

Renewing America's economic promise through
OLDER INDUSTRIAL CITIES



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Executive Summary

America's older industrial cities—Akron, Ohio and Albany, Ga.; New Bedford, Mass. and Newark, N.J.; St. Louis, Mo. and St. Paul, Minn.; and dozens of others in between—deserve renewed attention. They have endured wrenching economic transitions over the past several decades, yet many today exhibit important signs of momentum. Their innovative companies, knowledgeable workers, valuable infrastructure, and civic commitment make them potentially critical focal points for narrowing our country's growing societal and political divides.

This report provides an in-depth analysis of the key attributes of dozens of older industrial cities across the country, arguing that bottom-up efforts to better leverage their advantages, and address their disadvantages, can help achieve improved economic growth, prosperity, and inclusion for all. Its key findings include:

America must grapple with the economic, social, and political consequences of increasingly uneven growth. The broad decline of manufacturing employment, and the concentrated rise of high-tech employment, have produced highly uneven economic outcomes across the U.S. landscape over the past two decades. Many big cities and small towns in America's industrial belt have lower incomes today than in 1999 and are not sharing in the dynamic growth of high-tech companies and jobs. By leaving communities and their residents disconnected from economic opportunity, deepening regional inequality may hold back collective growth and threaten the social fabric on which a healthy democracy depends.

Seventy (70) older industrial cities, predominantly located in lagging parts of the Midwest and Northeast, represent valuable focal points for efforts to promote

economic growth and inclusion. These historical manufacturing centers, which have struggled over time to grow jobs in new sectors, collectively account for one-eighth of the U.S. population and economy. They represent much higher shares in large northern states such as Indiana, Michigan, Ohio, and Pennsylvania. From St. Paul, Minn. eastward to Lynn, Mass., these 70 communities are home to a racially diverse working class and serve as economic anchors for wider, politically contested suburban and rural areas. Strong national economies depend on the contributions of a range of urban areas, and the embedded innovation, knowledge, and infrastructure assets of these cities make them promising centers for efforts to improve regional opportunity.

Older industrial cities have lagged behind other urban areas on measures of economic performance, but some are regaining momentum. On three core dimensions of economic success—growth, prosperity, and inclusion—older industrial cities as a group underperform other urban areas, particularly on employment and income trends for their communities of color. Yet their aggregate outcomes mask important variation among these places, with Northeastern and larger cities outpacing their Midwestern and smaller

counterparts. These differences suggest four categories of older industrial cities—strong, emerging, stabilizing, and vulnerable—whose underlying assets and challenges position them differently for future economic growth and opportunity.

To navigate coming waves of economic change, leaders in older industrial cities must capitalize more fully on core assets while they address longstanding challenges. Older industrial cities must prosper amid wider regional, national, and global dynamics that shape opportunities for places and highlight those cities' key strengths and vulnerabilities:

- **Technological change:** Older industrial cities possess significant technological know-how as exhibited in their high levels of university research funding, patenting, and STEM degree attainment. But their declining employment in advanced industries points to their struggles in converting those assets into technology-enabled economic growth.
- **Urbanization:** Many older industrial cities are benefiting from an urbanizing economy given their significant job clusters and commitment to quality of place. But they face challenges in achieving and sustaining employment and residential momentum within their regions to support increased growth and opportunity.
- **Demographic transformation:** Older industrial cities are benefiting from the growth of a younger, more diverse workforce even as earlier generations approach retirement. Further, one-fifth of the nation's black working class residents live in these older industrial communities. Yet these cities must still overcome stark legacies of out-migration and segregation, expressed through racial disparities in educational attainment, earnings, and upward mobility that threaten their success in an increasingly pluralistic U.S. economy and society.

These assets and challenges, moreover, array differently across the four types of older industrial cities in ways that correspond closely to their

recent economic success, and suggest different priorities for their recovery and renewal.

To renew America's economic promise, state and local leaders must pursue inclusive economic growth in older industrial cities.

While federal policies matter for closing regional disparities, state and local leaders are best positioned to help people, firms, and places adapt to the digital revolution while undertaking structural reforms to ensure that historically underrepresented populations contribute to and benefit from economic growth. At the core are promising strategies to increase job creation, job preparation, and job access in older industrial cities. In New York and Ohio, cities are working to more deeply understand their specific technological capabilities, identify current and potential capabilities that have market promise, and build stronger bridges from their research and STEM assets to commercial application. In Indiana, Missouri, and Maryland, cities are helping their current and future workforces—particularly young people of color—gain skills and connections for a changing economy. In Michigan and Massachusetts, cities are working to reinforce urban growth in ways that ultimately put more economic opportunity within reach of low-income communities and workers of color. Finally, older industrial areas in Virginia and Michigan are embracing models that create region-wide capacity and commitment to sustain and coordinate these efforts over time. A national strategy to support broader economic prosperity should support the bottom-up innovation and civic commitment already at work in many of these markets.

This report ultimately aims to improve our understanding of older industrial cities' position in our modern economy, and to suggest ways in which we might better leverage their advantages and address their disadvantages, to achieve improved economic growth, prosperity, and inclusion for all. It seeks not only to inform and inspire leaders in these older industrial places, but also to speak to the concerns of all Americans committed to the interwoven health of our economy, society, and democracy.

*Renewing America's economic promise
through older industrial cities*



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I. Introduction

The promise of older industrial cities

This is a report about a particular class of cities that at one time were some of the heavyweights of the U.S. economy. They still anchor their local and regional economies, and many play important roles in the global economy. But due both to choices made long ago and to rapid changes happening today, these cities are neither realizing their full economic potential, nor making as significant a contribution to national prosperity as they could.

Macon (GA)



These cities are America's *older industrial cities*: Akron, Ohio and Albany, Ga.; New Bedford, Mass. and Newark, N.J.; St. Louis, Mo. and St. Paul, Minn.; and dozens of others in between.¹ Through much of the 20th century, they were the engines of America's unparalleled manufacturing prowess. Several retain monikers today—Steel City, Rubber City, Motor City, Flour City, Brew City—that reflect their historic production specializations. While most preserve some of that industrial might, all have struggled with more recent changes that have transformed the United States into an economy where services dominate. Many of these cities have endured wrenching economic transitions over the past few decades, the costs of which we see not only in their vacant factories and houses, but also in the human hardships—poverty, lack of educational opportunity, joblessness—endured by many of their families and communities.

These cities were built before many others in America, and around what are now considered to be older industries. Some might view their age as a handicap in a nation that likes new things: new cars, new homes, new buildings, new gadgets, even new spouses.² Newness appeals to our relatively wealthy, large, technologically savvy country. America, after all, was the original “New World,” in contrast to the “Old World” and its quaint villages that evoke the glories of kingdoms long expired.

But America is not quite as young as it used to be. It lacks the environmental, social, and fiscal luxuries it once had to continually plow new terrain. Moreover, amid great uncertainty on the country's economic horizon, past need not be prologue. Relentless technological innovation and demographic changes are shifting what businesses and individuals value in ways that may reposition our older communities.

As evidence, many older industrial cities today exhibit important signs of economic and demographic momentum, visible in increased investment, growing industries, and burgeoning residential activity. Like many places, these cities

will undoubtedly confront serious challenges in the years and decades ahead that result from technological change, increasing urbanization, and the demographic transformation of American society. Indeed, older industrial cities have been grappling with those emergent forces for decades now. Yet the underlying assets that our older industrial centers possess—their innovative companies, knowledgeable workers, valuable infrastructure, and civic commitment—could be essential contributors to our collective ability to tackle those challenges.

What is more, our older industrial cities could be critical focal points for narrowing our country's growing societal and political divides. These cities anchor wider regions of the country where prosperity has lagged. Resulting increases in geographic inequality have fueled growing partisanship in federal and state politics, accelerating divisions in media and the public realm, and declining faith in the American experiment. Although the nation's most distressed small towns and rural communities have recently attracted understandable public concern, the assets contained within the Heartland's major cities and urban areas make them a stronger bet for efforts to extend economic well-being more broadly. These places also represent an important locus for achieving the greater racial and ethnic inclusion on which a sustainable

“Our older industrial cities could be critical focal points for narrowing our country's growing societal and political divides.”

future U.S. economy will depend. Helping to fulfill the potential of these cities would thus yield not only economic benefits for our nation, but also close the “trust gap” that undermines confidence in government and institutions and threatens continued social progress.

This is not the first time Brookings Metro has examined the state of America’s older industrial cities and their prospects for the future. A little more than a decade ago, we published an assessment of these cities and the case for state investment in their assets.³ Many of that report’s themes echo throughout this one, because these cities are still grappling with many of the same issues identified then. Yet the past 10 years have also included momentous economic and societal changes: the Great Recession followed by a record-long economic expansion; the advent

of the smartphone and massive advances in technological capabilities; and tectonic political shifts at the national level across two presidential administrations. As this analysis argues, those changes and others justify a fresh look at the status and prospects of our older industrial cities.

This report aims to refresh and improve our understanding of older industrial cities’ position in our modern economy, both collectively and individually. It also suggests ways in which these places might better leverage their advantages, and address their disadvantages, to achieve improved economic growth, prosperity, and inclusion for all. Ultimately, this report seeks not only to inform and inspire leaders in these older industrial places, but also to speak to all Americans committed to the interwoven health of our economy, society, and democracy.

II. Context

The case for older industrial cities

The American economy is growing unevenly

This may seem an odd time to focus on economic woes. By a number of measures, the United States is riding the wave of once-in-a-generation growth. While the U.S. economy endured a long recovery from the global financial crisis of 2007-2009, as of mid-2017, it had finally erased the employment gap caused by the recession and population growth. At the time of this report's publication in early 2018, the U.S. unemployment rate has reached its pre-recession low at around 4 percent, and the U.S. economy has added jobs each month for more than seven years running—a postwar record.

Headline statistics, moreover, paint a picture of economic momentum broadly shared across the national landscape. Unemployment rates are more similar across metropolitan areas today than they were at similar points during the last two economic expansions.⁵ Adjusted for inflation, 90 of the 100 largest U.S. metropolitan areas had a larger regional economy in 2016 than in 2010.⁶

Yet these positive trends obscure deeper divides within America's economic landscape.

A longer view of the U.S. economy, for instance, reveals much less progress overall. For instance, only in 2016 did real median household income finally reach its previous high from 1999.⁷ In other words, the typical middle-class U.S. household

Brooklyn (NY)



did not experience an increase in its standard of living over the course of nearly two decades. Researchers point to factors including trade, technological change, slower productivity growth, reductions in worker bargaining power, reduced labor mobility, and a lower real minimum wage as contributing to a lack of long-run earnings progress for most U.S. households.⁸

Viewed geographically, economic progress is more dramatically uneven. In most U.S. urban areas, median household income is lower today than in 1999. A number of large, predominantly coastal metropolitan areas, together with a handful of small urban areas that sit on shale oil or gas, have managed to meet or exceed those previous highs. Yet there are more than 200 large and small urban areas, many of them in the Midwest and Southeast, where incomes are at least 5 percent lower, and in a number of cases at least 15 percent lower, than in 1999.

These income patterns reflect, on the one hand, the geographically concentrated decline of manufacturing employment over the past 20 years, a diverse set of sectors that together supported considerable numbers of middle-class jobs. After losing about 1.5 million manufacturing

jobs during the 2000-2001 recession, the United States continued shedding jobs in that sector—about 2 million in all—during the subsequent economic expansion to 2007.⁹ The Great Recession destroyed another 2.3 million manufacturing jobs in 2008 and 2009, only about 1 million of which the United States recovered in the eight years thereafter. David Autor and his colleagues show how the rise of Chinese imports contributed to manufacturing decline in precisely the areas of the country that exhibited the largest declines in median income.¹⁰

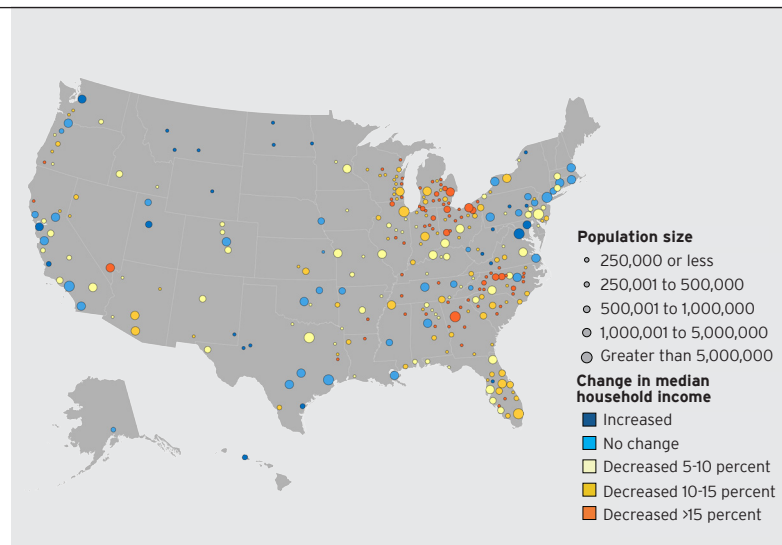
On the other hand, the patterns point to an increasing economic divide between the “coasts” and the “Heartland” in some of the more dynamic industries driving U.S. economic growth.¹¹ High-tech jobs provide one powerful example of this emerging divide. These jobs, typically associated with other important contributors to economic dynamism like entrepreneurialism and venture capital, have been amassing in a handful of large metropolitan areas, mostly on the East and West coasts.¹² From 2010 to 2016, just eight of these metro areas—San Francisco, New York, San Jose, Seattle, Dallas, Boston, Chicago, and Los Angeles—accounted for roughly half of net tech job growth nationwide.

FIGURE 2.1

Many places are short of their previous peaks for middle-class income

Change in median household income in metropolitan and micropolitan areas, 1999-2016

Note: Income changes are significant at 90% confidence level, excepting “no change” category.
Source: Brookings analysis of decennial Census and American Community Survey data



High-tech employment is but one example of a broader phenomenon in which dynamism is concentrating in a smaller number of larger places in the United States. Analysis from the Economic Innovation Group shows that during the 1990s, new business creation was occurring in places of all sizes.¹³ This was still true during the 2000s, although activity was shifting somewhat more in the direction of larger counties. In the first several

years of the current decade, however, counties with populations of at least 1 million accounted for nearly 60 percent of net new businesses created nationwide. Counties with populations under 100,000, by contrast, created no new businesses on net during that time. Others have observed this growing relationship between market size and economic vitality in the wake of the Great Recession.¹⁴

FIGURE 2.2

Tech job growth is highly concentrated in a few metro areas

Change in thousands of tech jobs, 2010-2016

Note: See Muro and Liu (2017) for definition of tech jobs.
Source: Brookings analysis of Moody's Analytics data

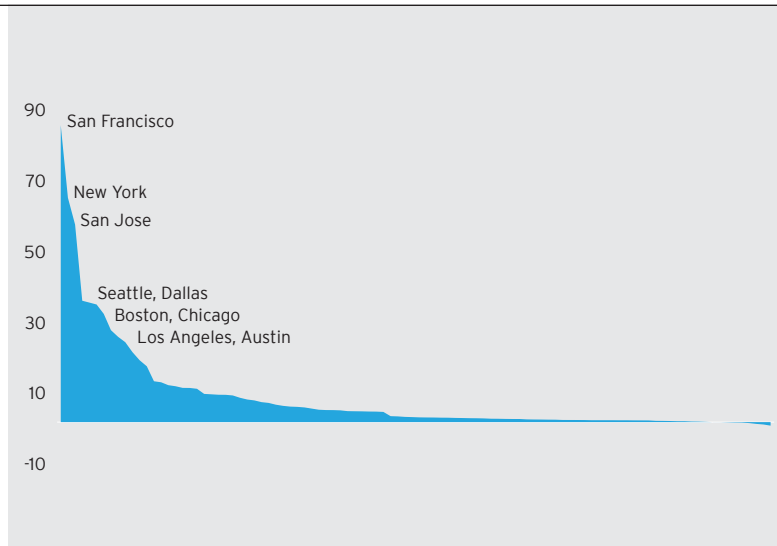
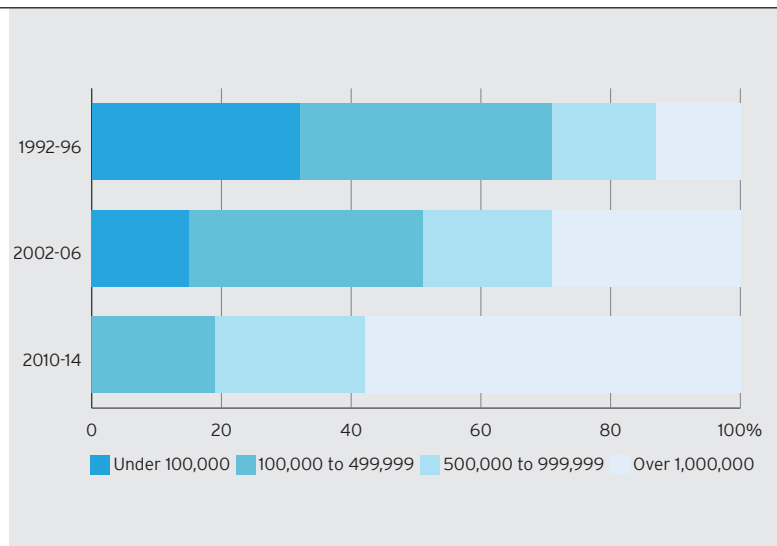


FIGURE 2.3

Business dynamism is concentrating in a smaller number of larger places

Share of net new businesses created by county population

Source: Economic Innovation Group



Uneven growth holds back collective prosperity

The simplest theories of economic geography suggest that uneven growth does not persist over time. As wages and home prices and traffic congestion become too high in successful places, employers and workers should migrate to lower-cost places, thus making regional economies more similar. This happened in 20th-century America, as underdeveloped Southern states—aided by innovations like modern air conditioning and local economic development incentives—caught up with Northern states on measures like per capita income.¹⁵

However, there are economic advantages to unevenness. Economist Alfred Marshall first described how the agglomeration of economic activity in a place can yield positive outcomes including reduced transportation costs, more efficient matching between workers and employers, and productive sharing of knowledge between firms.¹⁶ To the extent that these sorts of advantages outweigh the benefits that could be derived from relocating those activities, regions could diverge in their economic success over time.

Mounting evidence, in addition to the patterns observed above, demonstrates that U.S. regions are increasingly diverging in their economic outcomes. Economist Elisa Giannone shows that the wage gap between richer and poorer U.S. metro areas shrank from 1940 to 1980, but has grown since then, specifically for more educated workers. She concludes that this reversal reflects a mix of technology's increased rewards to highly skilled tech workers and local industry clustering.¹⁷

These dynamics have tended to disadvantage America's manufacturing regions, which are characterized by a distinctive economic geography. In these regions, factories grew not only in cities but also in smaller towns throughout the surrounding countryside that provided easy access to raw materials and transportation routes like rivers and railroads. The mill cities

of Massachusetts, the mining and steel towns of Western Pennsylvania, and the mid-sized cities of Michigan that formed around the auto supply chain all exemplify the distributed geography of 20th century industry. These supply chains formed economic clusters that crossed municipal and county lines and provided jobs close to where an increasingly suburbanized workforce lived. But as urban and small-town factories shuttered in these regions, they were left without the sorts of strong employment centers that characterized more diversified and knowledge-based economies like Boston, Chicago, and San Francisco, and that provided the basis for even more concentrated agglomerations of high-tech activity.

While being on the wrong end of growing regional inequality is certainly a problem for people who live in those places, it might not be a problem for a country's economy overall, if that inequality merely reflects the value of agglomeration.¹⁸ Many economists have argued for U.S. policy changes at the local level that, by increasing housing supply and affordability, could reinforce agglomeration in our most successful metropolitan areas by providing more opportunities for people to migrate there from less successful regions.¹⁹ Their models find that such changes could significantly raise aggregate economic growth. Not surprisingly, those arguments resonate at a time when the median single-family home price in San Francisco hovers around \$1.5 million.²⁰

Yet there are several reasons why we should also focus on policies to assist the United States' underperforming regions. First, long-distance migration is not what it used to be. Only 1.7 percent of Americans moved across state lines from 2016 to 2017, well below rates that exceeded 4 percent in the 1990s.²¹ Public policies could certainly do more to help resource-constrained workers and families to relocate.²² Even then, strong local social networks and deeply embedded cultural preferences will likely limit long-distance mobility. As the next chapters document, our lagging regions remain home to tens of millions of people and substantial economic and social assets. A sensible approach to improving access to economic opportunity for their residents

requires far more than policies predicated on mass numbers of people moving from the middle of the country to a few cities on the coasts.²³

Second, stark regional inequalities likely reflect more than market forces alone. Institutions that shape a regional economy's ability to use and develop its resources—governments, universities, civic organizations, banks, and the like—help determine its potential for growth. Over time, economically underperforming regions can see the quality of their institutions deteriorate, and thus experience what economist Thomas Farole and his colleagues term “durable underdevelopment.”²⁴ Examining the case of the European Union (EU), Farole and co-authors recommend interventions to improve capacities in lagging metropolitan regions through policies that support innovation, connection to larger regions, institutional modernization, and even targeted sectors. They justify such interventions partly on the basis of the EU's relatively low degree of labor mobility, which may inhibit the redistribution of these capacities over time. But similar place-based interventions arguably make sense for a decreasingly mobile U.S. population as well.

Third, a growing body of evidence indicates that economic growth can occur in parallel with reductions in regional inequality. Although some models of economic growth imply a trade-off between addressing regional inequalities and aggregate economic growth, recent research shows no relationship between the share of population in very large cities and overall economic growth in high-income OECD countries, particularly in those countries like the United States that also exhibit high income inequality.²⁵ Major public interventions like the advent of the Tennessee Valley Authority, the siting of the Centers for Disease Control in Atlanta, and the creation of Research Triangle Park in Raleigh-Durham contributed significantly to the South's catch-up in living standards during a period of robust national economic growth in the 20th century.

Fourth, regional inequalities in the United States today have undoubtedly deepened political divisions that threaten America's social cohesion and democratic institutions. As economist Benjamin Friedman observes, the moments in modern history when growth was not widely shared were precisely those times when political and social progress stalled.²⁶ Growing inequality and a lack of overarching economic possibility and opportunity in many of our communities has provided fertile ground for growing resentment across racial, ethnic, class, and geographic lines.²⁷ The resulting political divides have a distinctive economic geography, as the 2016 Electoral College map clearly shows.²⁸ Failing to address the increasingly uneven nature of U.S. growth may be not only economically unwise, but also foolhardy for our democracy.

Opportunity lies in older industrial cities

To the extent that our nation is having a public debate about regional inequality, participants frame it largely around the plight of rural areas. This is understandable. Small and remote areas have indeed struggled the most in the post-recession period to regain jobs and income. They inspire inquiry, too, because they were the epicenter of the unanticipated political earthquake that brought Donald Trump to the White House in late 2016. Questions of what we can do to revive rural America's fortunes thus abound.²⁹

This report advances a somewhat different proposition for how to close our economic and social divides. It asserts that we should focus first on our *cities*, because their assets in a technology-driven, urbanizing, diversifying economy and society make them promising centers for efforts to broaden growth and opportunity in the United States. The cities that need our focus are not those like Boston and Houston and San Francisco and Seattle that are already playing at the highest echelons of the global economy.

Rather, we should commit to the renewal of our *older industrial cities*, the economic anchors for regions of the country that remain at high risk of being left behind.

This is not the first report to argue for a focus on older industrial cities. The last decade—dating to a Brookings report from 2007—has featured a number of studies of places in the United States and abroad that share a set of similar characteristics (see “Other research on older industrial cities” in next chapter). This study and others are predicated on the idea that not only do these older industrial cities merit increased attention due to their economic assets and challenges, but also they are worth considering as a *group*, notwithstanding that they may possess different paths to future success. What shared features make these places a unique group today?

- **Urban form:** Older industrial cities share a history of significant manufacturing activity, which led them to develop their land in quite different ways than cities where services traditionally dominated the economic landscape. Large swaths of land in these places were dedicated to low-slung production facilities. These were not as easily repurposed for new uses when companies failed or moved their operations as other commercial buildings, so most older industrial cities feature considerable amounts of vacant manufacturing land. Manufacturing job loss in most of these cities contributed to population loss, which in turn yielded oversupply and vacancy in their housing markets, most concentrated in formerly working-class neighborhoods that today exhibit high levels of poverty. Despite these challenges of urban form, most older industrial cities also boast historically significant architecture and public lands, the legacy of the wealth and beneficence of their early 20th century industrialists.
- **Human capital:** The legacy of older industrial cities’ shared history in manufacturing is also embedded in what their existing companies

and workers know how to do. These are the original “maker cities,” and their expertise in production processes—and increasingly, the advanced technologies that enable those processes in modern firms—potentially sets them apart in the global marketplace.^{30 31} At the same time, as economist Ed Glaeser has observed, leaders in many of these cities and their states—particularly those in the eastern part of the Midwest—were historically slower to invest in broad access to secondary and higher education, which were not prerequisites to a middle-class lifestyle when unionized factory jobs were plentiful.³² As a result, residents of these cities generally possess lower levels of formal educational attainment than those in services-oriented cities, in an age when many employers regard those credentials as markers of a productive and adaptable workforce.

