accessible service industries than regions with only moderate losses in manufacturing and moderate growth in advanced industries. This suggests that other economic and policy conditions play important roles in increasing wage and job growth for workers without a BA degree. Examining these conditions at the regional level—alongside measures of economic insecurity and racial gaps in employment and wages—can augment the insights of this research and point toward policy solutions tailored to the specific regional context.

Appendix

Figure 13.
Measures of Industry Growth and Job Quality of Accessible Service Industries by Region Type for the 150 Largest Metros

	Industry growth		Measures of job quality for accessible service industries				
	Change in manufacturing jobs, 2005–2015	Change in advanced industry jobs, 2005–2015	Average annual wage, 2015	Cost-of-living–adjusted average annual wage, 2015	Real growth in average annual wage, 2005–2015	Change in jobs, 2005–2015	Index value
Hardest Hit							
Ann Arbor, MI	-35.1%	-17.6%	$30,076	$29,142	-4.3%	5.9%	-1.28
Eugene-Springfield, OR	-35.1%	-31.4%	$30,157	$30,690	-2.2%	6.6%	-0.87
New Haven-Milford, CT	-29.6%	-20.4%	$34,705	$30,858	-3.3%	-0.2%	-1.05
Poughkeepsie-Newburgh-Middletown, NY	-25.0%	-24.9%	$32,134	$27,491	-5.3%	7.7%	-1.61
Richmond, VA	-28.9%	11.4%	$26,806	$27,838	-1.9%	17.7%	-1.28
Tallahassee, FL	-27.6%	13.2%	$25,862	$27,970	-5.6%	6.9%	-1.57
Hardest Hit (unweighted average)	*-30.2%*	*-11.6%*	*$29,957*	*$28,998*	*-3.8%*	*7.4%*	*-1.28*
Passed Over							
Albuquerque, NM	-28.2%	-13.0%	$30,693	$31,738	4.1%	0.9%	-0.54
Baltimore-Towson, MD	-28.8%	15.4%	$37,551	$34,523	0.0%	8.6%	-0.04
Colorado Springs, CO	-28.6%	-7.3%	$33,999	$33,763	1.7%	9.8%	-0.07
Dayton, OH	-25.3%	-19.1%	$28,629	$32,363	-2.0%	-2.7%	-0.72
El Paso, TX	-25.4%	1.7%	$29,737	$34,056	9.2%	20.6%	0.33
Fayetteville, NC	-26.2%	9.3%	$37,217	$41,742	-11.4%	2.5%	0.96
Flint, MI	-44.0%	-46.1%	$29,810	$33,602	5.7%	-1.7%	-0.18
Fresno, CA	-6.8%	-17.8%	$33,541	$34,777	3.8%	15.4%	0.24
Hickory-Lenoir-Morganton, NC	-26.2%	-2.8%	$29,457	$34,813	0.4%	2.4%	-0.19
Huntsville, AL	-24.5%	-3.9%	$25,988	$29,677	2.6%	15.6%	-0.72
Modesto, CA	-5.3%	-15.2%	$35,483	$36,011	7.5%	4.3%	0.33
New Orleans-Metairie-Kenner, LA	-22.9%	-14.4%	$35,308	$36,943	2.4%	10.1%	0.68
New York-Northern New Jersey-Long Island, NY-NJ-PA	-25.9%	9.9%	$43,212	$34,372	0.9%	12.6%	0.02
Oxnard-Thousand Oaks-Ventura, CA	-19.1%	-20.0%	$37,839	$30,967	1.0%	7.2%	-0.72
Providence-New Bedford-Fall River, RI-MA	-26.4%	-10.6%	$32,949	$33,281	6.0%	2.9%	-0.26
Riverside-San Bernardino-Ontario, CA	-20.5%	-12.4%	$34,277	$31,744	-1.6%	20.1%	-0.44
Rochester, NY	-25.3%	-21.2%	$31,178	$32,042	7.2%	6.4%	-0.44
Santa Rosa-Petaluma, CA	-6.3%	-23.1%	$37,492	$30,633	4.9%	13.2%	-0.58
Shreveport-Bossier City, LA	-31.7%	-33.6%	$31,129	$35,210	0.8%	4.1%	0.12
South Bend-Mishawaka, IN-MI	-18.6%	-21.5%	$29,668	$34,053	-0.1%	-3.0%	-0.37
Springfield, MA	-24.6%	-12.2%	$32,584	$33,620	2.7%	1.7%	-0.32
Stockton, CA	-11.1%	-17.4%	$35,983	$35,638	3.0%	14.0%	0.35
Syracuse, NY	-26.3%	-6.5%	$31,209	$32,878	3.8%	1.9%	-0.41
Youngstown-Warren-Boardman, OH-PA	-25.6%	-12.6%	$27,775	$32,828	2.0%	-3.5%	-0.50
Passed Over (unweighted average)	*-23.1%*	*-12.3%*	*$33,029*	*$33,803*	*2.3%*	*6.8%*	*-0.14*

Steady, Struggling							
Asheville, NC	-8.1%	0.5%	$27,360	$29,624	0.4%	16.4%	-0.89
Deltona-Daytona Beach-Ormond Beach, FL	-4.6%	-5.9%	$28,179	$29,532	-0.6%	3.3%	-1.19
Durham, NC	-23.5%	3.4%	$28,144	$29,584	-3.5%	12.2%	-1.07
Honolulu, HI	-4.5%	8.1%	$34,791	$26,616	7.6%	8.0%	-1.48
Lancaster, PA	-18.6%	-2.8%	$29,724	$30,061	-0.7%	9.2%	-0.95
Lansing-East Lansing, MI	-9.4%	-8.2%	$28,523	$30,912	3.6%	-0.6%	-0.83
Port St. Lucie-Fort Pierce, FL	-4.9%	19.1%	$30,319	$31,649	-4.9%	9.8%	-0.76
Salem, OR	-12.9%	0.9%	$28,837	$30,663	-3.0%	7.6%	-0.93
Sarasota-Bradenton-Venice, FL	-15.8%	15.3%	$31,947	$31,927	-12.6%	6.2%	-0.96
Trenton-Ewing, NJ	-11.4%	17.0%	$30,497	$26,897	-4.3%	13.1%	-1.65
Tucson, AZ	-17.7%	-6.7%	$30,350	$31,569	-2.5%	5.4%	-0.80
Virginia Beach-Norfolk-Newport News, VA-NC	-10.8%	3.4%	$28,169	$28,491	5.5%	0.5%	-1.27
York-Hanover, PA	-18.3%	-10.9%	$29,177	$30,602	-0.9%	9.2%	-0.87
Steady, Struggling (unweighted average)	*-12.3%*	*2.5%*	*$29,694*	*$29,856*	*-1.2%*	*7.7%*	*-1.05*
Steady, Average							
Akron, OH	-18.1%	-7.2%	$30,619	$34,646	0.7%	0.5%	-0.17
Allentown-Bethlehem-Easton, PA-NJ	-12.5%	-3.0%	$32,090	$31,899	3.2%	16.3%	-0.31
Birmingham-Hoover, AL	-12.2%	-3.9%	$32,015	$36,859	0.2%	3.3%	0.35
Boise City-Nampa, ID	-16.2%	-6.7%	$29,550	$31,556	-4.3%	19.1%	-0.43
Boston-Cambridge-Quincy, MA-NH	-14.3%	16.4%	$40,064	$35,271	0.7%	10.1%	0.20
Bridgeport-Stamford-Norwalk, CT	-20.4%	-1.2%	$44,657	$36,322	-2.2%	5.3%	0.14
Brownsville-Harlingen, TX	-17.2%	-2.9%	$24,806	$30,761	3.3%	27.8%	-0.34
Buffalo-Niagara Falls, NY	-17.7%	-6.1%	$31,276	$33,936	7.8%	4.8%	-0.06
Canton-Massillon, OH	-9.5%	-2.2%	$27,853	$32,266	-0.9%	-0.2%	-0.73
Cape Coral-Fort Myers, FL	-22.6%	20.7%	$31,544	$33,125	-12.6%	20.7%	-0.43
Chattanooga, TN-GA	-12.1%	13.0%	$31,929	$36,364	6.8%	2.2%	0.37
Chicago-Naperville-Joliet, IL-IN-WI	-16.4%	2.6%	$39,211	$37,052	2.1%	7.3%	0.48
Cincinnati-Middletown, OH-KY-IN	-7.8%	9.8%	$33,103	$37,604	2.3%	2.2%	0.50
Cleveland-Elyria-Mentor, OH	-16.7%	-8.6%	$33,677	$38,075	2.5%	-0.3%	0.57
Columbia, SC	-0.5%	6.4%	$29,261	$32,404	5.0%	12.9%	-0.27
Corpus Christi, TX	-10.7%	9.3%	$31,867	$34,448	10.8%	15.6%	0.38
Davenport-Moline-Rock Island, IA-IL	-7.1%	8.5%	$31,936	$36,122	10.4%	-4.4%	0.28
Detroit-Warren-Livonia, MI	-13.8%	-1.4%	$34,933	$36,569	-3.2%	-3.2%	0.10
Evansville, IN-KY	-11.2%	-9.6%	$31,014	$35,382	2.6%	7.6%	0.11
Fayetteville-Springdale-Rogers, AR-MO	-19.2%	-5.7%	$31,114	$35,521	0.9%	18.6%	0.35
Fort Wayne, IN	-5.3%	-6.3%	$30,809	$35,102	-0.1%	3.1%	0.04
Greensboro-High Point, NC	-17.1%	-4.4%	$31,500	$35,804	2.3%	5.4%	0.18
Harrisburg-Carlisle, PA	-13.9%	2.3%	$33,633	$35,373	6.1%	9.6%	0.34
Hartford-West Hartford-East Hartford, CT	-13.8%	2.7%	$38,950	$38,280	1.7%	3.9%	0.71
Indianapolis, IN	-15.1%	5.8%	$33,754	$36,698	-2.2%	14.0%	0.41
Jackson, MS	-19.1%	-5.0%	$28,069	$31,813	2.9%	8.4%	-0.50
Jacksonville, FL	-15.1%	18.2%	$36,215	$37,794	-1.4%	12.1%	0.64
Kalamazoo-Portage, MI	-11.5%	-7.5%	$29,861	$33,052	4.7%	-1.1%	-0.45
Knoxville, TN	-17.9%	-1.0%	$31,309	$35,957	1.9%	11.9%	0.40