- **Culture:** Innumerable factors contribute to the culture of a place, such as where its residents originally came from, what they do for a living, and the characteristics of their surroundings. In these respects, the older industrial cities of the Midwest and Northeast continue to share a great deal in common: populations shaped by European immigration and black migration from the South; a tradition of hard and often physically demanding work; and the struggle for resiliency in the face of long-run economic hardship. For as much strength as they draw from their shared culture, however, these cities’ fraught history of management-labor relations and pronounced racial segregation remain aspects of their contemporary societies that they must overcome to secure a better future.³³

³⁴

We should care about the success of these older industrial cities not only for the sake of their residents and communities, but also because strong national economies depend on the contributions of a range of urban areas. Economists David Castells-Quintana and Vicente Royuela find that rather than relying on a small set of very large cities, “A more balanced urban system, in which small and medium-sized cities

play a fundamental role in the mobilization of local assets to exploit local synergies, seems to be a better strategy than intense urban concentration.”³⁵ Compared to many of its advanced-economy counterparts, the United States is blessed with a wide range of urban areas from which to draw economic strength. As journalist Henry Grabar observes, vibrant smaller cities can act as an important hedge against the uncertain health of very large cities amid hazards like war, climate change, or automation.³⁶

Of course, our country is a union of states that themselves have considerable influence over the trajectories of their cities. And since 2010, states in which greater shares of the population live in cities with 50,000 or more residents have grown jobs more quickly than their less urban counterparts. This is true not only for states with a few large superstar cities (see: California, New York, Texas), but also for states with a range of important cities, like Colorado, Oregon, and Tennessee. It may be that state economic fortunes increasingly rely on the presence and health of major cities.

A call to focus on cities is not a call to abandon rural areas. Far from it. Indeed, many of the cities

on which this report focuses are highly proximate to small towns and rural counties in states like Indiana, Ohio, Pennsylvania, and Virginia, places that face very difficult economic circumstances. Creating greater momentum in those cities might put more jobs within commuting distance of small-town residents, or might be the difference between younger people building a career near their families and hometowns, and leaving their home state or region altogether. And proximate urban and rural areas, as many have observed, trade with one another in ways that contribute to a virtuous economic symbiosis.³⁷

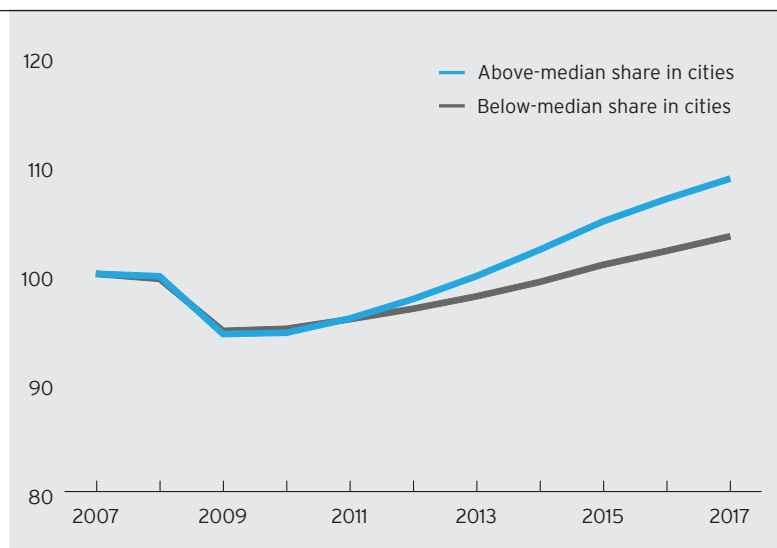
Not all older industrial cities may ultimately achieve increased growth and opportunity. Many, as noted at the outset, have been ravaged by economic and demographic changes and undermined by public policies, to the degree that they may lack the scale and savvy to help sustainably reverse a growing tide of regional inequality. But for all their challenges, older industrial cities are places where one can build on strengths—of innovative companies, knowledgeable workers, valuable infrastructure, and civic commitment. The next chapter defines and explores these cities more deeply.

FIGURE 2.4

Employment is growing faster in states where more people live in cities

Indexed employment growth by state and share of population in cities

Note: Cities defined as municipalities with population exceeding 50,000.
Source: Brookings analysis of Moody's Analytics and American Community Survey data



III. Definitions

What and where are older industrial cities?

As the previous section argues, the future of the U.S. economy, and that of the democratic institutions which undergird it, depend on whether more places are able to enjoy increased growth and opportunity. This section identifies a set of places in the United States that over the past few decades have not fully shared in national prosperity, yet may nonetheless possess many of the underlying assets that could help them contribute to increased future growth and opportunity, ultimately benefiting their residents.

Lynchburg (VA)



Other research on older industrial cities

This report, including its approach to defining older industrial cities, builds on the work of several other reports published in recent years looking at the special economic, social, and physical attributes, contributions, and challenges of these cities.

The **older industrial cities** label emerged in the 1990s and 2000s in a series of academic and popular articles exploring the fortunes of what were variously termed “older manufacturing cities” and “post-industrial cities” like Pittsburgh, Cleveland, and Philadelphia.^{38 39 40} It gained added prominence with the publication of the 2007 Brookings report, *Restoring Prosperity*, and the subsequent creation of a philanthropic affinity group dedicated to grant-making in older industrial cities.^{41 42} The original Brookings report defines older industrial cities on the basis of subpar performance in the 1990s on economic and social outcomes, synonymous with “weak market” status.

Many subsequent examinations of older industrial cities focus on **population loss** as a particularly pernicious contributor to—and marker of—these cities’ challenges. Researchers associate this dynamic most closely with “legacy cities” or “shrinking cities,” both in the United States and Europe.^{43 44 45} This work naturally gives significant policy attention to issues like abandonment, re-use of vacant residential and industrial properties, and historic preservation.⁴⁶

Other research considers **economic history** as a defining feature of older industrial cities. Alec Friedhoff and co-authors focus their work on metropolitan areas where manufacturing represented more than 20 percent of employment in 1980, and in particular on those 76 metro areas in which job and wage growth lagged national averages through 2005.⁴⁷ That work shares a lineage with research by Travis St. Clair and co-authors examining “chronically distressed” metropolitan areas that lagged others on employment and GDP growth from the 1970s to the late 2000s.⁴⁸ Similarly, Emily Engel and Susan Longworth summarize research that identifies 47 Midwestern “industrial cities” that in 1960 had at least 50,000 residents and in which manufacturing accounted for at least 25 percent of employment.⁴⁹ These and other efforts examine the implications of city and regional economic decline and transition for state and local economic and workforce development policies.⁵⁰

As these summaries indicate, different reports adopt different **geographic definitions** of older industrial status. Most focus on municipalities as the primary locus of concern, given the often acute economic, social, and fiscal challenges these urban cores face. Others examine wider metropolitan areas as a window into the regional economic dynamics that influence the fortunes of urban places.

Three criteria inform a definition of older industrial cities

In this report, we adopt a new method to identify older industrial cities that borrows in part from past efforts that examined these places (see “Other research on older industrial cities”). Three criteria inform our approach to this new definition, through which we aim to:

- Describe economic (versus political) geographies that capture shared heritage and trajectory;
- Identify communities with a similar economic heritage, defined by historical reliance on manufacturing industries; and
- Examine divergence in performance across time, identifying places that de-industrialized while successfully creating new forms of economic value, versus places that did not weather the transition as well

In short, we define an older industrial city as **a significant urban area with a history in manufacturing that has struggled over time to grow jobs in new sectors**. Based on these criteria, we adopted the following approach to identifying older industrial communities.

First, we use counties to represent older industrial cities for a few reasons. Historical economic data are more readily available for counties than for cities. Counties also represent a middle ground between cities, which in most cases do not fully capture the local economy, and metropolitan areas, which in most cases contain significant suburban and exurban territory and thus fail to represent the unique assets and challenges facing the older industrial urban core. Moreover, many of the challenges that previous research has identified as characterizing older industrial cities—poverty, vacancy, low growth, aging infrastructure—are nearly as present in many of the urban counties surrounding those cities

today.^{51 52} We refer to the ultimate set of these places interchangeably as older industrial *cities*, *counties*, and *communities*, and thus frequently abbreviate them as “OICs.”

For each U.S. county, we assess three attributes to decide if it is an OIC:

1. **Presence of a major urban center.** We identify 365 **urban** counties that contain a city with at least 50,000 residents in 2016.⁵³ While many smaller places exhibit an older industrial heritage, it is challenging to generalize the experience of these small places together with that of larger places. We hypothesize that these larger urban areas, in general, possess a scale and set of assets that provide them with categorically different economic opportunities than smaller cities.⁵⁴

2. **Industrial heritage.** Of those 365 urban counties, we identify 185 **urban industrial** counties in which manufacturing represented at least 20 percent of all jobs in 1970.⁵⁵ This is slightly below the overall share for urban counties at that time (25 percent), but accounts for the fact that many places, especially in the Northeast, had already undergone significant deindustrialization by that time. These counties together contained nearly half of all U.S. manufacturing jobs in 1970.

3. **Competitive challenge.** Of those 185 industrial urban counties, we identify 70 **older industrial** counties that transitioned less successfully than other industrial counties from 1970 to 2016. To identify them, we take each county’s employment-by-industry structure as of 1970 and assume that jobs in each sector grew at the same rate they did nationally from 1970 to 2016. We then compare total county employment implied by that calculation in 2016 to actual total county employment in 2016. If the county has significantly fewer jobs than national trends would have predicted (at least 3 percent fewer, in our definition), we conclude that some local factors (rather than exclusively national/global factors) held back job growth and classify it as an OIC.⁵⁶

FIGURE 3.1

365 urban counties contain a city with at least 50,000 residents

Urban counties, 2016

Source: Brookings analysis of Moody's Analytics and U.S. Census Bureau data

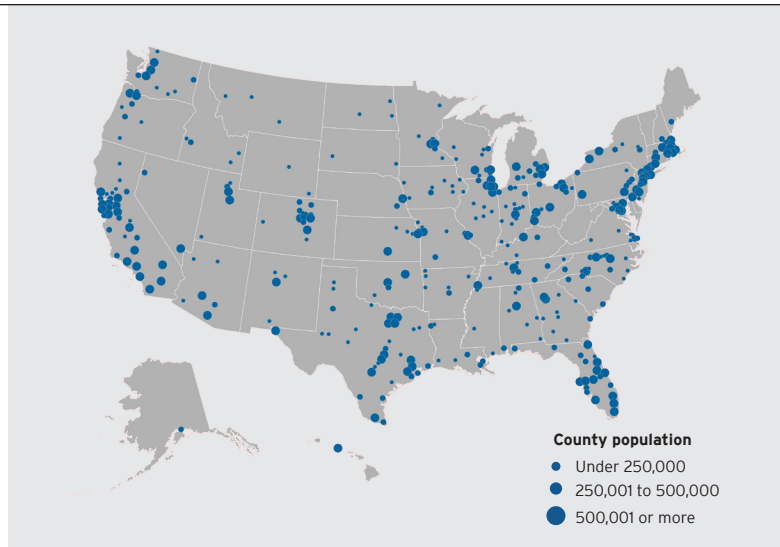


FIGURE 3.2

185 urban industrial counties had a significant history in manufacturing

Urban industrial counties, 2016

Source: Brookings analysis of Moody's Analytics and U.S. Census Bureau data

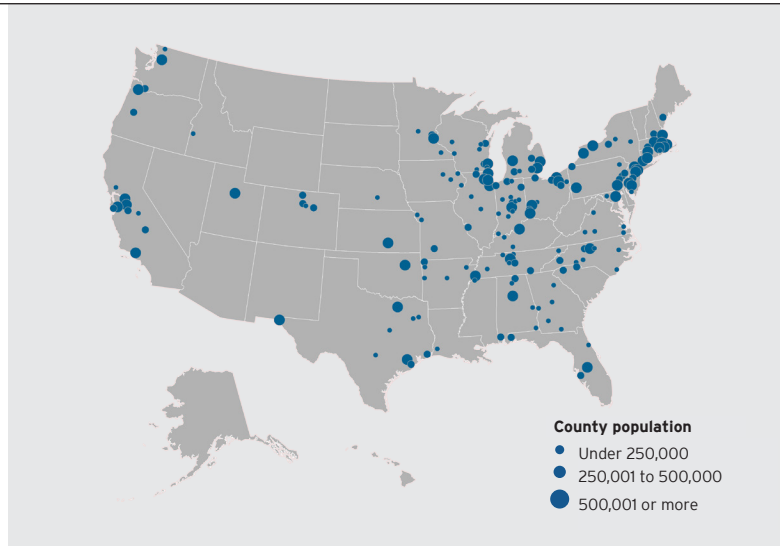


FIGURE 3.3

70 older industrial counties have struggled over time to grow jobs in new sectors

Older industrial counties, 2016

Source: Brookings analysis of Moody's Analytics and U.S. Census Bureau data

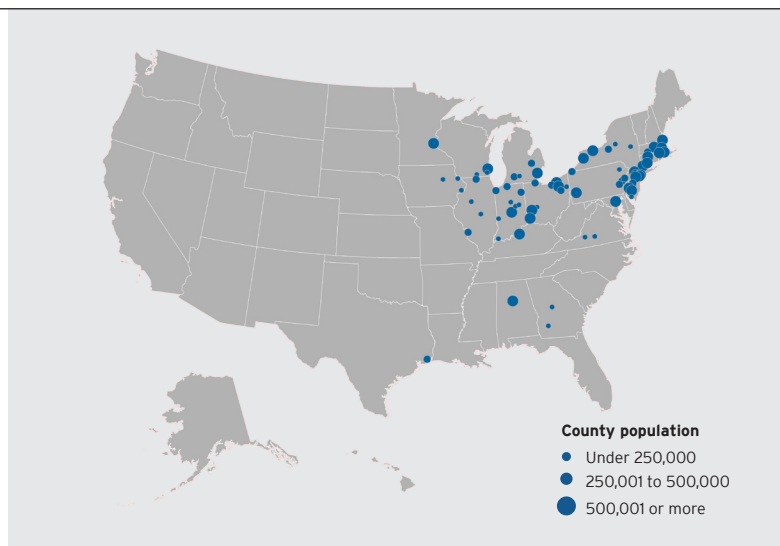


FIGURE 3.4

70 older industrial communities are located in 20 different states*Older industrial counties, largest cities, and county populations by state*

County Name	State	Largest City	2016 Population
Jefferson County	AL	Birmingham	659,521
Fairfield County	CT	Bridgeport	944,177
Hartford County	CT	Hartford	892,389
New Haven County	CT	New Haven	856,875
Bibb County	GA	Macon	152,760
Dougherty County	GA	Albany	90,017
Macon County	IL	Decatur	106,550
Peoria County	IL	Peoria	185,006
Winnebago County	IL	Rockford	285,873
Allen County	IN	Fort Wayne	370,404
Delaware County	IN	Muncie	115,603
Howard County	IN	Kokomo	82,568
Lake County	IN	Hammond	485,846
Madison County	IN	Anderson	129,296
Marion County	IN	Indianapolis	941,229
St. Joseph County	IN	South Bend	269,141
Vanderburgh County	IN	Evansville	181,721
Vigo County	IN	Terre Haute	107,931
Black Hawk County	IA	Waterloo	132,904
Dubuque County	IA	Dubuque	97,003
Scott County	IA	Davenport	172,474
Jefferson County	KY	Louisville/ Jefferson County	765,352
Baltimore city	MD	Baltimore	614,664
Bristol County	MA	New Bedford	558,324
Essex County	MA	Lynn	779,018
Hampden County	MA	Springfield	468,467
Norfolk County	MA	Quincy	697,181
Worcester County	MA	Worcester	819,589
Calhoun County	MI	Battle Creek	134,386
Genesee County	MI	Flint	408,615
Kalamazoo County	MI	Kalamazoo	261,654
Wayne County	MI	Detroit	1,749,366
Ramsey County	MN	St. Paul	540,649
St. Louis city	MO	St. Louis	311,404

Camden County	NJ	Camden	510,150
Cumberland County	NJ	Vineland	153,797
Essex County	NJ	Newark	796,914
Mercer County	NJ	Trenton	371,023
Passaic County	NJ	Paterson	507,945
Union County	NJ	Elizabeth	555,630
Erie County	NY	Buffalo	921,046
Kings County	NY	New York (Brooklyn)	2,629,150
Monroe County	NY	Rochester	747,727
Oneida County	NY	Utica	231,190
Onondaga County	NY	Syracuse	466,194
Queens County	NY	New York (Queens)	2,333,054
Schenectady County	NY	Schenectady	154,553
Clark County	OH	Springfield	134,786
Cuyahoga County	OH	Cleveland	1,249,352
Hamilton County	OH	Cincinnati	809,099
Lorain County	OH	Lorain	306,365
Lucas County	OH	Toledo	432,488
Mahoning County	OH	Youngstown	230,008
Montgomery County	OH	Dayton	531,239
Stark County	OH	Canton	373,612
Summit County	OH	Akron	540,300
Allegheny County	PA	Pittsburgh	1,225,365
Berks County	PA	Reading	414,812
Erie County	PA	Erie	276,207
Lackawanna County	PA	Scranton	211,321
Lehigh County	PA	Allentown	363,147
Northampton County	PA	Bethlehem	302,294
Philadelphia County	PA	Philadelphia	1,567,872
Providence County	RI	Providence	633,673
Jefferson County	TX	Beaumont	254,679
Roanoke city	VA	Roanoke	99,660
Campbell + Lynchburg, VA	VA	Lynchburg	135,164
Milwaukee County	WI	Milwaukee	951,448
Racine County	WI	Racine	195,140
Rock County	WI	Janesville	161,620

Source: Brookings analysis of Moody's Analytics and U.S. Census Bureau data

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Older industrial communities exhibit a series of important group attributes

Four aspects of OICs as a group deserve note: their size, location, demographics, and political profile.

- **OICs represent one-eighth of the U.S. population and economy.** Altogether, the 70 OICs occupy just 1 percent of U.S. land mass (34,000 square miles), but contain 38 million residents, or 11.7 percent of U.S. population. Among the 70 are 16 cities that rank among the 100 largest in the country, from Philadelphia (1.6 million) to Buffalo (257,000).⁵⁷ They encompass a slightly larger share of U.S. jobs (12.2 percent) and GDP (12.0 percent) than population, indicating their role as centers of commerce within both national and regional economies.
- **OICs are concentrated in the Midwest and Northeast.** As the map of older industrial cities clearly indicates, the vast majority—62 of the 70—are located in Midwestern and Northeastern states. (Two of the remaining eight—Baltimore and Louisville—are in states that abut those regions of the country.) Together they comprise the nation’s historical (and much of its contemporary) industrial belt, forged along major waterways and railways and proximate to the key inputs—agriculture, coal, iron ore,

timber—that fueled their rise through the late 19th and early 20th centuries. As the 20th century progressed, much of this industrial activity migrated southward, creating a new map of American manufacturing that includes many cities and regions in the Southeast. Many of those places are struggling today with deindustrialization dynamics that have affected their Northern counterparts for several decades, as production further mechanizes and moves offshore. A few counties in Virginia, Alabama, and Georgia already qualify as older industrial places, but many more could in the coming years if current trends persist (see “Future [not] older industrial cities?” in next section).

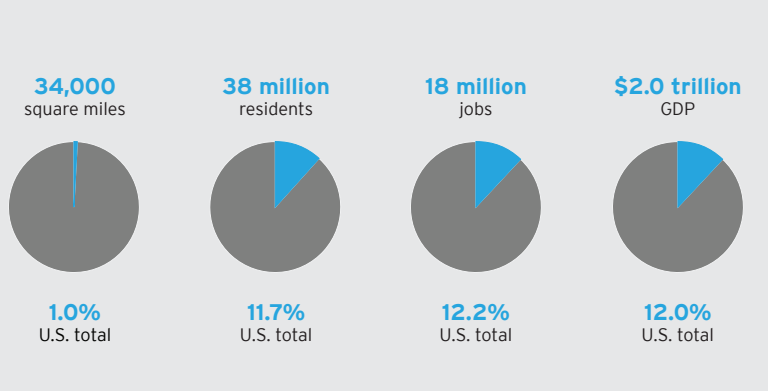
One consequence of OICs’ regional clustering is that they hold considerable economic sway in a number of important states. In Indiana and Ohio, which have nine OICs each, those counties represent 40 percent of statewide population, and generate nearly half of their states’ GDP. OIC shares of statewide GDP exceed one-third in Massachusetts and Pennsylvania, reach 31 percent in New Jersey, and equal one-quarter in Michigan and New York.⁵⁸

- **OICs contain significant shares of the nation’s working-class individuals—both black and white.** Demographically, older industrial cities anchor a region of the country that experienced its most rapid growth during an era of mass immigration from Europe and

FIGURE 3.5

OICs are significant demographically and economically

Attributes of 70 older industrial counties, 2016



Source: Brookings analysis of Moody’s Analytics and U.S. Census Bureau data

the “Great Migration” of African-Americans from the South, groups that sought new opportunity in booming urban factories. While recent decades have seen black population slowly return to the South and new groups of Hispanic and Asian immigrants and refugees populate the Northeast and Midwest, older industrial communities remain predominantly white and black places. In 2016, the population of the 70 older industrial counties was 59 percent white, 21 percent black, 13 percent Hispanic, and 6 percent Asian. Three–Bibb and Dougherty counties in Georgia (home to Macon

and Albany), and Baltimore City—are majority-black places.⁵⁹

Given their historic strength in production industries that offered plentiful employment to workers without higher education, these counties today contain a diverse cross-section of America’s so-called working class, adults who do not possess a college degree and whose labor market outcomes have suffered in recent decades. Older industrial counties house 11 percent of the nation’s white working class, similar to their overall share of U.S.

FIGURE 3.6

OICs account for significant shares of population and economic activity in several states

OIC share of statewide totals for states with OICs, 2016

State	OICs (#)	Population (%)	Jobs (%)	GDP (%)
Connecticut	3	75	80	83
Rhode Island	1	60	61	61
Indiana	9	40	47	48
Ohio	9	40	45	46
Massachusetts	5	49	42	39
Pennsylvania	7	34	36	36
New Jersey	6	32	32	31
Kentucky	1	17	25	26
New York	7	38	29	26
Michigan	4	26	25	25
Wisconsin	3	23	22	22
Alabama	1	14	19	20
Iowa	3	13	15	13
Maryland	1	10	13	12
Minnesota	1	10	12	12
Missouri	1	5	8	9
Illinois	5	5	5	4
Georgia	4	2	3	3
Virginia	2	3	4	3
Texas	1	1	1	2

Source: Brookings analysis of Moody’s Analytics and U.S. Census Bureau data

population, but nearly 20 percent of its black working class. These places thus represent an important geographic locus for understanding and addressing the economic prospects of racially diverse demographic groups left behind in recent economic cycles.