Lakeland, FL	-9.3%	-10.3%	$33,177	$36,102	-0.2%	3.5%	0.12
Las Vegas-Paradise, NV	-13.6%	7.6%	$37,531	$38,079	-3.5%	10.1%	0.59
Lexington-Fayette, KY	-12.2%	-4.9%	$28,832	$31,928	1.5%	14.5%	-0.36
Little Rock-North Little Rock, AR	-20.0%	1.7%	$30,626	$34,394	5.1%	6.5%	0.05
Los Angeles-Long Beach-Santa Ana, CA	-20.6%	-4.7%	$41,100	$33,446	1.5%	8.4%	-0.16
Manchester-Nashua, NH	-22.9%	-10.0%	$35,738	$32,498	-0.3%	4.1%	-0.45
McAllen-Edinburg-Pharr, TX	-20.9%	17.9%	$26,003	$31,759	8.3%	30.5%	0.07
Miami-Fort Lauderdale-Miami Beach, FL	-16.6%	7.4%	$37,229	$34,021	-0.5%	13.8%	-0.05
Milwaukee-Waukesha-West Allis, WI	-9.6%	-4.3%	$31,210	$32,608	-1.4%	2.4%	-0.57
Montgomery, AL	-4.0%	20.0%	$28,354	$32,574	0.8%	-2.0%	-0.63
Ocala, FL	-23.9%	-0.2%	$28,988	$32,794	-3.1%	5.8%	-0.53
Omaha-Council Bluffs, NE-IA	-0.9%	7.0%	$34,870	$37,573	2.0%	8.6%	0.59
Orlando, FL	-10.6%	9.2%	$34,885	$35,385	-3.9%	20.5%	0.28
Palm Bay-Melbourne-Titusville, FL	-12.3%	-5.3%	$33,514	$35,234	-8.8%	-6.2%	-0.33
Pensacola-Ferry Pass-Brent, FL	-20.1%	19.0%	$34,009	$36,963	6.3%	2.1%	0.45
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	-22.0%	-7.1%	$36,352	$33,993	0.5%	4.8%	-0.20
Phoenix-Mesa-Scottsdale, AZ	-12.4%	11.7%	$35,759	$36,809	-0.8%	8.0%	0.44
Pittsburgh, PA	-12.9%	9.3%	$33,096	$35,615	9.7%	0.1%	0.34
Portland-South Portland-Biddeford, ME	-12.5%	9.3%	$32,834	$32,200	5.6%	3.4%	-0.47
Portland-Vancouver-Beaverton, OR-WA	-0.9%	15.7%	$36,540	$35,400	-1.2%	13.1%	0.41
Reading, PA	-2.6%	3.7%	$31,219	$33,051	2.6%	5.7%	-0.31
Reno-Sparks, NV	-7.9%	-8.6%	$33,486	$33,792	-2.2%	1.5%	-0.40