- **OICs anchor politically contested areas of the country.** Older industrial cities are numerous in many of the swing states that traditionally decide presidential elections and the balance of power in Congress, including Michigan, Ohio, Pennsylvania, and Wisconsin. More than that, these urban areas anchor wider

regions that were closely contested between the Democratic and Republican presidential tickets in 2016. To be sure, OICs themselves remain fairly “blue.” Overall, Hillary Clinton captured 59 percent of total votes in OICs, compared to 36 percent for Donald Trump, and Clinton carried 51 of the 70 counties. In this respect, OICs leaned slightly more Democratic than urban counties nationally. Yet the counties adjacent to OICs were more “purple,” with 50 percent of their voters choosing Clinton, and 44 percent choosing Trump. Trump won a majority of votes in 224 of those OIC-adjacent counties, compared to only 50 for Clinton. These patterns

FIGURE 3.7

OICs contain a disproportionate share of America’s black working class

Share of non-college adults living in older industrial counties by race/ethnicity, 2016

Source: Brookings analysis of American Community Survey data

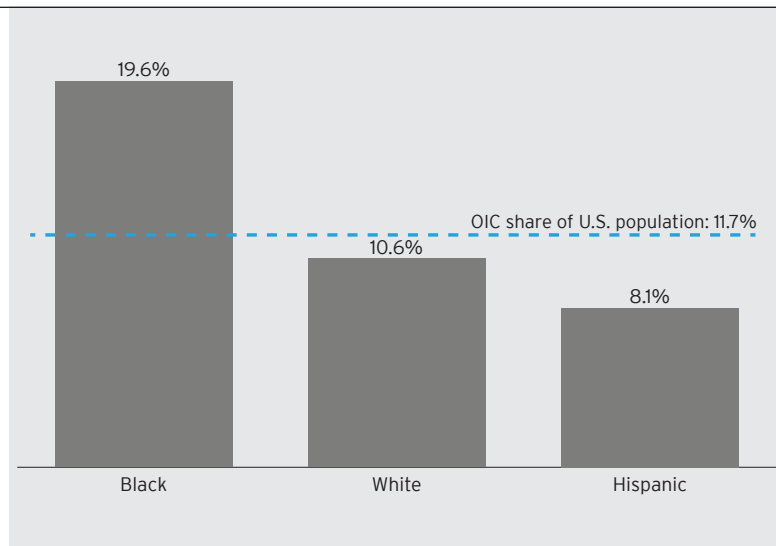


FIGURE 3.8

OICs voted “blue” in 2016, but their surrounding areas were more “purple”

Presidential voting patterns by county type, 2016

County type	Clinton (%)	Trump (%)	Other (%)	Clinton counties (#)	Trump counties (#)
Total	48.1	45.9	6.0	474	2,610
Urban	55.2	38.4	6.4	189	175
OIC	59.3	35.7	5.0	51	19
OIC-adjacent	50.4	44.0	5.6	50	224

Source: Brookings analysis of data from *The Wall Street Journal*

suggest that the economic fortunes of many of the places that matter most to the nation's politics are closely linked with those of older industrial cities.

Notwithstanding their collective importance and distinctive profile, older industrial counties are a diverse lot. The next chapter introduces a typology of these counties based on recent economic trends, but one immediately apparent source of their diversity is size. The 70 counties range in population from just 83,000 (Howard County, Indiana, home to Kokomo) to 2.6 million (Kings County, New York, equivalent to the borough of Brooklyn). Of those 70 counties, 29 are large (populations exceeding 500,000), 22

are small (populations less than 250,000), and the remaining 19 are medium-sized (populations from 200,000 to 500,000). Small older industrial counties are, in general, more concentrated in the Midwest—the state of Indiana alone accounts for five—while larger older industrial counties are more often located in the Northeast, reflecting regional differences in political/administrative geography as well as differences in economic geography. Size is not the only differentiator among older industrial counties, nor necessarily the most important one, but as the subsequent analysis shows, it does seem to be associated with the economic opportunities and challenges facing these places in the years ahead.

IV. Performance

How are older industrial cities faring?

To properly assess the future economic potential of the nation's older industrial communities, it helps to understand their past. Analyzing how older industrial counties have fared economically not only points to the general sorts of economic challenges these cities and their residents continue to face, but also suggests a typology of communities that points to different pathways for securing their future economic prosperity.

Pittsburgh (PA)



Economic success combines growth, prosperity, and inclusion

We assess the performance of local and regional economies based on a more expansive definition than typical headline metrics such as population, job growth, or the unemployment rate. We adapt the definition from a framework developed for Brookings's Metro Monitor.⁶⁰ While headline statistics measure outcomes that certainly matter, they constitute only part of what true economic development should seek to achieve: putting local economies on a higher trajectory of long-run *growth*, by improving the productivity of individuals and firms in order to raise local standards of living (*prosperity*) for all people (*inclusion*). We use a series of indicators to examine outcomes over time in each of these three areas—growth, prosperity, and inclusion—for the 70 older industrial counties. By category, those indicators include:

- **Growth:** GDP (gross value added); jobs; and jobs at young firms (those less than five years old)
- **Prosperity:** GDP per job; and per-capita household income
- **Inclusion:** Prime-age employment-to-population ratio; and median household income

We also measure inclusion outcomes within these counties by race/ethnicity, and by place (using measures of concentrated poverty and economic segregation) to determine whether and how well prosperity is shared across population groups and communities.

We compare outcomes for older industrial counties overall to those for the wider universes of urban counties (365 containing a city with at least 50,000 people in 2016) and urban industrial counties (185 urban counties where at least 20 percent of jobs were in manufacturing in 1970), as well as for the nation as a whole.

OICs have—by definition—grown slowly

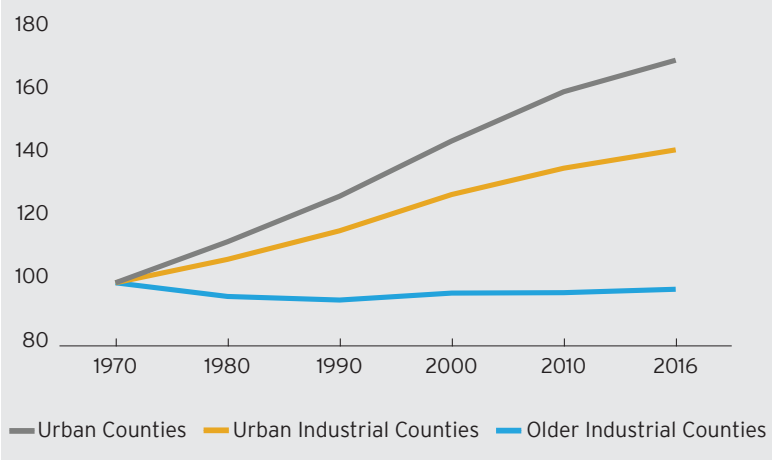
Older industrial counties have experienced less growth over time than urban counties overall. This is embedded in how we define these places, as experiencing less job growth from 1970 to 2016 than one would have expected based on their economic structure in 1970. But the growth differences are nonetheless striking.

Although population growth is not a core part of how we define economic success, a lack of such growth—and in many cases, absolute decline—markedly characterizes the experience of older industrial places. In the aggregate, population

FIGURE 4.1

Older industrial communities have not grown in population since 1970

Indexed population growth, 1970-2016



Source: Brookings analysis of decennial census and American Community Survey data

in the 70 older industrial counties (roughly 37 million) is nearly the same today as it was in 1970. That compares to increases of 42 percent in urban industrial counties, and 71 percent in urban counties over the 46-year period. While not uniform, many older industrial counties suffered significant population declines in the 1970s and 1980s amid rapid contraction in the manufacturing industry and accelerating middle-class migration to suburbs and other regions of the country.

The population trend in OICs is mirrored in lagging growth in both jobs and GDP in these communities over time. Overall, jobs in these counties rose by nearly one-quarter between 1970 and 2016, equivalent to 3.5 million jobs. That OICs experienced job growth despite no net population growth reflects the fact that most remain important centers of employment for a local workforce that suburbanized over time. Yet job growth was much stronger in other types of areas—76 percent in urban industrial counties, and 108 percent in urban counties overall. OICs have kept slightly better pace on GDP growth, with a 78 percent expansion between 1980 and 2016, though still well short of increases in urban industrial (139 percent) and urban (154 percent) counties over time. That GDP kept growing in older industrial communities even as they shed significant numbers of factory jobs

can be attributed to productivity gains in the manufacturing sector.

The recent picture is relatively brighter on a key measure of economic dynamism, the number of jobs at firms less than five years old. While this indicator has fallen for the nation as a whole and all types of urban communities over time, OICs have fared similarly to other places, and have seen modest growth in young-firm employment since 2012.

.....

OICs lag similar places on prosperity

Prosperity reflects the degree to which economic opportunity is accruing to the average worker and household in a local area. In this sense, it measures the “quality” of growth. An economy can expand by adding inputs (e.g., population and workers), but see its prosperity decline if that growth doesn’t result in higher-value, higher-paying jobs and increased income for its residents. Likewise, an economy could grow slowly or contract, but could experience increasing prosperity if it sheds lower-value activities in the process.⁶¹

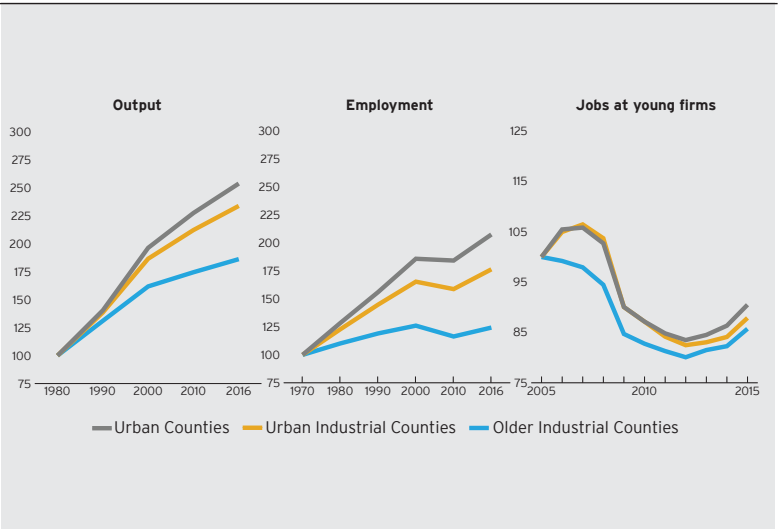
Increases in productivity, or the amount of GDP generated per job, contribute to local competitiveness and tend to drive long-term wage

FIGURE 4.2

OIC economies have, by definition, grown more slowly than others

Indexed output, employment, and jobs at young firms

Note: Jobs at young firms refers to employment at firms less than five years old.
Source: Brookings analysis of Moody’s Analytics and Census Bureau data



growth. In this regard, OICs have tracked national trends over time, registering steady productivity gains in the 1980s, 1990s, and 2000s, but stalling since 2010. Even as urban and urban industrial counties eked out small productivity gains from 2010 to 2016, older industrial communities essentially flat-lined, suggesting no real improvement during the recovery in the average quality of their jobs. Average GDP per job in OICs in 2016 was \$111,000, below the \$118,000 average across urban industrial counties.

The overall picture on per-capita income in OICs is somewhat brighter, but only relative to the trend in other places. Average income per household member was \$30,900 in older industrial counties in 2016, barely higher than the \$30,000 figure in 1999. Urban and urban industrial counties also

posted similarly modest increases in per-capita income over that time, though they register slightly higher averages than OICs on this measure in 2016.

Employment has rebounded, but incomes have not, in OICs

Inclusion, a third economic success dimension, reflects how the benefits of growth and prosperity are distributed among individuals, particularly by income, race, and place. Growing inequality of all types in the U.S. economy in recent decades has made economic inclusion an increasingly central concern for public, private, and civic sector officials at all levels. The two

FIGURE 4.3

OIC economies are lagging on prosperity

Indexed productivity and per capita income

Source: Brookings analysis of Moody's Analytics, decennial census, and American Community Survey data

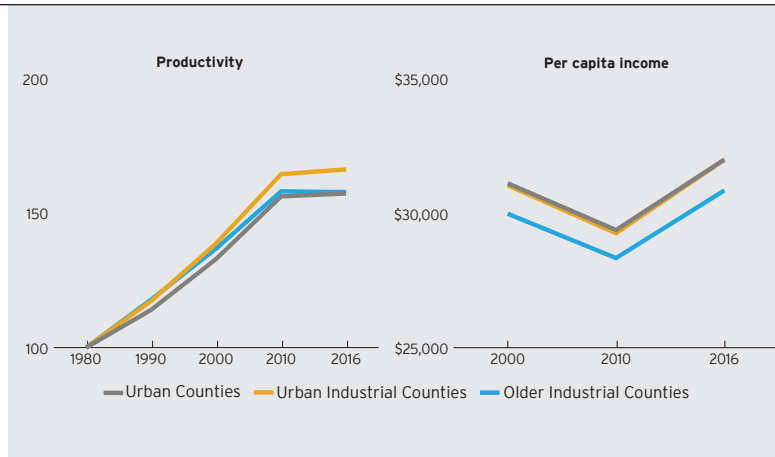
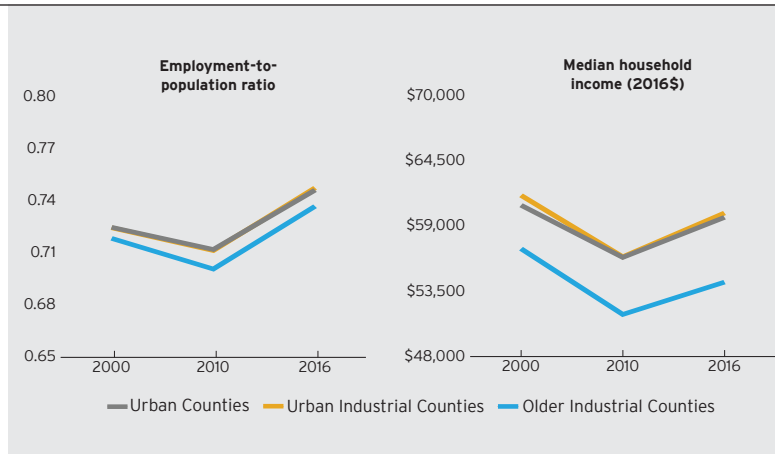


FIGURE 4.4

OIC economies are rebounding on employment but not income

Employment-to-population ratio and median household income, 2000-2016

Note: Employment-to-population ratio is calculated among the civilian population aged 25-64.
Source: Brookings analysis of decennial census and American Community Survey data



measures here—the share of prime-age adults (25 to 64 years old) who are employed, and median household income—suggest the degree to which local economies are boosting participation for potentially marginalized workers, and delivering earnings gains that accrue to typical households and families.

On employment, OICs actually fare quite well. Notwithstanding their slower rates of job growth, 73.6 percent of prime-age adults in older industrial communities were employed in 2016, only slightly below the rate for urban industrial counties (74.6 percent). Although this statistic masks important within-county disparities (see below), it implies that OICs overall provide employment opportunity roughly on par with that available in similar counties nationwide.

Despite their near-parity with other types of communities on employment, incomes in older industrial counties remain lower. The median OIC household earned \$54,000 in 2016, roughly \$6,000 below equivalent figures for urban and urban industrial counties. That gap widened in the 2000s, as incomes fell faster in older industrial counties, and in the 2010s, as their incomes recovered somewhat more slowly. The decline of manufacturing employment in these communities, followed by weak productivity growth post-recession, seems to have held back progress on incomes even as employment rebounded.

Inclusion outcomes in OICs differ greatly by race

These overall inclusion measures mask stark variations by race that characterize older industrial communities more than other urban places:

- **On employment**, white prime-age adults in OICs are just as likely to be in work as their counterparts in other urban counties (and more likely than white Americans overall). Adults of color, on the other hand, are *less* likely than

those in other types of counties to be working, by a gap of nearly three percentage points.

- **On income**, both white and non-white OIC households have lower median incomes than their counterparts in urban counties overall. But the gap for households of color (nearly \$8,000 in 2016) is larger than for white households (nearly \$5,000). Moreover, the gap is closing for whites, but widening for non-whites. White median household income in OICs rose 7 percent from 2010 to 2016, slightly faster than in urban counties overall. At the same time, median income for households of color in OICs rose less than 5 percent, below the growth experienced by those households in urban counties.

OICs also exhibit significant economic inclusion disparities by place:

- **Concentrated poverty** is more prevalent in older industrial counties. In 2012-16, nearly one in 12 individuals in OICs (and one in four poor residents) lived in a neighborhood where the poverty rate exceeded 40 percent, far higher than in urban counties overall.⁶² Moreover, the gap between older industrial and urban counties on concentrated poverty widened significantly since 2000, meaning that even more low-income individuals in these communities must grapple with not only their own economic challenges, but also the challenges of those around them.
- **This segregation** occurs not only among the poor in OICs, but also among the well-off. Higher shares of the population in older industrial counties live in low-income or high-income communities (32 percent) than in urban counties (27 percent) or urban industrial counties (24 percent). By effectively limiting access to well-resourced schools and exposure to diverse environments, this higher degree of economic segregation may create barriers to upward mobility and frustrate efforts to rebuild a stronger middle class.

FIGURE 4.5

Employment patterns in OICs exhibit a racial divide

Employment-to-population ratio, non-Hispanic whites vs. people of color, 2010-2016

Note: Employment-to-population ratio is calculated among the civilian population aged 25-64.
Source: Brookings analysis of American Community Survey data

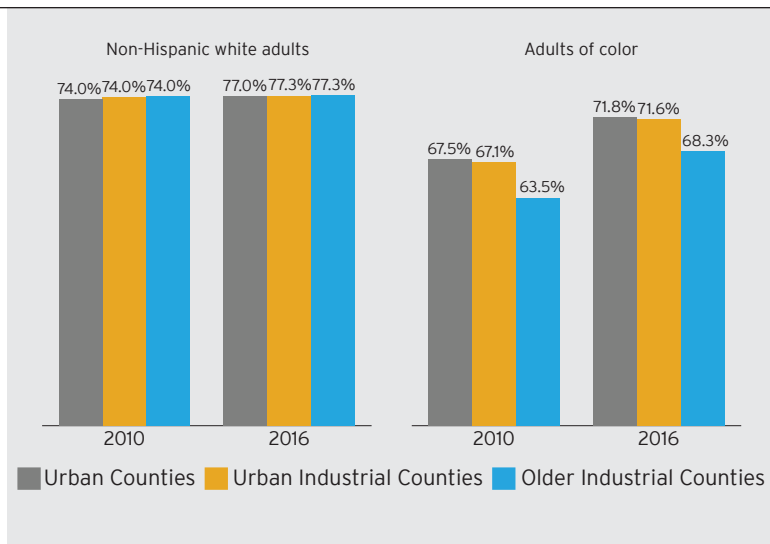


FIGURE 4.6

Concentrated poverty rose everywhere, but especially in OICs

Share of population living in extreme-poverty neighborhoods, 2000-2016

Note: Extreme-poverty neighborhoods are census tracts with poverty rates of 40 percent or higher.
Source: Brookings analysis of American Community Survey data

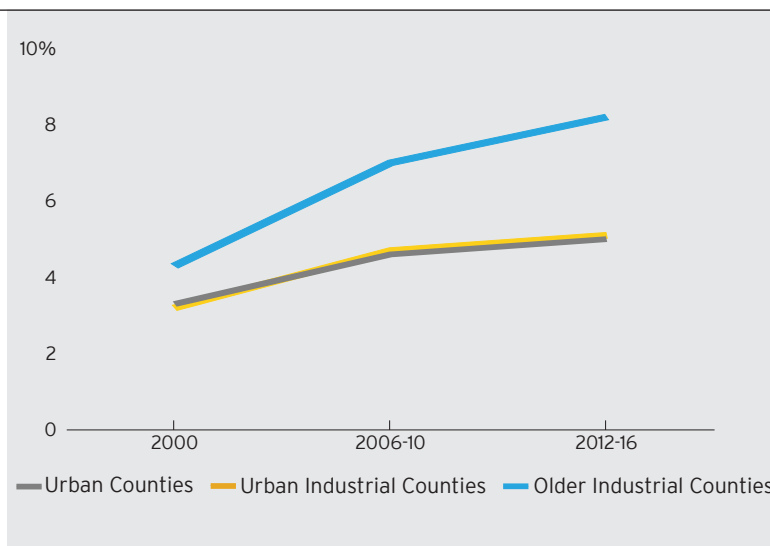
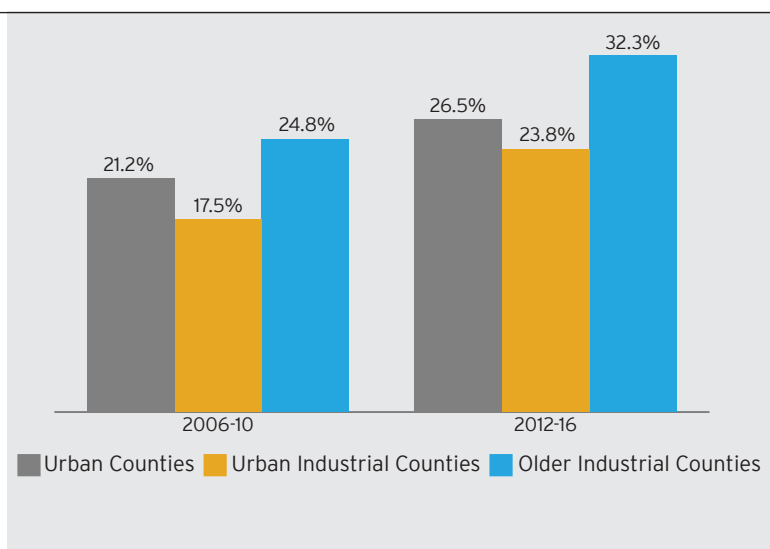


FIGURE 4.7

OICs also exhibit greater economic segregation

Share of population living in poor and wealthy neighborhoods, 2006-10 vs. 2012-16

Note: Poor and wealthy neighborhoods are census tracts with median household incomes below 67 percent and above 150 percent, respectively, of county-wide median income.
Source: Brookings analysis of American Community Survey data



These place-oriented disparities in older industrial communities relate very directly to the racial disparities described above. OICs exhibit higher levels of racial segregation, particularly between blacks and whites, than urban counties (see next chapter).

In sum, OICs' lagging performance on household income, their stark and widening economic disparities by race, and their higher levels of racial and economic segregation and concentrated poverty are inextricably linked. In many ways, the pathway to more inclusive economic growth in these (and many other) urban areas depends on expanding economic opportunity for people and neighborhoods of color.

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A typology of OICs reflects their economic performance

While older industrial communities overall face clear deficits in their metrics of economic well-being, those measures risk painting these places with somewhat too broad a brush. Notwithstanding similarities in their economic heritage and long-term transition struggles, Worcester, Mass. is not Waterloo, Iowa. Battle Creek, Mich. is not Baltimore, Md.

To capture that variation, we develop a typology of the 70 OICs based on their medium-run economic performance. The typology, in turn, informs how we analyze their underlying economic assets and challenges, and pinpoints factors that might matter more for advancing their future economic success. We score 360 urban counties on the seven growth, prosperity, and inclusion indicators described above, measured from 2000 to 2016, and develop a combined index of their performance.⁶³

The index reflects that on average, older industrial counties lag other counties on economic performance. The average OIC ranks 246 out of 360 counties on this index, compared to 204 for the average urban industrial county. Although they cluster toward the bottom, OICs appear

throughout the index distribution, including seven that place within the top 25 percent of all urban counties.

Based on their index scores, we identify four groups of OICs that exhibit different levels of economic success over the past decade and a half:⁶⁴

- **Strong** OICs rank among the top half of all urban counties on the performance index. While most of these 16 counties are not growing particularly rapidly, they tend to achieve high marks on prosperity and inclusion, suggesting that the economic well-being of their existing residents is improving over time. Most of these counties cluster along the Eastern Seaboard, including those in New York City (Brooklyn and Queens), and within the orbit of Boston (Bristol, Essex, Norfolk, and Worcester counties) and Philadelphia (including the city itself, and the counties surrounding Bethlehem, Pa. and Trenton, N.J.). Buffalo, St. Louis, and Waterloo, Iowa are strong performers in the interior.
- **Emerging** OICs include a regionally diverse group of 24 counties that, while also growing relatively slowly, manage average marks among all urban counties on prosperity and inclusion. Many of these also locate near the East Coast in southern New England, Upstate New York, New Jersey, and eastern Pennsylvania. Among emerging OICs, Louisville, Milwaukee, St. Paul, and Cincinnati in the Midwest, and Birmingham in the South, are all bouncing back strongly from a difficult 2000s decade.
- **Stabilizing** OICs generally rank among the bottom third of all counties on measures of growth, prosperity, and inclusion. Among the 16 are several small-to-midsized markets in Ohio, Indiana, and Michigan (along with a couple large ones such as Cleveland and Indianapolis) negatively affected by the manufacturing downturn of the 2000s that are beginning to regain their footing, yet still struggling to ensure wider prosperity. Compared to 2000, nearly all of these counties today have fewer jobs,

lower incomes, and lower rates of employment, though most remain within shouting distance of those previous peaks.

- **Vulnerable** OICs, 14 in all, rank among the bottom 5 percent of all urban counties on the performance index, and in the bottom quartile in each of the index's three dimensions (growth, prosperity, inclusion). Detroit (Wayne County) is the only large older industrial county on this list; the rest include smaller cities in Georgia,

Illinois, and Indiana. Some of these places, including Albany, Detroit, Flint, Kokomo, and Muncie, are bouncing back this decade. Median household income in Dougherty County, Georgia (around Albany), for instance, is up 19 percent since 2010, and the employment rate in Wayne County, Mich. (around Detroit) has risen 7 percentage points. But given how devastating the 2000s were for nearly all of these counties, they overall remain considerably smaller and poorer than they were at the turn of the century.