Rockford, IL	0.7%	1.8%	$29,456	$33,226	4.3%	1.4%	-0.37
Sacramento--Arden-Arcade--Roseville, CA	-15.9%	4.1%	$36,439	$34,961	1.9%	10.2%	0.14
St. Louis, MO-IL	-19.3%	-7.0%	$34,040	$37,912	1.0%	4.4%	0.56
Salinas, CA	-18.6%	6.4%	$37,258	$32,920	-1.8%	10.5%	-0.41
Santa Barbara-Santa Maria-Goleta, CA	-4.9%	8.3%	$37,634	$32,679	3.0%	6.7%	-0.30
Scranton-Wilkes-Barre, PA	-22.6%	-11.7%	$29,850	$33,273	7.6%	6.6%	-0.09
Spokane, WA	-11.8%	5.0%	$32,960	$34,960	10.7%	1.1%	0.18
Springfield, MO	-16.6%	18.4%	$30,769	$35,865	3.1%	9.9%	0.35
Tampa-St. Petersburg-Clearwater, FL	-19.9%	14.5%	$35,045	$34,720	-2.5%	4.0%	-0.13
Toledo, OH	-10.4%	0.7%	$29,977	$34,577	0.4%	-1.9%	-0.27
Washington-Arlington-Alexandria, DC-VA-MD-WV	-21.7%	12.2%	$40,417	$32,450	0.3%	9.1%	-0.43
Wichita, KS	-15.1%	-11.4%	$28,453	$32,089	-2.4%	7.8%	-0.60
Wilmington, NC	-13.2%	11.4%	$28,331	$30,302	5.0%	16.0%	-0.63
Winston-Salem, NC	-23.7%	5.7%	$28,818	$33,107	2.0%	6.6%	-0.35
Worcester, MA	-16.3%	4.8%	$33,750	$32,566	-2.7%	4.4%	-0.60
Steady, Average (unweighted average)	*-14.0%*	*2.7%*	*$32,957*	*$34,513*	*1.5%*	*7.4%*	*-0.02*
Steady, Looking Up							
Atlanta-Sandy Springs-Marietta, GA	-11.9%	15.8%	$38,573	$40,319	0.5%	12.6%	1.26
Columbus, OH	-11.2%	4.0%	$35,419	$38,486	4.8%	11.0%	0.96
Dallas-Fort Worth-Arlington, TX	-10.3%	15.3%	$38,206	$38,141	0.7%	23.6%	1.14
Killeen-Temple-Fort Hood, TX	-12.6%	-7.4%	$45,550	$50,133	-1.2%	17.3%	3.22
Louisville, KY-IN	-0.7%	19.3%	$33,711	$37,678	4.3%	10.1%	0.75
Memphis, TN-MS-AR	-15.9%	20.8%	$37,552	$41,772	-0.8%	2.8%	1.24