FIGURE 4.8

Older industrial counties vary in their performance on growth, prosperity, and inclusion

Performance scores, 2000-2016

Source: Brookings analysis of Moody's Analytics and decennial census data

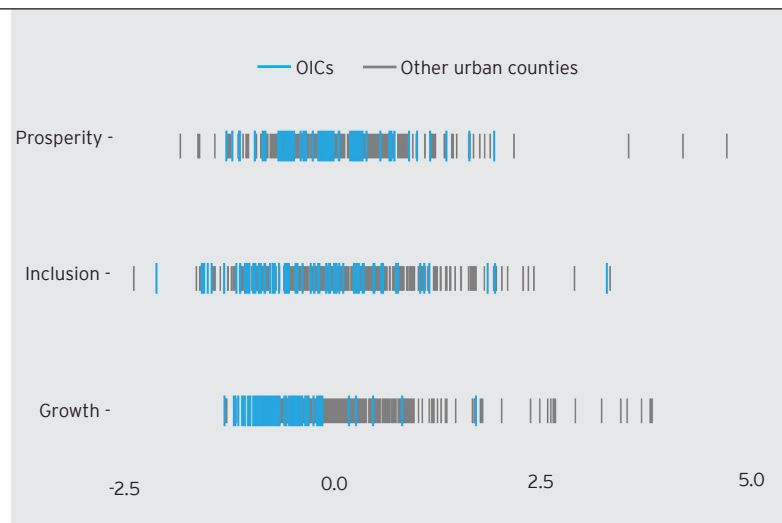
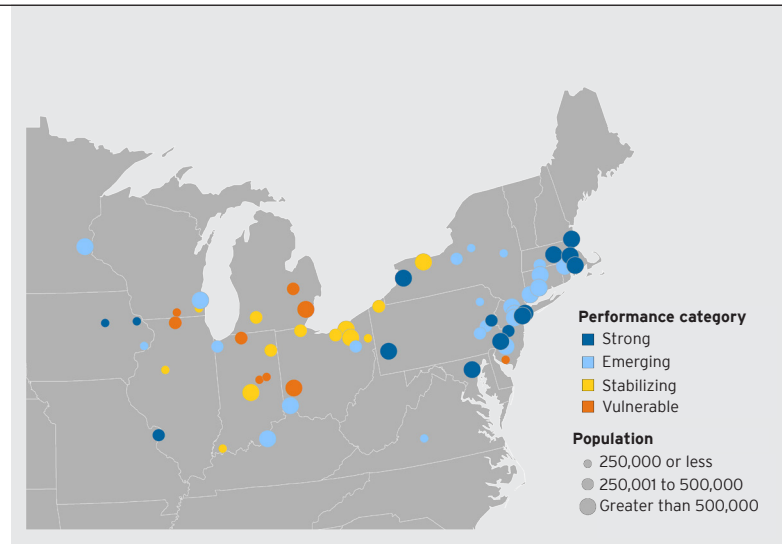


FIGURE 4.9

Midwestern and smaller OICs lag East Coast and larger counterparts on economic performance

Older industrial counties by 2000-2016 economic performance and 2016 population

Source: Brookings analysis of Moody's Analytics, decennial census, and American Community Survey data



The typology suggests three factors closely associated with recent economic performance of OICs:

- **Size: Larger OICs have done better than smaller OICs.** Across all urban counties, larger places performed better than smaller ones from 2000 to 2016. This was even truer among older industrial counties. The average large OIC

(with population over 500,000) ranked 202 out of the 360 counties on the performance index, compared to 253 for medium-sized OICs (populations from 200,000 to 500,000) and 298 for small OICs (populations under 200,000). The higher ranking of larger OICs held not only for the overall index, but in each of the three categories of growth, prosperity, and inclusion. Many of the largest OICs—Brooklyn and Queens,

FIGURE 4.10

Four types of OICs reflect their varying economic performance

Older industrial cities by performance category, 2000-2016

Strong	Emerging	Stabilizing	Vulnerable
Brooklyn, N.Y.	Providence, R.I.	Springfield, Ohio	Dayton, Ohio
Queens, N.Y.	Allentown, Pa.	Peoria, Ill.	Albany, Ga.
Beaumont, Texas	Lynchburg, Va.	Battle Creek, Mich.	Kokomo, Ind.
Baltimore, Md.	Paterson, N.J.	Akron, Ohio	Decatur, Ill.
Dubuque, Iowa	Birmingham, Ala.	Erie, Pa.	South Bend, Ind.
St. Louis, Mo.	Louisville, Ky.	Cleveland, Ohio	Roanoke, Va.
Pittsburgh, Pa.	Utica, N.Y.	Rochester, N.Y.	Muncie, Ind.
Bethlehem, Pa.	Camden, N.J.	Toledo, Ohio	Janesville, Wisc.
New Bedford, Mass.	Hartford, Conn.	Racine, Wisc.	Vineland, N.J.
Waterloo, Iowa	Bridgeport, Conn.	Youngstown, Ohio	Rockford, Ill.
Philadelphia, Pa.	Newark, N.J.	Fort Wayne, Ind.	Detroit, Mich.
Lynn, Mass.	Scranton, Pa.	Indianapolis, Ind.	Anderson, Ind.
Buffalo, N.Y.	New Haven, Conn.	Lorain, Ohio	Macon, Ga.
Trenton, N.J.	Syracuse, N.Y.	Evansville, Ind.	Flint, Mich.
Worcester, Mass.	Elizabeth, N.J.	Terre Haute, Ind.	
Quincy, Mass.	Reading, Pa.	Kalamazoo, Mich.	
	Milwaukee, Wisc.		
	St. Paul, Minn.		
	Hammond, Ind.		
	Canton, Ohio		
	Cincinnati, Ohio		
	Schenectady, N.Y.		
	Davenport, Iowa		
	Springfield, Mass.		

Note: Cities listed are largest within each older industrial county, and are ranked within categories by performance index score.
 Source: Brookings analysis of Moody’s Analytics and Census Bureau data.

N.Y., Baltimore, Philadelphia, and the counties surrounding Buffalo and Pittsburgh—rank in the “strong” category. This pattern comports with research cited in the Introduction finding that larger places have performed better economically in the recovery from the global financial crisis.

- **Location: East Coast OICs have done better than Midwestern OICs.** Of the 21 older industrial cities located within 2 hours of the Eastern Seaboard, 20 of them rank in one of the top two performance categories. Conversely, only 8 of the 32 OICs in Midwestern states ranked in those top two categories. While East Coast OICs are on average larger than their Midwestern counterparts, this regional discrepancy remains even after controlling for those size differences.⁶⁵ Many East Coast OICs are proximate to economically strong city-regions such as New York, Boston, and

Washington, D.C. (in the case of Baltimore) and have undoubtedly benefited from spillover effects.

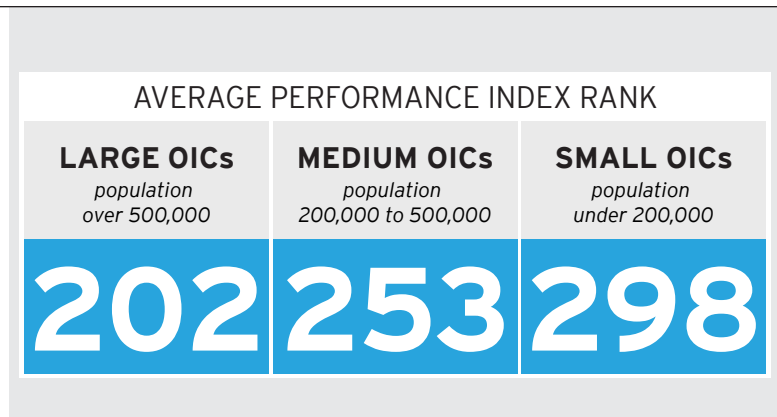
- **Racial/ethnic inclusion: OIC success is highly associated with outcomes for communities of color.** The four types of older industrial cities identified here exhibit large differences in outcomes for non-white populations over time. Among 14 strong OICs for which data are available, four posted gains in non-white median household income from 2000 to 2016, versus only one that registered a decline (the remainder saw no change). By contrast, in 10 of the 14 vulnerable OICs, non-white household income is significantly lower today than in 2000, by an average of nearly \$10,000 (the other four counties saw no change). This indicates that the economic strength of OICs overall, and the economic resiliency of their racial and ethnic minority populations, are closely related.

FIGURE 4.11

Larger OICs have performed better economically

Average performance index rank among 360 urban counties, OICs by population, 2000-2016

Source: Brookings analysis of Moody’s Analytics, decennial census, and American Community Survey data



Future [not] older industrial cities?

The methodology we use to define older industrial cities is, by its nature, binary—you're either an OIC, or you're not. However, as the typology in this section shows, underlying economic dynamics vary quite a bit across these cities, and there are also many other urban areas that exhibit performance similar to the older industrial places.

In fact, our methodology points to a number of places whose status could change from “urban industrial” to “older industrial” in the near future if trends hold. Recall that OICs, in addition to containing a significant city and having a history in manufacturing, had at least 3 percent fewer jobs in 2016 than their 1970 economic structure would have predicted, based on national employment trends. There are many urban industrial counties that in 2016 did not yet have a significant-enough “competitive deficit” to qualify as older industrial, but were close enough to that threshold, and on a downward trajectory post-recession, that together suggest they might reach that status within 10 years.

These 14 counties are more geographically extensive than the 70 OICs, including several in the Southeast that began to deindustrialize later than their Northeast and Midwest counterparts.⁶⁶ On the 2000–2016 performance index, their average rank among 360 urban counties was 268, lower than two of the OIC types. In light of that, the analysis and recommendations in this report may be as relevant to this near-older industrial group of places as to those “officially” deemed older industrial cities.

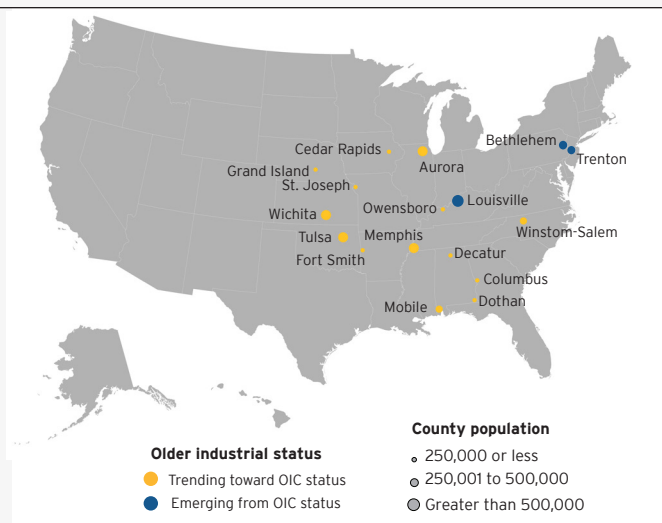
Similarly, the methodology also highlights a few older industrial places that may emerge from that status in the near future. Bethlehem, Louisville, and Trenton all anchor counties that, if current trends persist, would have relatively small competitive employment deficits a decade from now. This further highlights the dynamic economic processes affecting all urban areas that demand continued vigilance and adaptation among local leaders seeking to accelerate economic growth and opportunity.

FIGURE 4.12

Some counties are trending toward, and others emerging from, OIC status

Counties on the margins of older industrial status, 2016

Note: Names above are those of counties' largest cities.
Source: Brookings analysis of Moody's Analytics and U.S. Census Bureau data



V. Assets and Challenges

What factors influence older industrial cities' adaptation to major economic and social forces?

Efforts to improve economic outcomes for residents and communities in older industrial areas are critical not only for their own well-being, but also for closing some of the deep divides affecting America's broader economy and society.

New Haven (CT)



Like all urban areas, however, older industrial cities are not economies unto themselves. They function amid wider regional, national, and global dynamics that shape opportunities for places. Chief among these forces are technological change, urbanization, and demographic transformation (see “Key factors influencing urban trajectories”). The fortunes of older industrial cities in coming years will depend greatly on how well their companies, institutions, and residents recognize and navigate this change.

OICs possess significant assets that can enable

their continued adaptation to economic pressures ahead. At the same time, they have complicated economic and social legacies that pose unique challenges for their efforts to stimulate growth and broaden access to opportunity. And as differences in their recent performance suggest, those assets and challenges are not distributed equally among older industrial cities. We examine how older industrial cities overall, and types of older industrial cities, are positioned to seize opportunities and steer through currents shaped by ongoing technological change, urbanization, and demographic transformation.

Key factors influencing urban trajectories

This section examines three forces that are reshaping local and regional economies—technological change, urbanization, and demographic transformation—through a variety of indicators associated with these trends that illuminate older industrial economies’ assets and challenges. Existing research offers a variety of insights as to the critical influence of these forces on local growth and opportunity:

Technological change

The technologically advanced economy is a major driver of economic growth. Berkeley economist Enrico Moretti’s research shows that high-tech jobs create large local multiplier effects, increasing demand for labor at all levels.⁶⁷ While productivity growth has slowed nationally, metro areas that are participating in the tech boom are maintaining higher-than-average increases in productivity.⁶⁸ Regions’ success in a technologically advanced economy is strongly related to their human capital base. As our colleague Mark Muro’s work has shown, occupations requiring high levels of digital competencies have grown rapidly.⁶⁹ Metros with higher concentrations

of STEM workers have higher shares of R&D expenditures, tech transfer, patents, and venture capital, and by extension, higher output, productivity, and incomes.⁷⁰ For all its contributions to growth and labor market opportunity, however, technological change can destroy jobs in the short-term. Industrial robots have proliferated throughout a corridor from Michigan to Alabama, at the same time those regional economies have shed significant manufacturing employment.⁷¹

Urbanization

Urban places concentrate the economic assets that support the function of the advanced economy.⁷² Specifically, urban agglomeration and density provide a larger, more specialized pool of labor, capital, and services and enable the knowledge spillovers that generate new ideas.⁷³ In addition, urban density, infrastructure, and amenities are critical assets for places wishing to attract innovative companies, as the list of attributes in Amazon’s RFP for a second headquarters shows.⁷⁴ At the same time, continued suburban sprawl presents a fiscal challenge for cities with stagnant or

declining populations, and creates barriers to employment access for lower-income populations.⁷⁵

Demographic transformation

As our colleague William Frey documents, the United States will become a majority-minority nation by the middle of this century.⁷⁶ There is evidence that diversity is good for growth: more diverse metro areas have more business starts and higher rates of self-employment, which in turn are associated with growth in jobs, output, productivity, and per capita income.⁷⁷ But this shift also adds urgency to the imperative to shrink racial and ethnic disparities. The cost of continued racial segregation in these communities is high: Research from the Urban Institute shows that black-white segregation is associated with lower incomes for blacks and lower educational attainment for both blacks and whites.⁷⁸

This section explores several OIC attributes in these three areas that may propel market adaptation and progress in the face of ongoing macroeconomic changes, and others that could hold these cities back and contribute to further decline. To be sure, these are not the only factors that could circumscribe OICs' economic futures, and important work over the past decade has

described and helped address other unique assets and challenges these communities possess. Due to their long-term losses of manufacturing plants and workers, OICs contain disproportionate amounts of **vacant industrial land and residential properties** in a low-demand environment that complicate efforts to restore urban vitality. Those losses, coupled with “small-box” **legacy governance structures**, have reduced the **fiscal and technical capacity** of local governments in OICs to engage in strategic economic development while also providing high-quality services to residents and businesses. Moreover, OICs' uneven population losses mean that most bear burdens of concentrated poverty and economic distress that affect not only avenues to upward mobility for their low-income residents, but also impose increased local costs for core functions like **schools and safety**. Those higher local expenses carry arguably greater weight in an era of declining federal fiscal assistance to localities and significant legacy costs that many OICs carry in **bonded debt and retirement-benefit liabilities**.⁷⁹ While these land, governance, and fiscal factors undoubtedly influence OIC prospects, this analysis aims to contribute new evidence on their assets and challenges that relate directly to the key economic currents of our time.

Older industrial cities possess significant technological know-how, but have struggled to convert those assets into technology-enabled economic growth

For people, companies, and communities, the path to economic success is increasingly a digital one. The boom in digitalization—the use of digital

technologies and information to transform business operations—is having profound impacts on national and regional economies.

The most digitally oriented workers and places are reaping the benefits of this trend through increased job opportunities and pay, while others are falling behind. To illustrate the rapid nature of digitalization, Mark Muro and co-authors show that from 2002 to 2016, the share of U.S. jobs requiring high levels of digital knowledge rose from 5 percent to 23 percent, while the share

requiring low digital knowledge shrank from 56 percent to 30 percent. Jobs with higher digital content pay more than other jobs (even when controlling for workers' educational attainment), and metro areas with more digitally oriented jobs boast higher average wages. Building and exploiting digital capabilities also matters, they find, for navigating the effects of automation. Estimates from the McKinsey Global Institute imply that nearly 60 percent of tasks involved in low-digital occupations appear susceptible to automation, compared to around 30 percent of tasks in high-digital occupations. In essence, people and places that are successfully harnessing digital technologies to deliver new forms of economic value are less likely to be overtaken by technological advancement in the near term.⁸⁰

Older industrial places overall bring considerable assets to the task of keeping pace in a digitizing economy. On average, they possess institutions and knowledge that signify important capabilities in technological innovation and know-how. These include:

- **Outsized presence of research universities.** The older industrial cities of the Northeast and Midwest possess some of the nation's and

world's leading higher education institutions. These include many of the storied private research universities of the Northeast, as well as the celebrated land-grant colleges and universities of the Midwest.⁸¹ OICs outpace other types of urban counties on the presence of Tier I and Tier II research universities per capita. And their universities receive more grant dollars per capita from the National Science Foundation and National Institutes of Health than those in urban counties overall, signaling the scientific relevance of their research capabilities. Four of the top 10 universities for NSF and NIH funding—Johns Hopkins University (Baltimore), University of Pittsburgh, University of Pennsylvania (Philadelphia), and Yale University (New Haven) are located in OICs, and those same cities rank among the more economically vibrant of the 70 places.

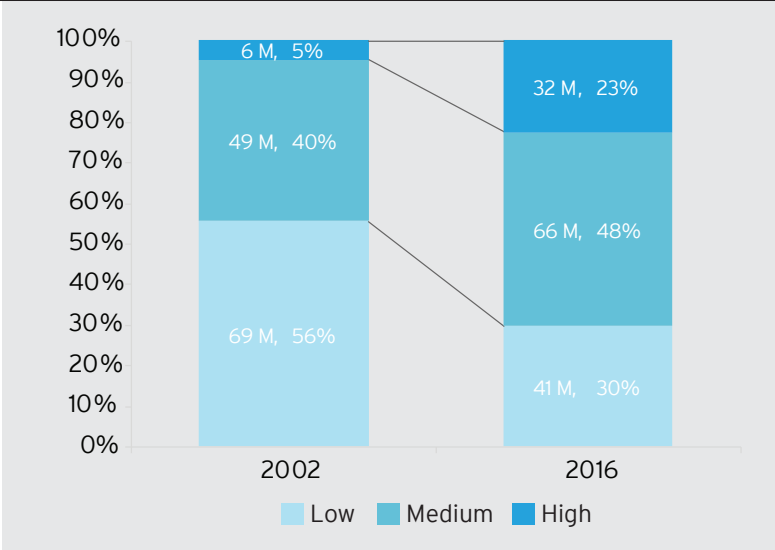
- **High rates of patenting in several technology categories.** Metropolitan economies with OICs generate more patents per worker than those with urban counties overall. This is particularly true in key technology categories including advanced manufacturing, life sciences, and precision systems that reflect older industrial economies' sectoral specializations. The life

FIGURE 5.1

The U.S. economy is digitalizing at an extremely rapid pace

Employment by levels of job digitalization, 2002 vs. 2016

Source: Muro, Liu, Whiton, and Kulkarni, "Digitalization and the American Workforce"



sciences powerhouses of Greater Boston and Mercer County, N.J. (Trenton area) contribute to that high aggregate for older industrial areas, but so do strong performers like Minneapolis-St. Paul, Rochester, Hartford, Worcester, and Cincinnati, most of which blend high patenting activity in advanced manufacturing and life sciences. Among smaller older industrial economies, Peoria ranks highly due largely to the presence of multinational equipment manufacturer Caterpillar.

- **Populations trained in science, technology, engineering, and math (STEM) disciplines.** While OICs overall slightly lag national and urban county averages on the share of their adults with college degrees, they reach near-parity when it comes to the share who hold a bachelor's degree in a STEM field, at about 14 percent in 2016. Rates are even higher in places such as Norfolk County (Mass.) near Boston, Fairfield County (Conn.) surrounding Bridgeport, Mercer County (N.J.) surrounding Trenton, and

FIGURE 5.2

OICs house many significant research-intensive universities

NIH and NSF grant dollars per capita, 2016

Source: Brookings analysis of USASpending.gov data

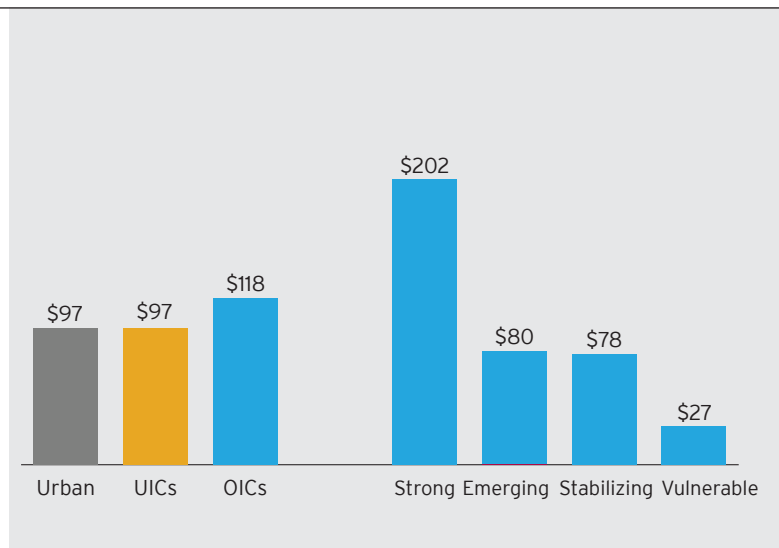


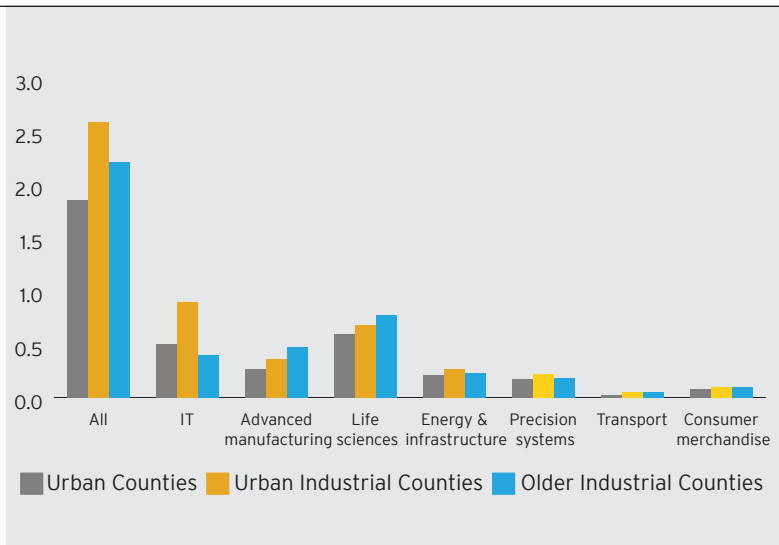
FIGURE 5.3

Older industrial economies boast high patenting rates in many technology categories

Patents per 1,000 workers by technology category, 2008-12

Note: Rates reflect aggregates of patents and workers for all metropolitan areas containing at least one county of the specified type.

Source: Brookings analysis of OECD data



Allegheny County (Pa.) surrounding Pittsburgh. This indicator is also closely associated with OIC economic performance, with more vibrant places possessing higher STEM orientation. Yet even in older industrial places that exhibit greater economic challenges, an average of 10 percent of adults are trained in fields that indicate high technological competency.

- **Significant shares of digitally oriented jobs.** These STEM competencies, in turn, undergird jobs in older industrial economies that demand high levels of digital skills. In 2016, metro areas containing OICs looked very similar to others in the share of their jobs requiring high, medium, or low levels of digital skills. As with STEM skills, East Coast metropolises with older industrial environs like Boston and New York rank high on this list, but so do Hartford, Baltimore, Minneapolis, Rochester, Detroit, and St. Louis. Their longstanding specializations in life sciences and advanced manufacturing feature increasing numbers of digitally intensive jobs. Conversely, smaller older industrial economies—the likes of Kokomo, Vineland, and Janesville—have much lower shares of these high-digital jobs.