Minneapolis-St. Paul-Bloomington, MN-WI	-7.3%	8.3%	$38,674	$37,458	8.3%	6.0%	0.75
Nashville-Davidson-Murfreesboro, TN	-14.1%	16.2%	$35,959	$38,579	5.4%	21.9%	1.22
Oklahoma City, OK	-3.2%	17.9%	$32,250	$35,578	14.0%	11.7%	0.86
Peoria, IL	-16.8%	-3.7%	$37,442	$41,628	12.4%	-0.9%	1.50
Steady, Looking Up (unweighted average)	*-10.4%*	*10.6%*	*$37,333*	*$39,977*	*4.9%*	*11.6%*	*1.29*
High Prospects							
Albany-Schenectady-Troy, NY	9.7%	25.1%	$34,622	$34,515	4.2%	0.9%	-0.12
Anchorage, AK	13.1%	29.6%	$37,243	$32,848	3.4%	8.7%	0.03
Augusta-Richmond County, GA-SC	-17.6%	24.6%	$33,587	$38,902	-4.9%	7.2%	0.64
Austin-Round Rock, TX	-12.0%	33.5%	$33,607	$33,198	4.1%	44.0%	0.67
Bakersfield, CA	14.0%	23.4%	$33,023	$33,909	0.3%	17.1%	0.25
Baton Rouge, LA	14.0%	12.8%	$33,554	$36,458	12.5%	11.7%	0.69
Beaumont-Port Arthur, TX	19.4%	20.8%	$32,747	$37,186	13.0%	6.4%	0.62
Charleston-North Charleston, SC	20.1%	47.5%	$29,161	$30,306	-1.8%	18.9%	-0.74
Denver-Aurora, CO	-5.9%	30.4%	$38,550	$35,729	2.4%	16.4%	0.52
Grand Rapids-Wyoming, MI	1.6%	14.1%	$32,786	$35,277	3.2%	13.8%	0.32
Greenville, SC	-3.6%	24.3%	$32,482	$37,040	5.5%	11.9%	0.67
Madison, WI	-6.6%	44.3%	$30,319	$30,638	14.2%	4.9%	-0.50
Naples-Marco Island, FL	5.9%	47.6%	$35,407	$34,653	-6.0%	17.0%	-0.03
Ogden-Clearfield, UT	16.0%	25.4%	$30,260	$32,114	4.6%	16.1%	-0.26
Provo-Orem, UT	4.1%	42.5%	$29,039	$29,988	10.9%	34.4%	-0.13
Raleigh-Cary, NC	-1.7%	37.3%	$32,971	$34,421	1.4%	30.9%	0.46
Salt Lake City, UT	4.8%	33.5%	$34,531	$34,382	7.7%	19.7%	0.38
San Antonio, TX	1.9%	42.8%	$33,008	$35,147	5.2%	28.6%	0.68
San Diego-Carlsbad-San Marcos, CA	1.5%	9.8%	$39,474	$32,307	1.7%	8.4%	-0.40
Savannah, GA	27.1%	39.7%	$32,344	$34,846	5.1%	18.2%	0.30
Seattle-Tacoma-Bellevue, WA	10.0%	36.4%	$40,758	$36,472	3.4%	9.9%	0.53
Tulsa, OK	7.0%	8.2%	$32,100	$36,012	2.9%	9.0%	0.49
Vallejo-Fairfield, CA	15.1%	13.2%	$36,327	$30,664	1.7%	0.1%	-1.03
Visalia-Porterville, CA	5.6%	-0.9%	$31,205	$33,201	8.5%	19.0%	0.07
High Prospects (unweighted average)	*6.0%*	*27.7%*	*$33,713*	*$34,176*	*4.3%*	*15.5%*	*0.17*
Leading Tech Hub							
Charlotte-Gastonia-Concord, NC-SC	-9.6%	29.5%	$37,506	$40,488	5.1%	22.4%	1.59
Des Moines, IA	0.3%	26.1%	$36,094	$38,141	6.2%	13.1%	1.01
Houston-Baytown-Sugar Land, TX	16.5%	28.8%	$40,702	$40,326	12.0%	26.1%	2.13
Kansas City, MO-KS	-8.2%	32.9%	$35,853	$38,752	6.4%	8.8%	1.00
Mobile, AL	36.4%	48.5%	$32,586	$38,156	10.3%	1.8%	0.85
San Francisco-Oakland-Fremont, CA	-6.7%	39.5%	$47,899	$37,241	6.4%	11.7%	0.80
San Jose-Sunnyvale-Santa Clara, CA	-1.2%	29.1%	$50,094	$37,784	18.7%	13.4%	1.62
Leading Tech Hub (unweighted average)	*3.9%*	*33.5%*	*$40,105*	*$38,698*	*9.3%*	*13.9%*	*1.29*

Source: PolicyLink/PERE analysis of data from Moody's Analytics and the U.S. Bureau of Labor Statistics.
Note: Data in each year are for the month of December. Values other than the number of metros reflect unweighted averages of each measure across the regions of each type. The three factors used to construct the typology are outlined in bold. See the Methods document for more information on how regions are classified.

Notes

1 Abigail Langston, Justin Scoggins, and Ángel Ross, *100 Million and Counting: A Portrait of Economic Insecurity in the United States* (Oakland, CA: PolicyLink and Los Angeles, CA: USC Program for Environmental and Regional Equity, 2018), https://www.policylink.org/resources-tools/100-million.

2 National Equity Atlas, "Actual GDP and estimated GDP with racial equity in income (billions): United States, 2015," PolicyLink and USC Program for Environmental and Regional Equity, accessed June 6, 2019, http://nationalequityatlas.org/indicators/GDP_gains_with_racial_equity.

3 Brookings defines advanced industries as follows: "Individual advanced industries were identified using two criteria: an industry's research and development spending per worker must fall in the 80th percentile of industries or higher, exceeding $450 per worker; the share of workers in an industry whose occupations require a high degree of knowledge in science, technology, engineering, and mathematics must also be above the national average, or 21 percent of all workers. An industry must meet both criteria to be considered advanced. Together the two thresholds identify 50 industries that invest heavily in technology innovation and employ skilled technical workers to develop, diffuse, and apply new productivity-enhancing technologies." Mark Muro, Jonathan Rothwell, Scott Andes, Kenan Fikri and Siddharth Kulkarni, *America's Advanced Industries: What They Are, Where They Are, and Why They Matter* (Washington, DC, The Brookings Institution, 2015), p. 2, https://www.brookings.edu/wp-content/uploads/2015/02/AdvancedIndustry_ESFinalFeb2lores-1.pdf

4 National Equity Atlas, "Racial/ethnic composition: United States, 1980–2050," PolicyLink and USC Program for Environmental and Regional Equity, accessed June 6, 2019, http://nationalequityatlas.org/indicators/Race~ethnicity.

5 National Equity Atlas, "Median hourly wage by race/ethnicity: United States, 1980–2015," PolicyLink and USC Program for Environmental and Regional Equity, accessed June 6, 2019, http://nationalequityatlas.org/indicators/Wages%3A_Median.

6 Muro, Rothwell, Andes, Fikri, and Kulkarni, *America's Advanced Industries: What They Are, Where They Are, and Why They Matter*.

7 Thomas Piketty, Emmanuel Saez, and Gabriel Zucman documented the dramatic growth of income inequality in the United States, finding that while average pre-tax incomes for adults in the United States has grown by 60 percent over the past three decades, growth has largely been concentrated at the top end of the income distribution and stagnant for the bottom 50 percent of income earners. Thomas Piketty, Emmanuel Saez, and Gabriel Zucman, "Distributional National Accounts: Methods and Estimates for the United States," Working Papers 201603, *World Inequality Lab*, 2016, http://gabriel-zucman.eu/files/PSZ2017.pdf.

8 In *Equity, Growth, and Community,* Manuel Pastor and Chris Benner examined the relationship between regional economic factors (sectoral mix, workforce skills, job quality, growth), social equity, and political polarization. Using case studies of diverse regions across the country, they concluded that advancing racial and economic equity is good for economic growth, and best facilitated by the development of "epistemic communities"—local networks that produce shared knowledge and influence political discourse, public action, and regional governance—that include a diverse range of perspectives and experiences. Chris Benner and Manuel Pastor, *Equity, Growth, and Community: What the Nation Can Learn from America's Metro Areas*, (Oakland, California: University of California Press, 2015), http://growingtogethermetro.org/.

9 Richard Florida, Fabio Dias, and Patrick Adler recently updated previous research asserting the rise of "megaregions"—rather than nation-states—as the engines of the global economy. Richard Florida, "The Real Powerhouses That Drive the World's Economy," *City Lab*, February 28, 2019, https://www.citylab.com/life/2019/02/global-megaregions-economic-powerhouse-megalopolis/583729/.

10 Many others, including Maximiliano Dvorkin and Hannah Shell, have illustrated the increasing polarization of the U.S. labor market, showing the highest rate of growth among low-wage occupations and flat growth, or decline, in middle-wage occupations. Maximiliano Dvorkin and Hannah G. Shell, *Labor Market Polarization: How Does the District Compare with the Nation?* (St. Louis, MO: Federal Reserve Bank of St. Louis, 2017), https://www.stlouisfed.org/~/media/publications/regional-economist/2017/second_quarter_2017/district_overview.pdf.