For all these strengths, however, older industrial communities seem to exhibit greater challenges in translating their technological research and knowledge assets into technology-fueled jobs and economic growth. A few trends illustrate these challenges:

- **Declining employment in advanced industries.** Advanced industries represent the United States' "tech" sector at its broadest and most consequential level. These 50 sectors are characterized by deep involvement with technological research and development and STEM workers, areas in which older industrial areas evince important underlying assets.⁸² Yet compared to other urban areas, OICs have seen employment in these sectors shrink considerably since 2000—by 23 percent, roughly double the decline that urban industrial counties experienced. This can be

attributed in part to OICs' heavier historical concentration in advanced manufacturing jobs. Manufacturing employment shrank by 28 percent nationally from 2000 to 2016, and by 40 percent in OICs. At the same time, urban counties overall grew advanced services jobs in areas like engineering, computer systems, and telecommunications that nearly compensated for those manufacturing job losses. But advanced services jobs grew more slowly in OICs and did not make up for their advanced manufacturing losses. Advanced services jobs did boom in some OICs, such as Indianapolis, Worcester, St. Louis, and Cleveland. Many small OICs such as Battle Creek, Mich., Bethlehem, Pa., and Janesville, Wisc. also posted high growth rates in advanced services, albeit from small bases. Nonetheless, 60 of the 70 OICs saw declines in advanced industry employment overall from 2000 to 2016.

- **Frequently lower levels of "economic complexity."** In any economy, firms must bring together a variety of different inputs and activities to make products. In a developed economy like the United States, firms must innovate by drawing on those inputs and activities to develop new capabilities that enable growth. The greater the variety of inputs, and the more those inputs relate to other inputs in the economy, the more pathways exist to innovation and growth. As Brad Cunningham observes, this type of complexity describes advertising in New York; the industry thrives there because the city boasts an ecosystem of media, theatre, artists, models, and actors and because its dense transportation and housing system allows these capabilities to come together.⁸³ Researchers at Harvard's Center for International Development have pioneered ways of measuring and visualizing this economic complexity for developing economies.⁸⁴

Other researchers are now applying similar techniques to examine cities in advanced economies, using data on patenting to examine the variety and connectedness of their technological capabilities.⁸⁵ Among older

FIGURE 5.4

OICs resemble other urban counties in STEM degree attainment

Share of the 25+ population holding a STEM bachelor's degree, 2016

Source: Brookings analysis of American Community Survey data

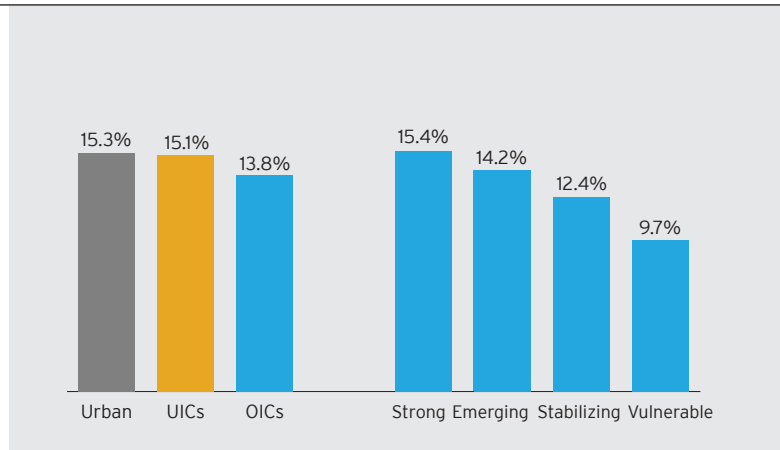


FIGURE 5.5

Like other metro areas, older industrial economies have significant numbers of digitally-intensive jobs

Share of employment by level of digitalization, 2016

Source: Muro, Liu, Whiton, and Kulkarni, "Digitalization and the American Workforce"

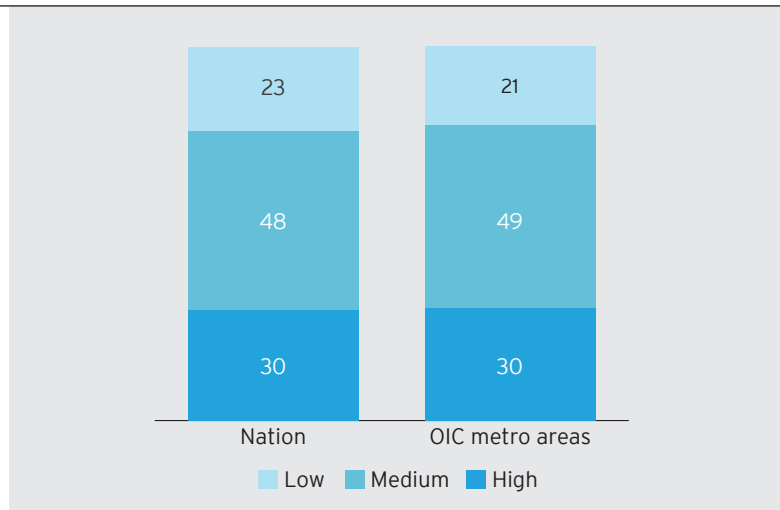
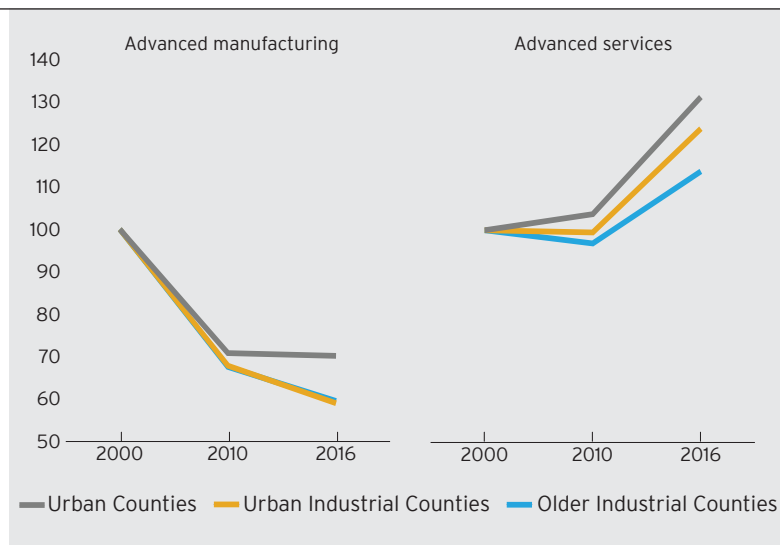


FIGURE 5.6

Older industrial counties lost more advanced manufacturing jobs, and grew fewer advanced services jobs

Indexed advanced industries employment, 2000-2016

Source: Brookings analysis of Moody's Analytics data



industrial economies, those data reveal high levels of economic complexity in several large markets, but very low levels in many small- to mid-sized markets. Metropolitan areas with OICs such as Trenton, Rochester, Worcester, Albany, Philadelphia, and Baltimore rank highly due to their size, economic diversity, and specializations in life sciences and advanced materials. Yet other large older industrial areas such as Detroit, Milwaukee, Louisville, and Toledo post only middling ranks, and several small markets throughout the Midwest rank near the bottom of all metropolitan areas. This may signal a dearth of innovation activity in these places, or a concentration of innovation in less complex technologies (i.e., those that do not connect to many others). The loss of advanced industry employment in OICs has no doubt eroded some of their private-sector-led innovation capacity as well. A city with low economic complexity still possesses pathways to innovation and growth but may have fewer viable options for realizing those outcomes.

- **Untapped potential for research commercialization from downtown universities.** Research universities located in downtown areas of large cities can be particularly important anchors for regional

economic growth, given their proximity to large employers, entrepreneurs, private equity, and other amenities that facilitate the commercialization of research. A review of 33 downtown universities suggests that many OICs lag their peers on measures of their universities' research commercialization, including startups, patents, invention disclosures, licensing income, and licensing deals.⁸⁶ Two OICs—Philadelphia and Pittsburgh—count multiple downtown universities among the strongest performers on these measures. Baltimore (Johns Hopkins University), Cleveland (Case Western Reserve University), and St. Louis (Washington University) also rank in the top half. Yet few other OICs are represented among those with strongly research-oriented downtown universities, and those that are (Birmingham, Cincinnati, Indianapolis, Newark) rank nearer the bottom of the list on research commercialization measures.⁸⁷

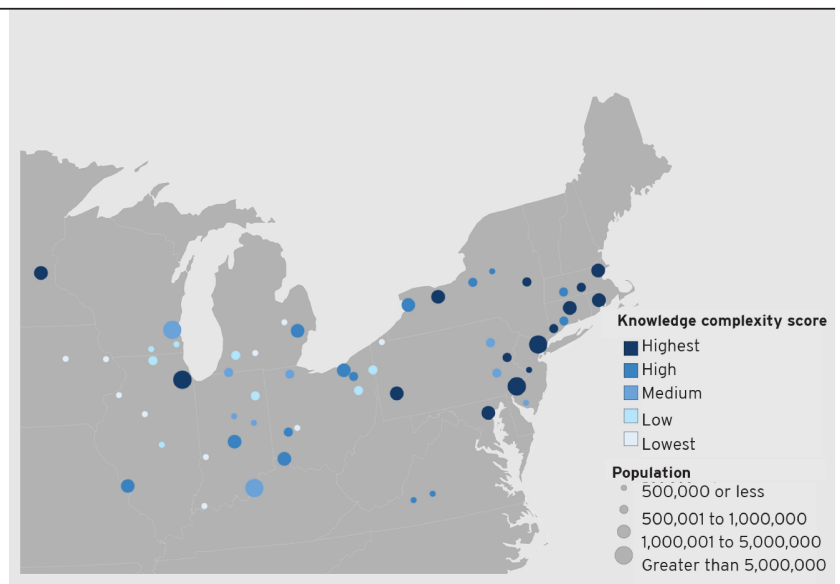
In summary, many OICs have meaningful research assets and capabilities that nonetheless are not generating significant economic development and job growth. This dynamic could owe to a number of root causes. Universities in OICs may not be well connected to industry, their research strengths may not effectively complement

FIGURE 5.7

Smaller and mid-sized older industrial economies have lower economic complexity, and fewer near-term options for technology-enabled innovation and growth

Knowledge complexity scores by metro area

Source: Dieter Kogler and David Rigby analysis for Brookings



regional industry clusters, or they may be spawning new enterprises that nevertheless leave these cities as they grow due to financial or human capital constraints. The legacy of large employers in OICs might mean that new patents and technologies are less likely to “escape” and drive dynamic new spin-offs and start-ups. Behind all this may lie a frayed circuitry that is failing to connect risk capital and entrepreneurial experience on the coasts with new ideas and talent in the Heartland. That noted, OICs’ uptick in young-firm employment in recent years is a hopeful sign that some of these cities may be sowing the seeds for indigenous business growth.

.....

Many older industrial cities are benefiting from an urbanizing economy, but most exhibit challenges in achieving and sustaining critical mass to support growth and opportunity

Economic activity is urbanizing. This is occurring at the national scale, as employers and investors seek access to large pools of skilled workers and globally connected infrastructure. Amazon’s request for proposals for a second North

American headquarters location exemplifies this preference, targeting metropolitan areas with at least 1 million people that feature those assets.⁸⁸ Urbanization is also occurring at the local scale, as high-value knowledge-based industries seek access to denser environments that support the exchange of ideas and capital, and that are attractive to workers seeking a higher quality of place in their professional and personal lives.⁸⁹

Recent trends illustrate the impact of these urbanizing forces. Over the past decade, economic opportunity has gravitated toward bigger metropolitan areas. Between 2007 and 2016, the share of prime-age adults who are working rose marginally in metro areas with more than 1 million residents but fell in others. The declines were greatest in regions with fewer than 500,000 residents. Within metropolitan areas, areas closest to the urban core experienced job growth on par with that in other parts of the metropolitan area from 2011 to 2014. That represents a shift from the last expansion in the 2000s, when suburban job growth far outpaced that in city centers.⁹⁰

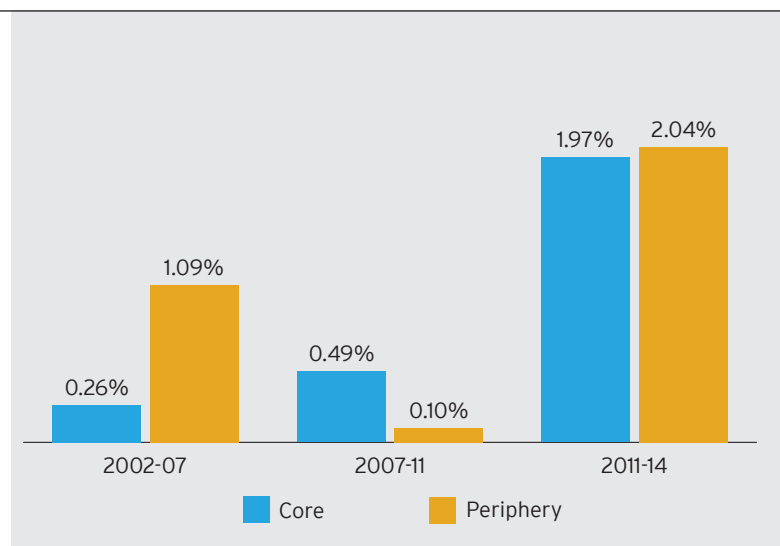
Older industrial communities bring several advantages to navigating the currents of an urbanizing economy:

FIGURE 5.8

Employment opportunity has shifted toward urban cores in large metropolitan areas

Job change by location, 51 largest metro areas

Note: Core areas are within three miles of the central business district; periphery is metropolitan remainder. Source: Daniel Hertz, “City center job growth continues strength; suburbs rebounding from recession”



- **Location in a highly urbanized area of the country.** OICs' concentration in the Northeast and Midwest, particularly along the Northeast Corridor and major highways and waterways, places them in some of the densest parts of the United States. The average OIC has a considerably greater number of residents within 100 miles than the average urban or urban industrial county. This provides advantages to employers and investors who desire proximity to large numbers of potential workers or consumers. Economic performance among OICs further suggests the role of regional size and density, with strong and emerging markets proximate to much larger populations than their stabilizing and vulnerable counterparts.
- **Clustering of employment at the neighborhood scale.** Within OICs, nearly half of jobs are located in high-density clusters, defined as neighborhoods where employment per square mile ranks them in the top fifth of all U.S. neighborhoods.⁹¹ This figure is on par with averages for urban and urban industrial counties, indicating that OICs retain regionally significant job destinations in their downtowns and key corridors. Strong-performing OICs, which have almost two-thirds of their jobs in those high-density nodes, do especially well on

this measure. While vulnerable OICs lag others on this metric, they have recently posted higher growth in job clustering. Macon, Ga., Roanoke, Va., Dayton, Ohio, and Reading, Pa. are among the cities anchoring economically struggling counties whose employment nonetheless grew more urbanized from 2010 to 2015, perhaps due to increased revitalization efforts in their downtowns.⁹² Among larger and stronger OICs, Milwaukee, Louisville, Indianapolis, and Philadelphia saw their employment clustering grow over this period as well. Whether these shifts will contribute to increased innovation and job growth in these core counties remains to be seen, but they signal an important platform from which such growth could emerge.

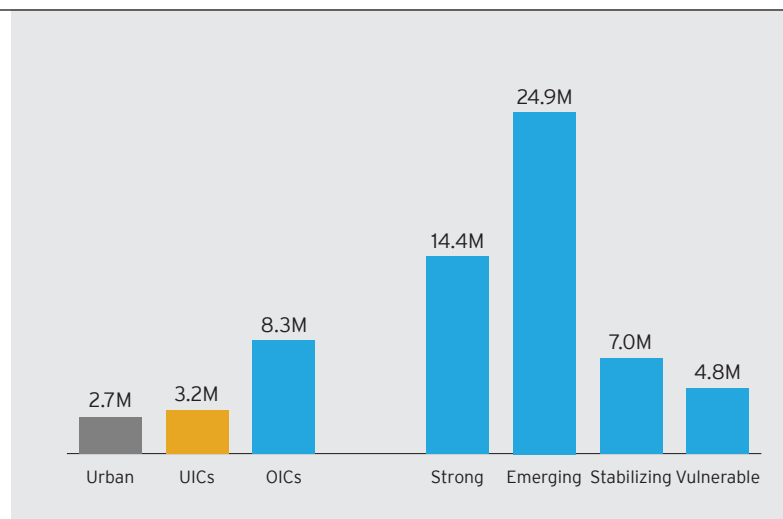
- **Commitment to distinctive quality of place.** Many older industrial places also benefit from a strong sense of place and community identity, often rooted in a rich history that translates to modern value. OICs possess:
 - Significant architecture—historical buildings, warehouses—attracting new and adaptive reuses
 - Distinctive, human-scaled neighborhoods populated by diverse waves of immigrants,

FIGURE 5.9

OICs are located near larger numbers of workers and consumers than other urban counties

Median population within 100 miles, 2016

Source: Brookings analysis of American Community Survey data



migrants, and local entrepreneurs

- Prestigious cultural institutions that draw visitors from around their regions and the globe
- Generous waterfronts and coastlines that once powered industry and transportation and now serve as centers of recreation and sustainability⁹³
- Vibrant arts communities connected to legacies of industrial design and sustained today by affordable costs of living and space

These assets combine in OICs with the uniquely American devotion to the underdog, fueling community pride and sustaining the passionate fan bases of several sports teams that for decades have nonetheless fallen short of the ultimate prize (see: Cleveland Indians, Detroit Lions, Buffalo Sabres, Indiana Pacers).

Because identity is less a measurable economic phenomenon than a suggestion of some cultural relevance, it is difficult to say exactly how different places stack up. Yet one can see in the proliferation of local “makers”—for instance, in the craft brewing industry—a trend in OICs both large and small that leverages their manufacturing heritage, low land costs,

and civic pride. This particular urban industry is hardly a panacea—it is neither very diverse nor frequently a basis for new export economies (Great Lakes Brewing Company in Cleveland and Matt Brewing Company in Utica—makers of Saranac—are notable exceptions)—but as many have begun to observe, these often-small businesses can be important markers of renewed community vitality.^{94 95}

Notwithstanding these hopeful signs of urban advantage and renewed vitality in OICs, many of these markets continue to face headwinds in amassing sufficient economic and demographic strength in regional and national contexts, including:

- **Falling share of metropolitan employment.** Since about 1990, the typical older industrial county has contained a lower share of its metropolitan area’s jobs than typical urban and urban industrial counties. That slippage has continued into the current decade; all types of urban counties are seeing their regional employment shares drop, but that decline has been somewhat greater in older industrial counties. Only four OICs (Davenport, Iowa; Kalamazoo, Mich.; Lynchburg, Va.; and Bethlehem, Pa.) grew their share of metro

FIGURE 5.10

OICs retain significant, growing urban employment clusters

Median share of jobs located in employment clusters, 2015

Note: Employment clusters are census tracts where jobs per square mile ranks in the top quintile of all U.S. census tracts.
Source: Brookings analysis of Census Longitudinal Employer Household Dynamics data

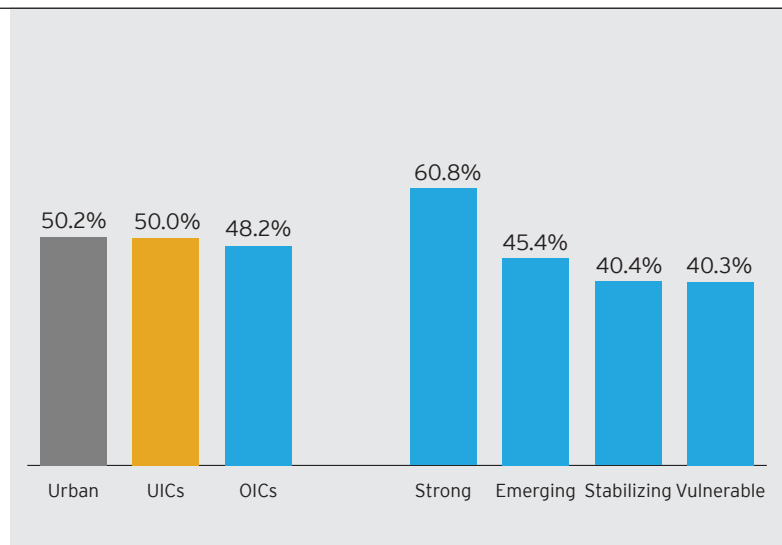


FIGURE 5.11

OICs exhibit one key marker of local “maker” vitality

Craft breweries by county type, 2017

Source: Brookings analysis of BreweryDB.com data

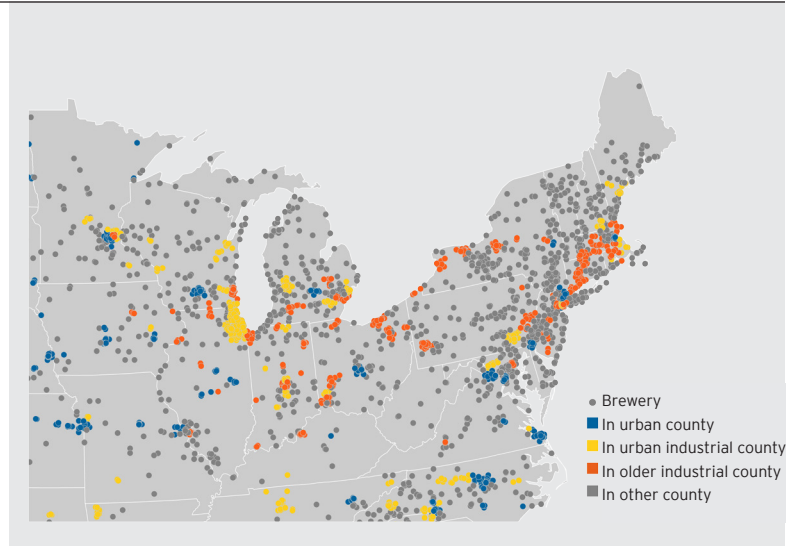


FIGURE 5.12

OICs’ share of their metro areas’ jobs continues to decline

Median county share of metro area jobs, 1970-2016

Source: Brookings analysis of Moody’s Analytics data

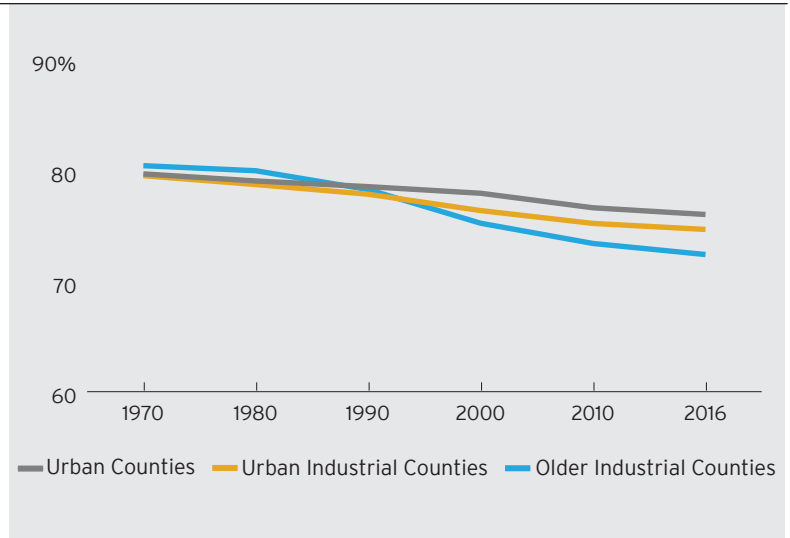
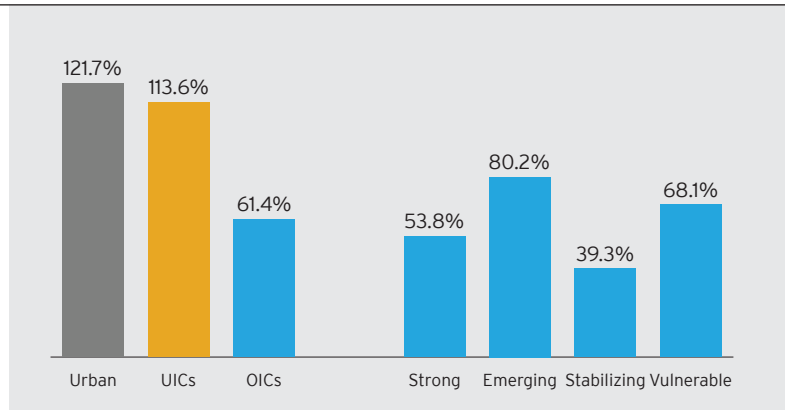


FIGURE 5.13

OICs lag other urban counties on new residential development growth

Percent change in housing unit permits, 2010-2016

Source: Brookings analysis of Census Building Permits Survey data



employment by at least 1 percent from 2010 to 2016; far more saw that share drop by a significant margin, particularly in Indianapolis, Ind., Rockford, Ill., Birmingham, Ala., and Detroit, Mich. Thus, even as many of these OICs were managing to concentrate more of their jobs in high-density areas, their status as their regions' core employment centers continued to erode.