11 William B. Bonvillian, "US Manufacturing Decline and The Rise of New Production Innovation Paradigms," OECD, accessed June 6, 2019, http://www.oecd.org/unitedstates/us-manufacturing-decline-and-the-rise-of-new-production-innovation-paradigms.htm.

12 Sarah Chaney, "U.S. Manufacturing Capacity Increases for 16th Month in a Row," *The Wall Street Journal*, October 16, 2018, https://www.wsj.com/articles/industrial-production-increased-0-3-in-september-1539696070.

13 David H. Autor and David Dorn, "The Growth of Low-Skill Service Jobs and the Polarization of the US Labor Market," *American Economic Review* 103 (2013): 1553–97, https://www.ddorn.net/papers/Autor-Dorn-LowSkillServices-Polarization.pdf.

14 Muro, Rothwell, Andes, Fikri, and Kulkarni, *America's Advanced Industries: What They Are, Where They Are, and Why They Matter*.

15 Enrico Moretti, *The New Geography of Jobs* (New York, NY: Mariner Books, Houghton Mifflin Harcourt, 2013), p. 97.

16 While we provide a brief description of the data and methods used for our analysis in what follows, more detail can be found in the methods document, available at https://www.policylink.org/resources-tools/regional-economies-in-transition-methodology.

17 Muro, Rothwell, Andes, Fikri, and Kulkarni, *America's Advanced Industries: What They Are, Where They Are, and Why They Matter*.

18 Service sector jobs include all private two-digit NAICS industries except for agriculture (11), mining (21), construction (23), and manufacturing (31-33). See the data and methods section for details on the index described here and other aspects of our analysis.

19 PolicyLink/PERE analysis of Integrated Public Microdata Series 2015 5-Year American Community Survey data. Universe includes all persons ages 25–64, living below 200 percent of the federal poverty level, in 150 U.S. metro areas.

20 Unless otherwise noted, data presented in this report are from our analysis. For in-depth information on the data and methodology used for the analysis, please see the methods document available at https://www.policylink.org/resources-tools/regional-economies-in-transition-methodology.

21 "Powerful multiplier effects mean every new advanced industry job supports more than two others," from Muro, Rothwell, Andes, Fikri, and Kulkarni, *America's Advanced Industries: What They Are, Where They Are, and Why They Matter,* p. 27.

22 Moretti, using data covering 320 metropolitan areas, found that each "high-tech" job in a region supports about five other jobs in the region, with two of those jobs being professional jobs (e.g., doctors and lawyers) and the other three being nonprofessional jobs (e.g., waiters and store clerks). The much higher multiplier effect found may be due in part to a focus on high-tech jobs and in part to a focus on metropolitan areas where larger multipliers would be anticipated than the nationwide rate. Moretti, *The New Geography of Jobs*, p. 60.

23 The estimates presented are based on estimated slope coefficients from simple ordinary least squares regression models in which the difference in the number of service jobs (overall and by entry-level education requirements) was regressed on the difference in number of advanced industry jobs between 2005 and 2015, across the 150 largest U.S. metro areas. Advanced service jobs were not double counted (i.e., they were excluded from the service job counts).

24 The average employment growth figures reported are unweighted averages across the regions indicated.

25 Available at https://www.policylink.org/resources-tools/regional-economies-in-transition-methodology.

26 Ibid.

27 Note that while some of the analysis breaks out traditional manufacturing separately, the measure of manufacturing decline used to construct the regional typology includes the entire manufacturing sector (including advanced industries). We did this for ease of explanation, and note that the resulting classification is very similar when restricting the "manufacturing decline" factor to traditional manufacturing.

28 Kathleen Green, "Projected New Jobs By Major Industry Sector, 2016–26," *Career Outlook*, U.S. Bureau of Labor Statistics, December 2017, https://www.bls.gov/careeroutlook/2017/data-on-display/projections-industry-sectors.htm?view_full.

29 Moshe Z. Marvit and Andrew Stettner, "Is There a Future for Good Manufacturing Jobs in the U.S.?" *The New York Times*, March 11, 2019, https://www.nytimes.com/2019/03/11/opinion/is-there-a-future-for-good-manufacturing-jobs-in-the-us.html.

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