- **Slower rate of new housing development.**

Overall, urban areas have achieved a significant rebound in new housing development from the depths of the financial crisis as the current decade began. The number of housing units permitted in urban counties was up 125 percent in 2016 from its level in 2010. That rebound was nearly equivalent in the subset of urban counties that had a historical concentration in manufacturing. But across the 70 OICs, new units permitted rose by only half that percentage overall (61 percent), from 40,000 units in 2010 to 64,000 units in 2016. Some larger counties like those containing St. Paul, Minn., St. Louis, Mo., Newark, N.J., Philadelphia, Pa., and Louisville, Ky. posted robust growth in new housing development, and a few small ones (around Marion, Ind., Flint, Mich., and Schenectady, N.Y.) showed strong growth from a low base.

Higher rates of housing vacancy in older industrial areas mean that household growth can occur more easily absent new housing development in these places than in other urban areas. Yet the wide margin between older industrial counties and others on this measure nevertheless suggests that significant residential re-urbanization is not yet a reality for most OICs. Between 2010 and 2016, median population change in the largest city of older industrial counties was 0 percent, compared to 4.3 percent in urban industrial counties' largest cities.

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Older industrial cities possess important demographic strengths, but carry legacies that threaten their continued progress in a diversifying society

As explored in the previous chapter, OICs' economic success is ultimately defined not only by whether they can generate greater growth and higher living standards, but also by whether those outcomes can be shared broadly across income and racial groups, and across communities. This is particularly the case given the increasing racial and ethnic diversity of the U.S. population overall, and the fact that people of color already represent more than 40 percent of OIC residents. Over the next few decades, immigration and aging will continue to transform America into a much more multi-racial, multi-ethnic society. The Pew Research Center projects that over the next 50 years, they estimate that the Hispanic population will grow by 50 million, Asians by 42 million, blacks by 16 million, and whites by only 2 million.⁹⁶ Critical to achieving a successful transition will be the millennial generation, young adults aged 18 to 34 in 2016 who represent a demographic bridge between an older U.S. white population and truly pluralistic generations to follow.⁹⁷

As still-important population centers throughout the Northeast and Midwest, older industrial counties contribute significantly to the nation's demographic strength, evidenced by several of their attributes:

- **Age-balanced workforces.** While the phrase "older" industrial communities may conjure a picture of demographically aged places, the combined workforce in OICs has an age profile similar to that in other urban areas. Almost 24 percent of employed residents of OICs are

FIGURE 5.14

OICs' workforces are similarly aged to those in other urban counties

Share of employed population aged 25-34 and 55-64, 2016

Source: Brookings analysis of American Community Survey data

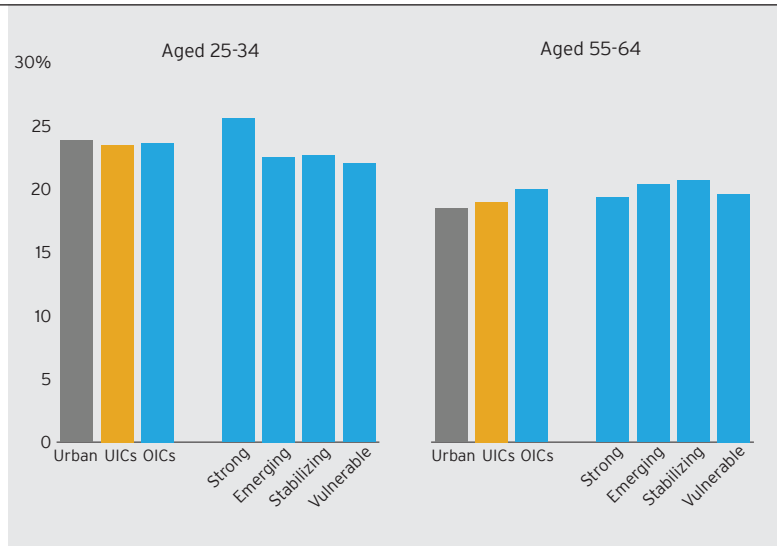


FIGURE 5.15

Immigrants are becoming larger shares of the local population in OICs, especially those that are economically stronger

Change in foreign-born population share (% points), 2010-2016

Source: Brookings analysis of American Community Survey data

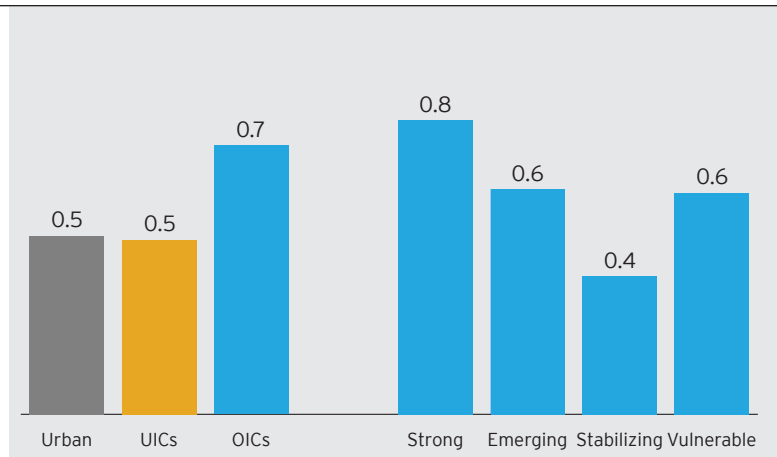
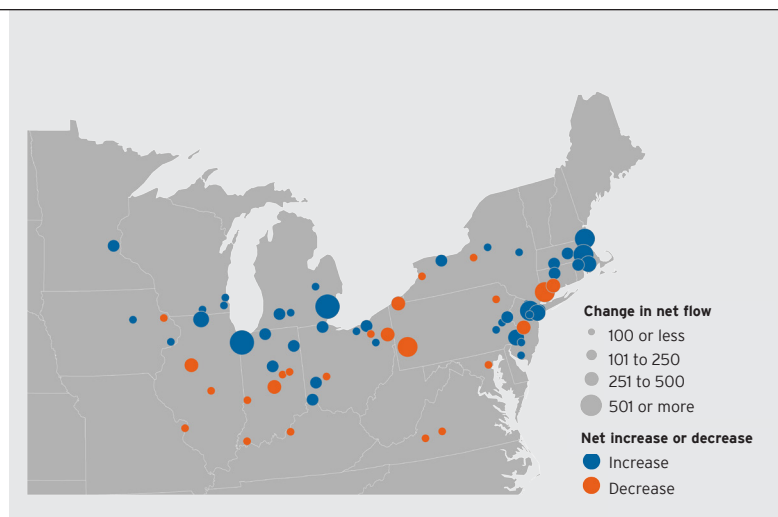


FIGURE 5.16

Some OICs are experiencing small but positive migration shifts from the nation's more expensive, tech-heavy cities

Change in net inflows from select markets to older industrial counties, 2011-12 to 2015-16

Note: See endnotes for complete list of select markets.
Source: Brookings analysis of IRS county migration statistics



between 25 and 34 years old, just shy of the average across all urban counties. Philadelphia, St. Louis, and Baltimore (all counties that are equivalent to their central cities) register the highest shares of their workforces in this age range. At the same time, about one in six workers in OICs is aged 55 to 64, just slightly above the average in other urban areas and nationwide, though not suggestive of an extraordinary aging pressure in these communities. Still, in the counties containing Youngstown, Ohio, Bethlehem, Pa., and Pittsburgh, older adults make up about one in five members of the workforce.

- **Rising immigration.** Part of older industrial areas' demographic vitality owes to increasing immigration in these communities. They were, of course, centers of U.S. immigration in the early 20th century, largely from Europe, but those flows waned along with their economic prowess. In the last several years, however, the foreign-born have begun to comprise a growing share of OIC populations, more so than in other urban areas. Philadelphia experienced the largest uptick this decade in foreign-born population share among older industrial counties, as the city added nearly 55,000 immigrants from 2010 to 2016. Norfolk County outside Boston, Ramsey County, Minn. (containing St. Paul), and Passaic County, N.J. (containing Paterson) also registered large proportional increases in immigrants, representing a mixture of high-skilled foreign professionals, lower-skilled labor migrants, family members of existing residents, and refugees gaining resettlement. The larger increases in foreign-born representation in economically stronger OICs signal immigrants' attraction to these healthier local economies as well as the contributions they make to local economic success.
- **Some glimmers of in-migration.** There is considerable talk, at least anecdotally, of a "boomerang effect" in many older industrial markets, wherein young people who have

achieved economic success in the nation's large and coastal cities return to their Rust Belt roots as they age and desire greater affordability and proximity to family.⁹⁸ To be clear, most OICs continue to experience net out-migration overall, particularly to their nearby suburban counties. Yet recent trends point to momentum in some older industrial areas in their exchange with the nation's most significant (and often most expensive) tech markets.⁹⁹ Beyond those OICs that function in part as suburbs of those markets (e.g., Lake County, Ind. outside Chicago; Essex and Norfolk counties outside Boston; Essex, Kings, and Queens counties outside New York), several have seen growing in-migration, or at least slowed out-migration, toward high-tech cities over the past few years. Chief among them are Wayne County, Mich. (Detroit), Philadelphia, Winnebago County, Ill. (Rockford), Jefferson County, Ala. (Birmingham), and Allen County, Ind. (Fort Wayne). These shifts are by no means very large, but they signal for some markets potentially growing economic and social appeal for people who can exercise locational choice in a national labor market.

These trends point to a stable or rising preference among some demographic groups—younger workers, immigrants, and households seeking lower costs of living or proximity to family—for residence in older industrial cities, providing those places with potentially important demographic momentum. Yet the legacy of out-migration and segregation in these communities looms large today, revealed in a series of attributes that pose challenges to OICs' success in a more pluralistic U.S. economy and society:

- **Higher racial segregation.** OICs exhibit considerably higher levels of residential segregation by race than other areas, the result of housing policies that for decades prevented (and in some ways continue to prevent today) fair access to housing for racial and ethnic minorities. Weighted by population, OICs' combined dissimilarity index—representing

the proportion of nonwhite residents who would have to move across neighborhoods to be distributed in the same way as white residents—is 8 percentage points higher than in urban industrial counties, and nearly 12 percentage points higher than in all urban counties. A number of OICs rank among the most segregated in the country, including Wayne, Mich. (Detroit), Brooklyn and Queens, N.Y., Milwaukee, Wisc., Essex, N.J. (Newark), and Lake, Ind. (Gary/Hammond). More so than in other urban areas, African American and Hispanic populations in older industrial areas remain largely located in central cities, while their suburban areas are largely white.

- **Deep educational attainment disparities by race and ethnicity.** By limiting access to high-quality schools for children of color, residential segregation may contribute to OICs' significant educational attainment disparities by race and ethnicity. In these counties, only 22 percent of non-white/Hispanic adults have a four-year college degree, versus 38 percent of whites. All urban counties exhibit such disparities, but attainment for both whites and people of color in older industrial areas lags that in other areas. These aggregates, however, mask particularly striking attainment disparities in highly segregated cities and counties such as Baltimore (36 percentage-point difference), Brooklyn (31 percentage points), St. Louis and Essex County, N.J. (Newark) (30 percentage points), and Fairfield County, Conn. (Bridgeport) (28 percentage points). Moreover, a strong relationship exists between overall educational attainment and OIC economic performance, suggesting that efforts to improve growth and opportunity in these diverse areas must address those disparities.¹⁰⁰
- **Concentration of blacks and Hispanics in low-paying fields.** A downstream effect of higher racial residential segregation and deep educational attainment disparities for people of color in OICs is their increased concentration

in occupations that pay less. Nearly half of all workers of color in older industrial counties are employed in the low-paying fields of sales and personal services, compared to 38 percent of white workers in those counties. That's a larger disparity than other counties exhibit, even those counties that had a similar industrial past. Not surprisingly, the OICs in which racial and ethnic minority workers are most concentrated in low-paying fields include many with the highest rates of residential segregation and largest attainment disparities: St. Louis, Baltimore, Brooklyn, Jefferson County, Ala. (Birmingham), and Essex County, N.J. (Newark). Altogether, in 65 of 70 older industrial counties, workers of color are more likely to hold low-paying occupations than their white counterparts. While differences in educational attainment certainly help drive these occupational outcomes, racial discrimination and social networks undoubtedly contribute to these troubling disparities as well.

Demographic disparities in residential, educational, and occupational opportunity in OICs can combine to circumscribe upward mobility for children growing up in these communities. Research from Raj Chetty and colleagues estimates the independent impact that counties have on long-run earnings outcomes for children growing up in lower-income households. They find that over the past two to three decades, an additional year spent growing up in the typical older industrial county reduces their income at age 26 by about 0.09 percent. That actually compares somewhat favorably with other types of urban counties, where the effect is even more negative. But there is great variation across places, and many economically weaker OICs have effectively reduced upward mobility for low-income kids by significant margins, such as Roanoke, Va. (-0.9 percent), Flint, Mich. (-0.8 percent), Albany, Ga. (-0.7 percent), and Indianapolis, Ind. (-0.6 percent). These negative effects on mobility also appear, however, in a few OICs that have performed more strongly as of

FIGURE 5.17

OICs exhibit greater racial segregation than other counties

Population-weighted white-black dissimilarity index, 2011-15

Source: Brookings analysis of American Community Survey data

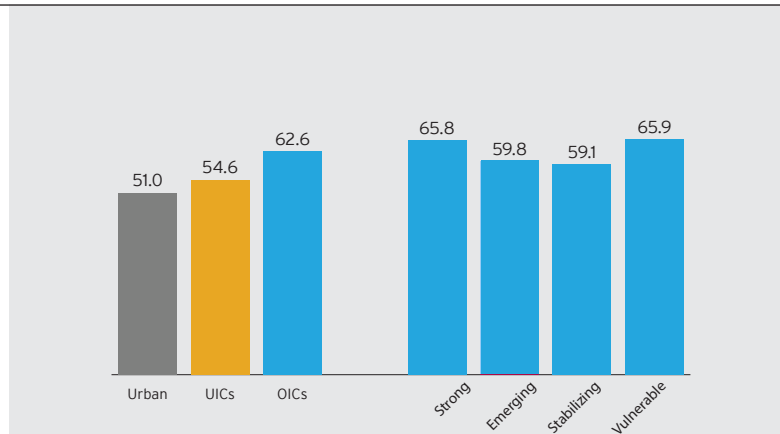


FIGURE 5.18

OICs exhibit considerable disparities in educational attainment between whites and people of color

Share of the 25+ population with at least a bachelor's degree, whites vs. people of color, 2016

Source: Brookings analysis of American Community Survey data

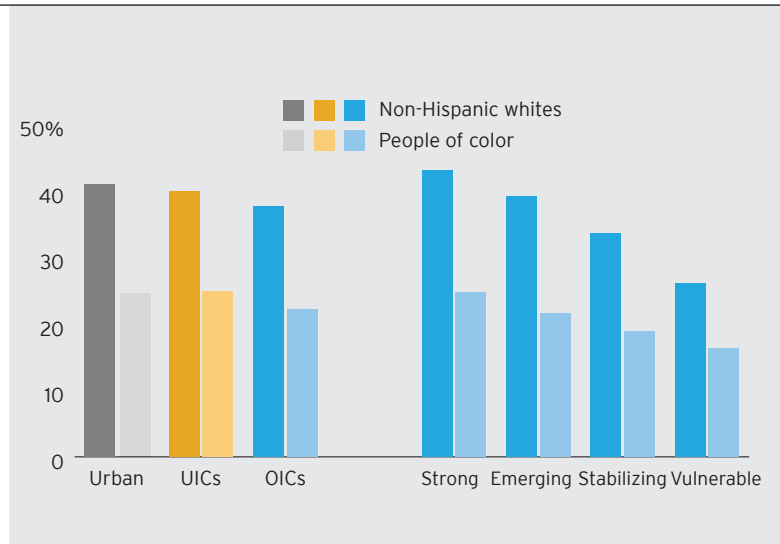
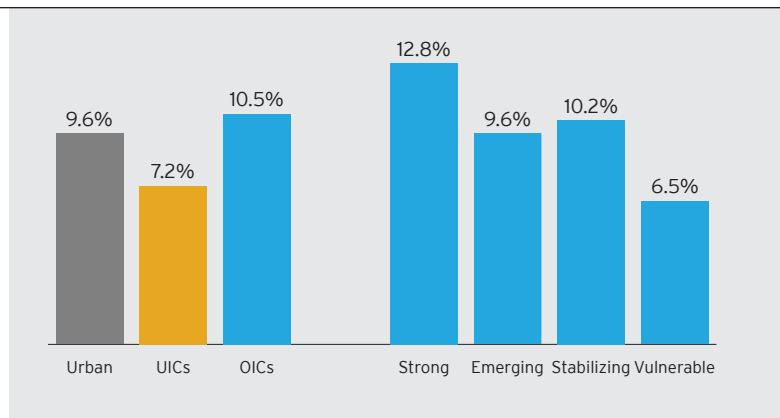


FIGURE 5.19

Workers of color in OICs are more concentrated in low-paying fields like sales and personal services

Overrepresentation of workers of color in lower-wage occupations, 2016

Note: Rate reflects difference between workers of color share in lower-wage occupations and share of all workers.
Source: Brookings analysis of American Community Survey data



late, but still harbor substantial racial disparities, such as St. Louis (-0.8 percent), Baltimore (-0.7 percent), and Milwaukee (-0.5 percent). As communities of color come to represent even larger shares of population in these urban areas, breaking down racial barriers to opportunity will become even more critical to OICs' long-run chances at rebuilding a stronger middle class.

This section demonstrates that OICs exhibit a series of assets and challenges in three areas that could critically shape their adaptation to key economic and demographic changes ahead. Moreover, how these communities are poised

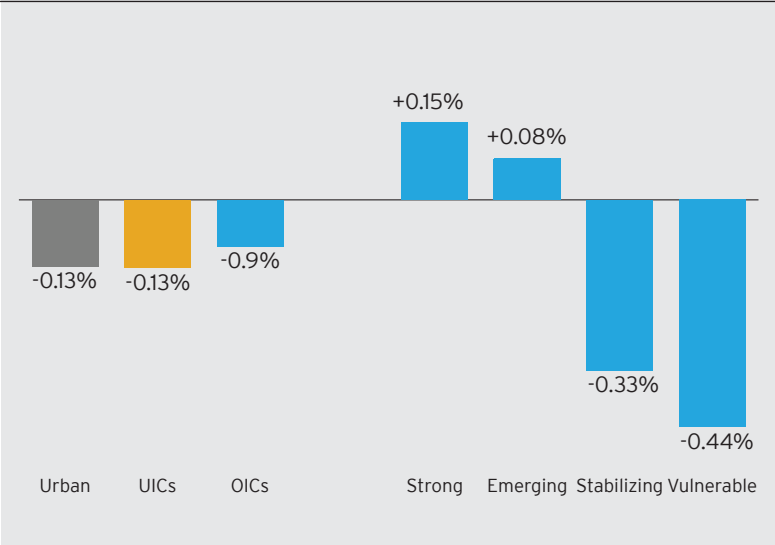
to respond to technological change, continued urbanization, and demographic transformation has already influenced their recent inclusive growth outcomes, as the OIC typology demonstrates. In general, strong OICs possess more of the assets for, and demonstrate fewer of the challenges to, future inclusive growth than their vulnerable counterparts, with emerging and stabilizing OICs ranking somewhere in between. Yet all of these communities enjoy a substantial baseline of population and economic activity that positions them to contribute even more meaningfully to our nation's future.

FIGURE 5.20

Economically weaker OICs have offered limited upward mobility for young people

Median effect of an additional year of childhood spent living in a given county on low-income children's income at age 26

Source: Brookings analysis of Chetty and Hendren, *The Effects of Neighborhoods on Intergenerational Mobility II: County-Level Estimates*, Quarterly Journal of Economics, forthcoming



VI. Responses

How can older industrial cities achieve inclusive economic growth?

In general, the nation's 70 older industrial cities possess the assets that matter in a modern, global economy—innovation capabilities and research universities, considerable STEM talent among a diversifying workforce, and a commitment to quality neighborhoods and employment centers. While federal policies could better strengthen these regional assets to promote growth in the industrial Heartland, such reforms are not likely to happen anytime soon. Instead, it will require local, regional, and state leaders to step up and together reposition their economies for growth and inclusion in an era of rapid global, digital, and demographic change.

Indianapolis (IN)



Over the past decade, leaders in older industrial cities have made great inroads in adapting their excess land and abandoned properties for redevelopment in response to years of population decline. Yet as this report has documented, those efforts need to be coupled with more deliberate efforts to help research institutions, industries, and workers also adapt to the rigors of the modern economy while dismantling longstanding barriers to racial equity.

To start, leaders in older industrial cities must embrace the goal of inclusive economic growth as a shared responsibility. This vision is not just the province of growth actors such as business and economic developers or solely that of social justice advocates and community developers. It requires a shared commitment from leaders in economic development, education and workforce development, and land use and infrastructure planning to step out of their silos and jointly increase the participation of more firms, people, and places in economic success to sustain growth.

Leaders can also establish new, visible metrics for collective action that define the outcomes they hope to achieve from a vision of shared prosperity. Many share a growing awareness that traditional metrics of job growth and new capital investments are insufficient. Leaders in Minneapolis-St. Paul and Northeast Ohio (as detailed below) have set community-wide benchmarks around job quality, business dynamism, skills attainment by race, and job proximity that enable leaders to more directly confront entrenched barriers to progress and hold each other accountable for delivering change.

Furthermore, this commitment to an inclusive economy can translate to a common framework for action. In “Opportunity for Growth,” our Brookings colleague Joseph Parilla offers a strategy framework for inclusive growth that, while applicable to cities of all types, arguably has particular relevance for older industrial areas. He writes that local leaders “...must simultaneously deliver environments in which firms and industries can thrive and create good

jobs while also creating systems and networks that help lift up workers and communities, especially those that have been historically disadvantaged.” In short, leaders across sectors in older industrial cities can pursue policies and practices that address three areas that ultimately shape inclusive growth outcomes:

- The dynamic process of firm creation and expansion that responds to the opportunities created by technological change and fuels **job creation** and productivity growth
- The skills, knowledge, and capabilities that constitute **job preparation** for a rapidly diversifying population, providing pathways to upward mobility and economic self-sufficiency especially for workers of color
- The physical proximity and connectedness to employment that promote **job access** in an urbanizing economy, ensuring that no neighborhoods are isolated from economic opportunity and investment

As the typology introduced in this report suggests, different older industrial cities have different starting points and viable opportunities in the areas of job creation, job preparation, and job access. To help local leaders better understand those fundamentals at a more detailed level so they can select and pursue the most appropriate interventions in each of those areas, this report includes an interactive tool that benchmarks each of the 70 OICs on a variety of key indicators that highlight their strengths and weaknesses, and potential assets and challenges in adapting to overarching economic change. This information can help leaders in stronger OICs pinpoint the key challenges that they must address to fully realize inclusive growth, while also assisting those in more vulnerable OICs in prioritizing and sequencing a broader array of efforts to stimulate the local economy in ways that improve outcomes for struggling families and communities.

Our nation as a whole has important economic, social, and political stakes in the success of

older industrial communities. Those stakes should inspire deeper and more strategic federal commitment to their well-being. Future work will explore the possible dimensions of a federal-state-local policy agenda tailored to OICs that, in turn, reinforces the inclusive growth framework described above. Here, we present examples of promising strategies that different types of urban industrial communities—larger and smaller, and those that have transitioned both more and less successfully over time—have adopted that reflect the framework in action. These strategies range from local to regional to state in their focus, and some rely on multiple levels of government. Most involve not only the public sector, but also key business and non-profit actors as well. Ultimately, a modern national strategy to support OIC prosperity will support the bottom-up innovation and civic commitment already at work in many of these markets.

Older industrial cities can stimulate technology-enabled job creation

Our analysis shows that most older industrial cities possess significant technological capabilities that could help them not only weather coming technological disruptions, but also succeed in adapting to those changes and prospering. Yet their capabilities are not effectively translating into significant new forms of economic value and job creation. This suggests that these cities would benefit from more intentional strategies to understand their specific technological capabilities, identify current and potential capabilities that have market promise, and build stronger bridges from their research and STEM assets to commercial application. Leaders in some industrial regions are experimenting and finding success along these very lines.

[Data to Decisions \(Syracuse-Utica, N.Y. region\)](#)

For 53 years, the U.S. Air Force flew fighter planes and conducted sophisticated electronics research

from Griffiss Air Force Base in Rome, N.Y. At the same time, the wider CenterState region—which combined the Syracuse, Utica-Rome, and Ithaca metropolitan areas—developed strong industries in electronics, information technology, and related fields, led by large manufacturers like Carrier and General Electric and defense contractors like Lockheed Martin. The military closed Griffiss in 1995, however, moving most of its major functions to other installations, around the same time that the region’s large firms shifted manufacturing to other locations. The CenterState area struggled to generate robust economic growth and opportunity in the following decades.

Working with Brookings in the early 2010s, economic development organization CenterState CEO and partners conducted an in-depth market assessment of the regional economy.¹⁰² The process surfaced a set of inter-connected technology strengths that spanned multiple sectors with deep roots in the region’s legacy industries: digital electronics, information systems, medical equipment and applications, and environmental products. Recognizing the potential of these integrated technologies as the market grows for cybersecurity solutions, data mining, sophisticated sensors, and other digital products and services, leaders crafted a new regional specialization: a “data-to-decisions” applied technology cluster.

Already these strengths have given the region a competitive edge in unmanned aerial systems, or drones. Led by the non-profit NUAIR Alliance, the region won an early victory when the FAA named it one of five sites nationally designated for drone testing in 2013. Companies like Syracuse-based Gryphon Sensors, born out of non-profit technology provider SRC, Inc., develop and test detection and surveillance systems for drones.¹⁰³ Swedish aerospace and defense firm Saab recently announced that it would move its U.S. headquarters to the region to work more closely with subsidiary Saab Sensis to develop technologies that integrate unmanned vehicles into the nation’s air traffic management system.¹⁰⁴ “Data to decisions” and broader “cross-

connected platforms” were also a focal point of the region’s \$500 million award from New York State’s Upstate Revitalization Initiative.¹⁰⁵

Third Frontier Program (Ohio)

Third Frontier is a technology-based economic development investment program run by the state of Ohio’s Development Services Agency. Created in 2002, Third Frontier is funded by \$2.1 billion in state-backed bonds authorized by voters in 2005 and 2010. It supports programs targeted at the state’s early stage and startup technology companies through a range of resources including pre-seed investments, entrepreneurial coaching, support for technology validation and commercialization, and sponsorship of student internships. An independent commission specifies priority technology areas for the state (e.g., advanced materials, fuel cells, medical imaging) eligible for Third Frontier investment.

Through 2016, the state of Ohio reported that Third Frontier programs had cumulatively invested a little over \$1.3 billion in state dollars, which together with \$2.4 billion in matching private investment contributed to 10,000 private-sector jobs created and another 7,000 retained, with an average annual salary of \$69,000.¹⁰⁶ A new effort within the Third Frontier, the Ohio Opioid Technology Challenge, is awarding competitive grants to researchers (including at the University of Akron) and companies developing solutions to reduce opioid use, a particular challenge across a state whose cities, towns, and rural areas are fighting an epidemic of overdoses.¹⁰⁷

The wider indirect impact of the Third Frontier on regional innovation and job growth is difficult to measure, but there are signs that the initiative is increasingly positioning Ohio’s large older industrial cities for growth in health care and life sciences technologies. While Columbus recently produced one of the biggest successes in Ohio tech history in CoverMyMeds (originally founded in Northeast Ohio), Cleveland and Cincinnati companies also achieved new highs in venture capital attraction.¹⁰⁸ The presence of leading

research institutions (e.g., Cleveland Clinic), major Fortune 500 companies (e.g., Procter & Gamble), and regional public-private partnership organizations (e.g., Cintrifuse in Cincinnati, Flashstarts in Cleveland) support ecosystems that help translate state investments like Third Frontier into real-world technological value and quality job creation.¹⁰⁹

With Cleveland-based JumpStart, Inc., Third Frontier is also supporting efforts to broaden the demographic base of the state’s high-tech economy. Jumpstart, a nonprofit that helps tech entrepreneurs find capital and resources to grow their businesses, received backing in 2015 from Third Frontier and the Case Foundation for its \$10 million Focus Fund, which invests in Ohio tech startups led by women and people of color.¹¹⁰ The fund made two of its initial investments in Cincinnati-based Talmatrix, a human resources software-as-a-service company, and Akron-area BioMendics, a topical drug developer.¹¹¹

The Third Frontier is not the only state technology-based economic development program operating in older industrial contexts; Pennsylvania’s Ben Franklin Technology Partners program and Empire State Development’s NYSTAR programs in New York support similar collaboration between researchers and industry to stimulate high-tech job growth. Recent research finds that these sorts of state efforts have successfully “accelerate[d] high technology development by adopting market-supportive programs that complement private sector initiatives.”¹¹²

Older industrial cities can conduct job preparation for a diversifying workforce

The most important factor contributing to long-run economic growth and opportunity in cities and regions is human capital. The challenge for older industrial areas in this respect is partially the absolute quantity of labor and skills, but more so the distribution of educational attainment and opportunity among their populations, particularly

for growing populations of color. In too many older industrial cities, the lack of progress for younger people of color is arguably the most important economic challenge. That challenge, in turn, links back to longstanding patterns of residential and educational segregation that express themselves in limited occupational opportunity and mobility for non-white workers. Repairing those deep divides is the work of a generation or more, and entails not only efforts to improve near-term employability, but also to reduce longer-term social, health, and financial barriers to employment. Older cities are pursuing several interventions that show promise for helping their current and future workforces gain skills, connections, and supports for a changing economy.

Community Education Coalition (Columbus, Ind.)

The smaller Southeast Indiana city of Columbus is home to the headquarters of Cummins, Inc., a multinational manufacturer of engines and generators. As our Brookings colleague John Austin observes, the company's high levels of innovation and strong commitment to its hometown have contributed to above-average incomes among community residents.¹¹³

Founded in 1997, the Community Education Coalition (CEC) is a partnership of business, education, and community leaders with the shared goal of leveraging Southeast Indiana's education system to support economic growth and cultivate a high quality of life. After some initial successes in fundraising for local colleges, universities, and a community learning center, the coalition received a substantial grant from the Lilly Endowments in 2007 to form a regional initiative across 10 counties in Southeast Indiana to pursue greater educational attainment by 2015. Known as Eco15 (Economic Opportunities through Education by 2015), the program culminated with a 92 percent high school graduation rate, faster growth in post-secondary credential attainment than the Indiana-wide average, and a higher rate of college graduates in STEM fields.¹¹⁴

The coalition has gone on to implement several other initiatives, including a pilot program for extended early childhood education offerings at local colleges and universities, Hispanic student outreach, encouraging local Indiana University - Purdue University Columbus (IUPUC) to offer a bachelor's degree program in mechanical engineering, and building a \$15 million shared Advanced Manufacturing Center of Excellence facility for education and workforce development programs for Southeast Indiana manufacturers. While smaller industrial cities like Columbus can face growing challenges in retaining jobs and skilled workers, their size can also serve to facilitate effective collaborations like CEC that build the human capital essential to long-term economic prosperity.

LaunchCode (St. Louis, Mo.)

In 2013, the people who would go on to found the nonprofit LaunchCode noticed an opportunity in the city of St. Louis. The local economy was diversifying into new functions that demanded more technical talent; by 2013 the broader region had more than 43,000 jobs in computer and mathematical occupations, up from 36,000 just a few years before. An increasing demand for competent coders and a shortage of local workers with those skills meant there was a huge opportunity to help the city reach its potential.

LaunchCode was subsequently founded to increase access to jobs in technology for talented people from non-traditional backgrounds, but not simply by offering free classes in marketable skills. The organization's unique approach discovers opportunities for paid apprenticeships or internships, allowing successful applicants to gain the skills they need in a real work environment alongside more experienced programmers. Importantly, LaunchCode provides its training in culturally relevant contexts that help groups that have not traditionally worked in tech to succeed in gaining skills and jobs. Its Coder Girl program, for instance, is run for women, by women, to help them navigate nontechnical barriers to entry in an industry that remains male dominated.¹¹⁵

In 2016, LaunchCode placed 255 people into jobs, including paid apprenticeships and permanent positions. Of those, 30 percent had no college degree, and 48 percent were previously unemployed. After completing the program, the average LaunchCoder more than doubled his/her previous salary.¹¹⁶

While LaunchCode was founded in the older industrial city of St. Louis, it has subsequently expanded into a range of other cities: Kansas City, Seattle, Portland, Miami, and Tampa. It is arguably the organization's roots in an older industrial market that helped spur its role in a growing nationwide movement to broaden access to technical skills for populations traditionally excluded from those roles.

Thread (Baltimore, Md.)

Physical proximity is a critical ingredient for promoting job access. Still, there are many cities in which low-income individuals live but a stone's throw from significant employment centers yet remain disconnected from their plentiful job and career opportunities. Particularly for young people growing up in uncertain family and neighborhood environments, a lack of "bridging capital" to individuals and institutions in the wider educational and economic community can constitute a substantial barrier to their upward mobility.¹¹⁷

Baltimore provides a stark example of this phenomenon. Many young people growing up on the city's east and west sides live in poor, segregated, and often high-crime communities with very few jobs. They are almost exclusively African-American. A couple of miles away lies the city's booming downtown and Inner Harbor which attract a thriving professional class for work, live, and play.¹¹⁸

This was in part the motivation for Thread, a nonprofit that engages underperforming high school students in Baltimore (from the bottom 25 percent of their freshman class academically) to provide them with a "family" of volunteers and

mentors and access to community resources. The family acts to transcend barriers the student may face that leave him/her disconnected from educational and economic opportunity. The family remains with the student throughout his/her high school career and beyond and is active in his/her life to help solve problems, make connections, and provide tailored support.

Active since 2004, Thread has served more than 300 young people, with 87 percent of those who stayed in the program for at least five years earning high school diplomas (exceeding the city's 72 percent five-year high school graduation rate for all students). And 83 percent of student alumni have completed a post-secondary degree or certificate program. Thread doesn't take attrition lightly; as co-founder Sarah Hemminger says, "We're annoying. We show up on your doorstep. We want to take you to school."¹¹⁹ The program ultimately aspires to reach 3,000 students in Baltimore. Thread's model demonstrates that deep, sustained work can help address the racial and economic polarization that many OICs face and help young people from disadvantaged backgrounds connect meaningfully to their cities' new successes.

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**Older industrial cities
can enhance job access
to spur proximity and
connectedness**

This report argues that the very urban-ness of older industrial cities constitutes an important factor for achieving growth in an age when economic activity is urbanizing. While many older industrial counties possess proximity to large markets and positive trend lines in job clustering, their longer-run position for residential and commercial growth could be strengthened after many years of population and employment decline. To the extent such efforts put more opportunity within greater reach of the low-income communities of color that characterize many urban cores, they can meaningfully advance economic inclusion as well.

Detroit Future City (Detroit, Mich.)

In 2012, the city of Detroit launched the Detroit Strategic Framework, the culmination of a two-year, public long-term planning process that commenced during the Great Recession and collapse of the auto sector, one of the city's worst economic crises. While the framework establishes policy directions and actions for Detroit across a variety of areas, it emphasizes land use, transportation, built environment, and other place-based strategies for achieving a more inclusive and sustainable city.¹²⁰ One of the key challenges it outlines is adapting the footprint of a city that once housed 2 million people for something closer to its current population of 670,000, through directing investment toward key employment, transportation, educational, and open-space nodes.

To steward the implementation of the Detroit Strategic Framework, the Detroit Economic Growth Corporation incubated a new organization, Detroit Future City (DFC), which in 2016 became an independent nonprofit. DFC receives support from a range of philanthropic, business, and public sources to conduct research, convene stakeholders, develop best practices, and provide technical assistance to local land stewards. To that end, DFC has developed numerous web-based tools and resources to assist Detroiters in a variety of community development projects, such as repurposing empty lots or vacant land and installing environmentally sustainable water infrastructure. DFC has also helped form a number of economic development initiatives, including the Detroit Neighborhood Housing Compact, a cross-sector group focused on strengthening Detroit's single-family housing market.

DFC uses its research to draw continued attention to the framework and the city's progress toward its goals. It recently released "139 Square Miles," the first comprehensive profile of the city since the framework's publication in 2012. It analyzes data on Detroit's people, economy, and places, and highlights areas in which the city is making progress (e.g., increasing private-sector payrolls,

moving toward population growth) and those where it continues to fall short of its goals (e.g., growing educational attainment disparities across racial groups). DFC's work is also drawing needed local focus to critical below-the-radar issues, such as the implications of long-term shifts in the city's housing market from owner-occupied toward rental, and the future of Detroit's roughly 900 vacant industrial sites.¹²¹

Transformative Development Initiative Fellows (Massachusetts)

Whereas many state economic development organizations concentrate their efforts on attracting large employers to their major business hubs, MassDevelopment (the state economic and finance agency of Massachusetts) is trying a new tactic. Its Transformative Development Initiative (TDI) is a place-based approach to development that aims to form sustained connections on the ground with communities throughout the commonwealth.¹²² This is particularly the case in the state's Gateway Cities, its historical mid-sized mill towns and manufacturing hubs. In these cities, MassDevelopment looks to create a "critical mass" that can spur growth and investment. Yet a lack of local professional economic development capacity in fiscally challenged Gateway Cities can sometimes hamstring those efforts.

Beginning in 2014, TDI projects include a technical assistance program, equity investment in real estate, a small pilot grants program, and the unique TDI Fellows program. TDI Fellows sends experienced economic development professionals to selected Gateway Cities to work alongside local officials. The fellows come from diverse backgrounds such as city planning, community partnership building, and real estate. With a minimum of three years spent serving their community, TDI Fellows work to ensure the implementation of best practices. To date, fellows have been instrumental in launching several development initiatives including improving the walkability of downtown neighborhoods, revitalizing important cultural assets, and taking ownership of building renovation projects in seven

Gateway Cities throughout the state, including those in the older industrial counties of Bristol (New Bedford), Essex (Haverhill, Lynn, Peabody), and Hampden (Holyoke, Springfield). Populations in these cities have stabilized or are growing for the first time in many years.

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Older industrial cities can harness regional capacity to deliver on inclusive growth

Individual strategies and initiatives can help older industrial cities deliver on the goals of job creation, job preparation, and job access. Often, older industrial cities themselves lack the capacity and regional commitment that help sustain these efforts over time and ensure that they reinforce one another. Some, however, benefit from organizations and networks that act across jurisdictions and sectors to pursue longer-term visions for these communities that span business and political cycles. Building these types of regional entities is particularly critical for more vulnerable OICs where true renewal will demand a durable, inclusive vision.

The Fund for Our Economic Future (Northeast Ohio)

As the saying goes, what gets measured, gets done. Achieving sustainable, inclusive economic growth rarely happens on its own, as Brookings’s Metro Monitor demonstrates. Regional organizations can thus play a critical role in establishing goals and measures that local leaders use to guide their strategies and judge their progress toward inclusive growth.

In Northeast Ohio, an 18-county region that spans the Akron, Canton, Cleveland, and Youngstown metro areas, the Fund for Our Economic Future has taken up this challenge. The Fund is a collaborative of more than 50 funders focused on achieving growth and opportunity for the region’s communities and residents. Founded in 2004, the Fund’s members support organizations and

initiatives that work region-wide to create jobs in new and existing industries, prepare residents for those jobs to support their advancement and the competitiveness of the region’s businesses, and make jobs more accessible to improve employment opportunities, particularly for under-leveraged communities.

In 2006, recognizing the importance of a common framework to understand the region’s economic progress, the Fund commissioned the Upjohn Institute to prepare “Dashboard Indicators” for Northeast Ohio that identified factors critical to the area’s growth and well-being.¹²³ Those indicators helped guide the Fund’s subsequent investment strategy, and elevated the Fund’s role in providing research-based frameworks and evidence to assess the impact of those investments. In 2013, the Dashboard evolved into a series entitled “What Matters,” which provided analysis that has helped drive the Fund’s more concerted focus on promoting inclusive regional economic growth in the post-recession environment.¹²⁴

In February 2018, the Fund launched “The Two Tomorrows,” challenging Northeast Ohio’s leaders to embrace strategies in job creation, job preparation, and job access that more fully realize the region’s potential to achieve growth and opportunity. The Fund identifies eight indicators across these three priority areas that help ground the region’s progress against similar metro areas, and benchmark the success of the Fund’s strategies to: promote a continuously regenerating economy (through traded sector growth and entrepreneurship); with good jobs and rising incomes (with rising productivity, standards of living, and wage and employment growth); for everyone (eliminating economic disparities by race and place).¹²⁵ The Fund members’ long-term vision for Northeast Ohio and focus on achieving progress in discrete areas provide a powerful example of how common frameworks and measures can strengthen collective commitment to action in older industrial markets.

[The Right Place \(Grand Rapids, Mich.\)](#)

The state of Michigan occupies a central position in the American Rust Belt. Many of its cities—exemplified by Battle Creek, Detroit, Flint, and Kalamazoo in this report, but including many smaller places like Jackson, Muskegon, and Saginaw—have suffered among the most severe effects nationwide of manufacturing’s long employment decline. Yet Grand Rapids, a historic capital of U.S. furniture manufacturing in Western Michigan, stands apart. The region today has more manufacturing jobs than it did in 1990, even as that figure fell 25 percent statewide over the same period, and as many furniture manufacturers relocated to North Carolina.¹²⁶

The Right Place, a regional economic development organization based in Grand Rapids and serving wider Western Michigan, has been an important factor for sustaining the region’s economic competitiveness and improving its quality of life. Since 1985, The Right Place has served businesses and communities in the region by attracting investment and expanding access to emerging growth opportunities. It fosters collaboration across a range of industries and sectors that weave throughout the city and the broader Western Michigan region.

The Right Place recognizes four strategic growth sectors (advanced manufacturing, food processing and agribusiness, life science and medical devices, and information technology and communications) as arenas in which the Western Michigan region has a competitive advantage. One of its more successful initiatives is the Manufacturer’s Council, first convened in 1989. The council works to ensure the success of the region’s advanced manufacturers by providing a forum in which they can share best practices, solve common problems, and advocate for their future.

The long-term strategy of The Right Place is to make its mark through a sustained focus on four existing assets, which it identifies as “Foundations

for Economic Growth.” These include business support systems, infrastructure, work-ready talent, and quality of life. The organization reports that over its three decades, it has assisted companies in investing a cumulative \$4.7 billion in the region, creating 44,000 jobs.¹²⁷ Some of its most visible successes have occurred in and around downtown Grand Rapids, where committed civic leadership has helped transform previously vacant buildings and neighborhoods into vibrant destinations for commerce, education, and culture.¹²⁸

[Roanoke Regional Partnership \(Roanoke, Va.\)](#)

Roanoke ranks among the more economically challenged of the 70 older industrial cities. Founded as a railroad town in the late 1800s, the community continued to rely heavily on Norfolk & Western employment until the railroad company merged and relocated in the early 1980s. The community has struggled to recover since that time; inflation-adjusted median household income in Roanoke today is still about 9 percent lower than in 1989.¹²⁹ We identify it as one of the “vulnerable” cities in our OIC typology.

Yet Roanoke is enjoying renewed demographic and economic vitality, thanks in part to the efforts of the Roanoke Regional Partnership and a network of civic partners throughout Virginia’s Blue Ridge region. Founded in 1983, the partnership is a joint venture among the region’s seven counties and cities and its private-sector businesses. The partnership conducts conventional economic development activities such as marketing and business recruitment/retention/expansion. But it has also been a critical part of “post-cluster” efforts that are helping to remake the city’s economy and its built environment through a long-term focus on upgrading the region’s competitiveness.¹³⁰

Leaders built the scaffolding for Roanoke’s re-emergence in its downtown, where socially minded developers used federal and state tax credits in

the early to mid-2000s to convert abandoned industrial and commercial spaces into housing. A downtown higher education center that opened in the railroad's former headquarters building in 2000 now serves students with programs from 10 colleges and universities from across the region.¹³¹ These efforts, guided by public-private partnerships like Downtown Roanoke, Inc., helped double Roanoke's downtown population and fuel a wider 6,000-person increase in the city's population from 2004 to 2015, a veritable boom among post-industrial Appalachian communities.¹³²

The partnership has been at the forefront of efforts to embrace the advantages of Roanoke's location amid the Blue Ridge and Allegheny mountains by developing a robust "outdoor industry" that today boasts local tour providers, apparel manufacturers, and equipment retailers. That strategy drew on the efforts of the city and local nonprofits like Valley Beautiful Foundation that restored riverside parks and expanded trails and bike paths to better connect Roanoke to its region's natural assets.¹³³ The strategy counts among its successes the 2016 announcement

that Oregon-based brewer Deschutes will open its first East Coast brewery in Roanoke in 2019.

In 2010, Roanoke became home to the Virginia Tech Carilion School of Medicine and Research Institute. The institute conducts research in areas such as inflammation, infectious disease, neuroscience, and cardiovascular science and cardiology, and the medical school emphasizes research competency in training new physicians. The institutional partners—Virginia Tech and Carilion Clinic—recently formed a new venture capital fund to seed commercial applications of their research that are beginning to take root in a local "innovation corridor."¹³⁴

These efforts have not yet transformed the whole of Roanoke's economy (as our analysis shows), nor is it yet clear whether and how they will materially benefit the historically black communities that lie just north of the city's downtown.¹³⁵ But they reflect the sort of long-term regional vision, commitment to authentic economic diversification, deep partnerships, and valuing of place that is likely necessary to realize transformative change.

VII. Conclusion

The 2007 Brookings report “Restoring Prosperity” concluded with this observation:

After decades of deterioration and decline, current economic and demographic forces are providing fresh opportunities for older industrial cities to capitalize on their assets and restore the prosperity that has for too long eluded so many of their neighborhoods and families.

These words remain true in 2018. But their urgency has increased.

St. Paul (MN)



Emerging from the wreckage of the Great Recession, America's economy and society exhibit growing fault lines, especially by place. The concentration of wealth, investment, and dynamism in a shrinking number of our communities threatens the long-run stability of the U.S. economy, erodes confidence in our democracy, and further imperils access to the American dream.

This report shows that our older industrial cities can help repair those fault lines. They anchor regions of the country that have not fully participated in the latest waves of economic growth. Yet they remain significant centers of population and commerce. In the face of relentless economic and demographic change, older industrial cities possess considerable innovation, talent, and built environment assets that can spur adaptation, growth, and broader opportunity.

But this won't happen automatically. For all their strengths and market momentum, older industrial cities bear serious scars of the past that hold back business growth, limit community revitalization, and constrain human potential.

Cities can't heal those scars alone, but they must seize the mantle of leadership. Already, their public, private, and civic entities are energetically engaged in the tough work of forging stronger economies and communities that provide opportunity for all of their residents. We hear it from the people on the front lines of those efforts in our older industrial regions, and we see it firsthand in the older industrial counties from which we hail (Worcester, Mass. and Cuyahoga, Ohio). Local leaders should, through their words and actions, demonstrate their commitment to securing a future in which technological change, continued urbanization, and demographic transformation create new pathways to success for their residents and communities. That success is indeed within their reach.

States, for their part, must be critical partners in unleashing inclusive growth in their older industrial cities. As this analysis demonstrates, many states rely to a great degree on the

contributions of these older areas for prosperity statewide and in their adjacent small towns and rural areas. This report highlights examples of how states are deploying financial capital to stimulate public-private partnerships for growth (e.g., Ohio's Third Frontier and Roanoke's Virginia Tech Carilion School of Medicine and Research Institute) and human capital to help boost older industrial cities' revitalization capacity (e.g. Massachusetts's Transformative Development Initiative Fellows). States can generate the most positive impacts for their OICs when their efforts support locally-led visions for inclusive growth.

And although our nation's older industrial cities are not waiting around for federal leadership, the need for that leadership remains. The United States as a whole has a fundamental stake in the success of the broad regions that our older industrial cities anchor. A strategic national economic policy would assist these critical nodes to address their legacies, and thereby unleash more widely shared growth. It would provide the strong safety net that not only addresses the basic human needs these communities have, but also cushions the risks associated with the greater embrace of technology and risk-taking these cities arguably require. It would energize basic and applied research and development in the major universities and medical institutions that undergird the innovation ecosystems of most older industrial cities. It would support a renewal of infrastructure that relieves the legacy costs these markets disproportionately bear while helping them modernize their built environment for a new urban age. It would through a variety of channels dramatically expand individuals' ability to engage in the continuous learning essential to socioeconomic success in an era of accelerating change. And through targeted backing for locally-led visions, it would differentiate interventions based on the unique assets and challenges of these places.

Evidence abounds that we can build a stronger and more cohesive national economy that better supports the ideals to which Americans collectively aspire. We just need to start in the right places.

Endnotes

- 1** Jennifer S. Vey, "Restoring Prosperity: The State Role in Revitalizing America's Older Industrial Cities," Brookings (blog), 2007, <https://www.brookings.edu/research/restoring-prosperity-the-state-role-in-revitalizing-americas-older-industrial-cities/>.
- 2** Gretchen Livingston, "Four-in-Ten Couples Are Saying 'I Do,' Again," *Pew Research Center's Social & Demographic Trends Project* (blog), November 14, 2014, <http://www.pewsocialtrends.org/2014/11/14/four-in-ten-couples-are-saying-i-do-again/>.
- 3** Vey, "Restoring Prosperity."
- 4** Diane Whitmore Schanzenbach et al., "The Closing of the Jobs Gap: A Decade of Recession and Recovery" (The Brookings Institution Hamilton Project, August 4, 2017), http://www.hamiltonproject.org/papers/the_closing_of_the_jobs_gap_a_decade_of_recession_and_recovery.
- 5** Alan Berube and Cecile Murray, "Metro Area Unemployment Trends Buck the National Narrative: A Story of Convergence, Not Divergence," *Brookings* (blog), June 8, 2017, <https://www.brookings.edu/blog/the-avenue/2017/06/08/on-unemployment-metro-areas/>.
- 6** Richard Shearer et al., "Metro Monitor 2018 Dashboard" (Brookings Institution, 2018).
- 7** Arloc Sherman, Isaac Shapiro, and Robert Greenstein, "Census Data Show Robust Progress Across the Board in 2016 in Income, Poverty, and Health Coverage," Center on Budget and Policy Priorities, September 12, 2017, <https://www.cbpp.org/research/poverty-and-inequality/census-data-show-robust-progress-across-the-board-in-2016-in-income>.
- 8** Jay Shmbaugh et al., "Thirteen Facts about Wage Growth | The Hamilton Project" (Brookings Institution, 2017), http://www.hamiltonproject.org/papers/thirteen_facts_about_wage_growth.
- 9** Brendan Duke and Andrew Schwartz, "The Midwestern Great Recession of 2001 and the Destruction of Good Jobs" (Center for American Progress, 2017), <https://www.americanprogress.org/issues/economy/reports/2017/06/07/429492/midwestern-great-recession-2001-destruction-good-jobs/>.
- 10** David Autor, David Dorn, and Gordon Hanson, "The China Trade Shock - Studying the Impact of China's Rise on Workers, Firms, and Markets," *The China Trade Shock*, accessed January 11, 2018, <http://chinashock.info/>.
- 11** These terms are as much cultural as they are strictly geographic; some urban areas along the coasts have not fared well (e.g., in Florida and Connecticut) while others in the interior have (e.g., in Texas and Colorado). People variously define the Heartland as: areas away from the East and West Coasts; synonymous with the Midwest; home to agriculture or manufacturing; and predominantly white America. Emily Badger, "Where Is America's Heartland? Pick Your Map," *The New York Times*, January 3, 2017, sec. The Upshot, <https://www.nytimes.com/interactive/2017/01/03/upshot/where-is-americas-heartland-pick-your-map.html>.
- 12** Mark Muro and Sifan Liu, "Tech in Metros: The Strong Are Getting Stronger," *Brookings* (blog), March 8, 2017, <https://www.brookings.edu/blog/the-avenue/2017/03/08/tech-in-metros-the-strong-are-getting-stronger/>.
- 13** Kenan Fikri, John Lettieri, and Angela Reyes, "Dynamism in Retreat: Consequences for Regions, Markets, and Workers" (Economic Innovation Group, 2017), <http://eig.org/dynamism>.
- 14** Eduardo Porter, "Why Big Cities Thrive, and Smaller Ones Are Being Left Behind," *The New York Times*, October 10, 2017, sec. Economy, <https://www.nytimes.com/2017/10/10/business/economy/big-cities.html>.
- 15** "Regional Economic Development in Theory and Practice," Community-Wealth.org, June 22, 2012, <https://community-wealth.org/content/regional-economic-development-theory-and-practice>.
- 16** Alfred Marshall, "Principles of Economics," accessed January 12, 2018, <http://www.econlib.org/library/Marshall/marPCover.html>.
- 17** Mark Muro, Jacob Whiton, and Sifan Liu, "Online Giants Must Accept Responsibility for Impacts on the Physical World," *Brookings* (blog), January 8, 2018, <https://www.brookings.edu/blog/the-avenue/2018/01/08/online-giants-must-accept-responsibility-for-impacts-on-the-physical-world/>.

- 18** Edward Glaeser, "Reforming Land Use Regulations," *Brookings* (blog), April 24, 2017, <https://www.brookings.edu/research/reforming-land-use-regulations/>.
- 19** Chang-Tai Hsieh and Enrico Moretti, "Housing Constraints and Spatial Misallocation," Working Paper (National Bureau of Economic Research, May 2015), <https://doi.org/10.3386/w21154>.
- 20** Wolf Richter, "Insane Home Prices in Silicon Valley and San Francisco Are Tripping up Jobs Growth," *Business Insider*, accessed January 12, 2018, <http://www.businessinsider.com/how-home-prices-in-silicon-valley-and-san-francisco-impact-jobs-growth-2017-8>.
- 21** William H. Frey, "U.S. Migration Still at Historically Low Levels, Census Shows," *Brookings* (blog), November 20, 2017, <https://www.brookings.edu/blog/the-avenue/2017/11/20/u-s-migration-still-at-historically-low-levels-census-shows/>.
- 22** "Move Americans to Jobs, Not the Other Way Around," *Bloomberg.Com*, August 28, 2017, <https://www.bloomberg.com/view/articles/2017-08-28/move-americans-to-jobs-not-the-other-way-around>.
- 23** Heather Long, "America's Forgotten Towns: Can They Be Saved or Should People Just Leave?," *Washington Post*, January 2, 2018, sec. Wonkblog, <https://www.washingtonpost.com/news/wonk/wp/2018/01/02/americas-forgotten-towns-can-they-be-saved-or-should-people-just-leave/>.
- 24** Thomas Farole, Andrés Rodríguez-Pose, and Michael Storper, "Cohesion Policy in the European Union: Growth, Geography, Institutions," *JCMS: Journal of Common Market Studies* 49, no. 5 (September 2011): 1089-1111.
- 25** David Castells-Quintana and Vicente Royuela, "Agglomeration, Inequality and Economic Growth," *The Annals of Regional Science* 52, no. 2 (March 1, 2014): 343-66, <https://doi.org/10.1007/s00168-014-0589-1>.
- 26** Benjamin Friedman, *The Moral Consequences of Economic Growth* (Vintage, 2005), <https://scholar.harvard.edu/bfriedman/pages/moral-consequences-economic-growth>.
- 27** See, e.g., *The Politics of Resentment*, accessed February 1, 2018, <http://www.press.uchicago.edu/ucp/books/book/chicago/P/bo22879533.html#2018>, <http://www.press.uchicago.edu/ucp/books/book/chicago/P/bo22879533.html>, and Arlie Russell Hochschild, *Strangers in Their Own Land* (The New Press, 2016), <https://thenewpress.com/books/strangers-their-own-land>.
- 28** Mark Muro and Sifan Liu, "Another Clinton-Trump Divide: High-Output America vs Low-Output America," *Brookings* (blog), November 29, 2016, <https://www.brookings.edu/blog/the-avenue/2016/11/29/another-clinton-trump-divide-high-output-america-vs-low-output-america/>.
- 29** Michael Kruse, "Heartland Democrats to Washington: You're Killing Us," *POLITICO Magazine*, accessed January 12, 2018, <http://politi.co/2qShQfc>.
- 30** Peter Hirshberg, Dale Dougherty, and Marcia Kadanoff, *Maker City: A Practical Guide to Reinvention in American Cities* (Maker Media, 2016), <https://makercity.com/book/>.
- 31** Antoine van Agtmael and Fred Bakker, *The Smartest Places on Earth: Why Rustbelts Are the Emerging Hotspots of Global Innovation* (PublicAffairs, 2016).
- 32** Aaron Renn, "Ed Glaeser on the Future of the American Heartland," *The Urbanophile*, October 9, 2017, <http://www.urbanophile.com/2017/10/09/ed-glaeser-on-the-future-of-the-american-heartland/>.
- 33** Simeon Alder, David Lagakos, and Lee Ohanian, "Competitive Pressure and the Decline of the Rust Belt: A Macroeconomic Analysis," Working Paper (National Bureau of Economic Research, October 2014), <https://doi.org/10.3386/w20538> Working Paper (National Bureau of Economic Research, October 2014).
- 34** Richard Rothstein, *The Color of Law: A Forgotten History of How Our Government Segregated America* (Liveright, 2017), <http://www.epi.org/publication/the-color-of-law-a-forgotten-history-of-how-our-government-segregated-america/>.
- 35** Castells-Quintana and Royuela, "Agglomeration, Inequality and Economic Growth."
- 36** Henry Grabar, "America's Small Cities Don't Have to Die at the Expense of Big Ones," *Slate Magazine*, February 1, 2018, <https://slate.com/business/2018/02/small-cities-and-rural-areas-deserve-revitalization.html>.
- 37** Alan Berube, "Political Rhetoric Exaggerates Economic Divisions between Rural and Urban America," *Brookings* (blog), August 3, 2016, <https://www.brookings.edu/blog/the-avenue/2016/08/03/political-rhetoric-exaggerates-economic-divisions-between-rural-and-urban-america/>.

- 38** Witold Rybczynski, "Downsizing Cities," *The Atlantic*, October 1995, <https://www.theatlantic.com/past/docs/issues/95oct/rybczyns.htm>.
- 39** Mark Alan Hughes, "Dirt Into Dollars: Converting Vacant Land into Valuable Development" (Brookings Institution, 2000), <https://www.brookings.edu/articles/dirt-into-dollars-converting-vacant-land-into-valuable-development/>.
- 40** Susan B. Hansen, Carolyn Ban, and Leonard Huggins, "Explaining the 'Brain Drain' from Older Industrial Cities: The Pittsburgh Region," *Economic Development Quarterly* 17, no. 2 (May 1, 2003): 132–47, <https://doi.org/10.1177/0891242403017002002>.
- 41** Vey, "Restoring Prosperity."
- 42** "Older Industrial Cities | Funders Network," accessed January 15, 2018, <https://www.fundersnetwork.org/participate/older-industrial-cities/>. Many of these grant makers have supported the development of this Brookings report.
- 43** "Rebuilding America's Legacy Cities: New Directions for the Industrial Heartland" (American Assembly, 2012), <http://americanassembly.org/projects/legacy-cities-partnership>.
- 44** Alan Mallach and Lavea Brachman, "Regenerating America's Legacy Cities" (Lincoln Institute of Land Policy, May 2013), <http://www.lincolnst.edu/publications/policy-focus-reports/regenerating-americas-legacy-cities>.
- 45** *Phoenix Cities*, accessed January 15, 2018, <http://www.press.uchicago.edu/ucp/books/book/distributed/P/bo13439049.html>.
- 46** See, for example, the work of Legacy Cities Partnership, www.legacycities.org.
- 47** Alec Friedhoff, Howard Wial, and Harold Wolman, "The Consequences of Metropolitan Manufacturing Decline: Testing Conventional Wisdom" (Brookings Institution, 2010).
- 48** "Chronically Distressed Metropolitan Area Economies « Building Resilient Regions," accessed February 28, 2017, <http://brr.berkeley.edu/2012/06/chronically-distressed-metropolitan-area-economies/>.
- 49** Emily Engel and Susan Longworth, "Industrial Cities Initiative: Working Paper Summary - Federal Reserve Bank of Chicago" (Federal Reserve Bank of Chicago, 2012), <https://www.chicagofed.org/publications/profitwise-news-and-views/2012/pnv-aug2012>.
- 50** Jennifer S. Vey and Richard M. McGahey, *Retooling for Growth* (Brookings Press, 2008), <https://www.brookings.edu/book/retooling-for-growth/>.
- 51** Elizabeth Kneebone and Alan Berube, *Confronting Suburban Poverty in America* (Brookings Press, 2013).
- 52** Counties are admittedly a poorer reflection of urban economic dynamics in New England, where governance is organized at the city/town level, and where older industrial municipalities often represent a relatively small share of county-wide population and economic activity. Still, the wider influence of industrial decline is evident in many of the smaller suburban towns proximate to the older cities of Connecticut, Massachusetts, and Rhode Island.
- 53** We use the Missouri Data Center's MABLE/ GEOCORR Engine to allocate city populations to counties based on their 2010 populations and obtain 2016 city population data from the Census Bureau's Population Estimates Program.
- 54** Paul Krugman, "Opinion | The Gambler's Ruin of Small Cities (Wonkish)," *The New York Times*, December 30, 2017, sec. Opinion, <https://www.nytimes.com/2017/12/30/opinion/the-gamblers-ruin-of-small-cities-wonkish.html>.
- 55** We use employment data from Moody's Analytics.
- 56** Friedhoff, Wial, and Wolman, "The Consequences of Metropolitan Manufacturing Decline: Testing Conventional Wisdom. Note that Los Angeles County, Calif. and Cook County, Ill. (containing Chicago) qualified under this definition, but we judged them to be so different in size and industrial trajectory from other OICs that we excluded them from this analysis.
- 57** Among these 16 are the independent cities of Baltimore and St. Louis, which long ago seceded from the larger counties that surround them and share their names. Roanoke is a smaller independent city not part of a larger county. Although Lynchburg is also an independent city, the data in this report reflect the combination of Lynchburg and surrounding Campbell County, in line with how the federal government reports economic data for that area. The city of Philadelphia is coterminous with Philadelphia County, and Queens and Kings counties in New York are equivalent to the New York City boroughs of Queens and Brooklyn, respectively.
- 58** OIC shares of population and economic activity are especially high in Connecticut and Rhode Island. The counties anchored around the three Connecticut OICs of Hartford (Hartford County), Bridgeport (Fairfield County), and New Haven (New Haven County) are six to seven times as large in population as those cities.

Providence County in Rhode Island is more than three times as large in population as the city of Providence. As is true in other New England states, Connecticut and Rhode Island have no county governments, and cities and towns carry out local government functions.

59 Andre M. Perry, "Recognizing Majority-Black Cities, When Their Existence Is Being Questioned," *Brookings* (blog), October 4, 2017, <https://www.brookings.edu/blog/the-avenue/2017/10/04/recognizing-majority-black-cities-when-their-existence-is-being-questioned/>.

60 Shearer et al., "Metro Monitor 2018 Dashboard."

61 Paul D. Gottlieb, "Growth Without Growth: An Alternative Economic Development Goal For Metropolitan Areas" (Brookings Institution, 2000), <https://www.brookings.edu/research/growth-without-growth-an-alternative-economic-development-goal-for-metropolitan-areas/>.

62 These estimates reflect a pooled sample of 5 years of American Community Survey data from 2012 through 2016, which provide a sufficient number of observations for census tracts, the underlying geographic basis for measures of concentrated poverty.

63 This combined index for a county averages its scores for the growth, prosperity, and inclusion categories from 2000 to 2016, which in turn represent the averages of standard scores for the indicators within that category. Standard scores measure how a county's value on a particular indicator varies from the values of all counties. Because Massachusetts did not report data as early as 2000 that provide the basis for our calculation of jobs at young firms, for those counties we include their standardized score on change in jobs at young firms from 2010 to 2016 as part of their overall growth score.

64 We visually inspected the combined index scores for OICs to identify natural breaks in the score distribution that yielded four groups of counties of roughly equal size.

65 A simple linear regression of performance index scores controlling for size finds that OICs in the Northeast achieved significantly higher scores than those in the Midwest.

66 These counties (and major cities) include: Houston (Dothan), Mobile, and Morgan (Decatur) in Alabama; Sebastian (Fort Smith) in Arkansas; Muscogee (Columbus) in Georgia; Linn (Cedar Rapids) in Iowa; Kane (Aurora) in Illinois; Sedgwick (Wichita) in Kansas; Daviess (Owensboro) in Kentucky; Buchanan (St. Joseph) in Missouri; Hall (Grand Island) in Nebraska; Forsyth (Winston-Salem) in North Carolina; Tulsa in Oklahoma; and Shelby (Memphis) in Tennessee.

67 Enrico Moretti, *The New Geography of Jobs* (New York: Houghton Mifflin Harcourt, 2012).

68 Mark Muro and Joseph Parilla, "Understanding US Productivity Trends from the Bottom-Up," *Brookings* (blog), March 15, 2017, <https://www.brookings.edu/research/understanding-us-productivity-trends-from-the-bottom-up/>.

69 Mark Muro et al., "Digitalization and the American Workforce," *Brookings* (blog), November 15, 2017, <https://www.brookings.edu/research/digitalization-and-the-american-workforce/>.

70 Emily Pacetti, "What Matters to Metros: Foundational Indicators for Economic Competitiveness" (Fund for Our Economic Future of Northeast Ohio, 2013), http://www.thefundneo.org/sites/default/files/content-media/13076_FUND_WMM_REVISED%201008.pdf.

71 Mark Muro, "Where the Robots Are," *Brookings* (blog), August 14, 2017, <https://www.brookings.edu/blog/the-avenue/2017/08/14/where-the-robots-are/>.

72 Amy Liu and Alan Berube, "Achieving an Advanced Economy That Works for All: The Brookings Metropolitan Policy Program in 2016 and Beyond," January 6, 2016, <https://www.brookings.edu/research/achieving-an-advanced-economy-that-works-for-all-the-brookings-metropolitan-policy-program-in-2016-and-beyond/>.

73 Moretti, *The New Geography of Jobs*.

74 Amy Liu and Mark Muro, "Beyond 'Amazon Idol' toward a Real Regional Growth Strategy," *Brookings* (blog), September 22, 2017, <https://www.brookings.edu/blog/the-avenue/2017/09/22/beyond-amazon-idol-toward-a-real-regional-growth-policy/>.

75 Elizabeth Kneebone and Natalie Holmes, "The Growing Distance between People and Jobs in Metropolitan America," March 24, 2015, <https://www.brookings.edu/research/the-growing-distance-between-people-and-jobs-in-metropolitan-america/>.

76 William H. Frey, *Diversity Explosion: How New Racial Demographics Are Remaking America* (Brookings Press, 2015), <https://www.brookings.edu/book/diversity-explosion/>.

77 Pacetti, "What Matters to Metros: Foundational Indicators for Economic Competitiveness."

78 Gregory Acs et al., "The Cost of Segregation," Urban Institute, March 27, 2017, <https://www.urban.org/research/publication/cost-segregation>.

79 These factors are well described in Mallach and Brachman, "Regenerating America's Legacy Cities."

80 Muro et al., "Digitalization and the American Workforce."

81 John C. Austin, "Tale of Two Rust Belts: Higher Education Is Driving Rust Belt Revival but Risks Abound," *Brookings* (blog), December 19, 2017, <https://www.brookings.edu/blog/the-avenue/2017/12/19/tale-of-two-rust-belts-higher-education-is-driving-rust-belt-revival-but-risks-abound/>.

82 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," *Brookings* (blog), February 3, 2015, <https://www.brookings.edu/research/americas-advanced-industries-what-they-are-where-they-are-and-why-they-matter/>.

83 Brad Cunningham, "Cities: Where the Economy Plays Scrabble," *Brookings* (blog), July 6, 2017, <https://www.brookings.edu/blog/the-avenue/2017/07/06/cities-where-the-economy-plays-scrabble/>.

84 Ricardo Hausmann et al., *The Atlas of Economic Complexity: Mapping Paths to Prosperity* (Cambridge: MIT Press, 2013).

85 The data here were produced by Dieter Kogler at University College Dublin and David Rigby at UCLA. Dieter F. Kogler, Jürgen Essletzbichler, and David L. Rigby, "The Evolution of Specialization in the EU15 Knowledge Space," *Journal of Economic Geography* 17, no. 2 (2017): 345-73.

86 Scott Andes, "Hidden in Plain Sight: The Oversized Impact of Downtown Universities," *Brookings* (blog), October 10, 2017, <https://www.brookings.edu/research/hidden-in-plain-sight-the-oversized-impact-of-downtown-universities/>.

87 The report focused only on downtown research universities in the 100 largest metropolitan areas, which contain 41 of the 70 older industrial counties.

88 Joseph Parilla, "Which Cities Are Well Positioned to Land Amazon's HQ2?," *Brookings* (blog), September 8, 2017, <https://www.brookings.edu/blog/the-avenue/2017/09/08/which-cities-are-well-positioned-to-land-amazons-hq2/>.

89 Bruce Katz and Julie Wagner, "The Rise of Innovation Districts," June 9, 2014, <https://www.brookings.edu/essay/rise-of-innovation-districts/>.

90 Daniel Hertz, "City Observatory - City Center Job Growth Continues Strength; Suburbs Rebounding from Recession," City Observatory, May 24, 2016, <http://cityobservatory.org/city-center-job-growth-continues/>.

91 Specifically, we define high density clusters as Census tracts that meet three characteristics. First, they have an employment density of at least 2,073 jobs per square mile, which is the cutoff for the top quintile of job density across all tracts in 2015. Second, they must have a job density in the top quintile of all tracts in a particular two-digit NAICS sector. Third, tracts must have a location quotient of at least 1.05 in that same sector relative to their metropolitan area, reflecting a concentration of sector-specific employment in that tract. We adopt this approach based on methods developed in Marley and Gardner, "Identifying Concentrations of Employment in Metropolitan Areas," U.S. Census Bureau, 2010; and Pacetti et al., "The Geography of Jobs," Fund for Our Economic Future, June 2016.

92 Mason Adams, "The Small Appalachian City That's Thriving," CityLab, accessed January 15, 2018, <https://www.citylab.com/life/2017/12/roanoke-virginia-downtown-housing-revitalization/547589/>.

93 Of the 70 cities that anchor older industrial counties, 63 have downtowns that lie along the coastline of an ocean, bay, or gulf; or along the banks of a major river or lake.

94 James Fallows, "Craft Breweries as Markers for Civic Progress: It's Not Just Me! - The Atlantic," March 31, 2016, <https://www.theatlantic.com/notes/2016/03/craft-breweries-no-im-not-kidding-they-actually-matter-in-civic-development/476220/>.

95 Derek Thompson, "Craft Beer Is the Strangest, Happiest Economic Story in America," *The Atlantic*, January 19, 2018, <https://www.theatlantic.com/business/archive/2018/01/craft-beer-industry/550850/>.

96 Mark Hugo Lopez, Jeffrey Passel, and Molly Rohal, "Modern Immigration Wave Brings 59 Million to U.S., Driving Population Growth and Change Through 2065," *Pew Research Center's Hispanic Trends Project* (blog), September 28, 2015, <http://www.pewhispanic.org/2015/09/28/modern-immigration-wave-brings-59-million-to-u-s-driving-population-growth-and-change-through-2065/>.

97 William H. Frey, "The Millennial Generation: A Demographic Bridge to America's Diverse Future," *Brookings* (blog), January 24, 2018, <https://www.brookings.edu/research/millennials/>.

98 Jill Ann Harrison, "Rust Belt Boomerang: The Pull of Place in Moving Back to a Legacy City," *City & Community* 16, no. 3 (September 1, 2017): 263-83, <https://doi.org/10.1111/cico.12245>.

- 99** These counties include those containing Austin, Boston, Chicago, Denver, Los Angeles, Manhattan, Phoenix, Portland, San Diego, San Francisco, San Jose, Seattle, and Washington, D.C.
- 100** Allegheny County, Pa. (containing Pittsburgh), one of the stronger economic performers among older industrial counties, also boasts one of the higher rates of educational attainment among its non-white/Hispanic population, with 34 percent holding college degrees—just 9 percentage points shy of the rate for whites in that county.
- 101** Joseph Parilla, "Opportunity for Growth: How Reducing Barriers to Economic Inclusion Can Benefit Workers, Firms, and Local Economies," *Brookings* (blog), September 27, 2017, <https://www.brookings.edu/research/opportunity-for-growth-how-reducing-barriers-to-economic-inclusion-can-benefit-workers-firms-and-local-economies/>.
- 102** Kevin Tampone, "CenterState CEO Introduces Regional Business Plan after Two Years of Work," *syracuse.com*, November 7, 2013, http://www.syracuse.com/news/index.ssf/2013/11/centerstate_ceo_introduces_regional_business_plan_after_two_years_of_work.html.
- 103** Corinne Ramey, "Upstate New York Seeks Economic Boost From Drones," *Wall Street Journal*, March 28, 2016, sec. US, <http://www.wsj.com/articles/upstate-new-york-seeks-economic-boost-from-drones-1459126197>.
- 104** Rick Moriarty, "Defense Firm Saab Has Big Growth Plans for Syracuse Area | Syracuse.Com," January 31, 2017, http://www.syracuse.com/business-news/index.ssf/2017/01/defense_firm_saab_has_big_growth_plans_for_syracuse_area.html.
- 105** Amy Liu, "New York's Powerful Regional Partnerships for Economic Growth," *Brookings* (blog), November 30, 2001, <https://www.brookings.edu/blog/the-avenue/2016/01/07/new-yorks-powerful-regional-partnerships-for-economic-growth/>.
- 106** "Ohio Third Frontier: Impact," accessed December 18, 2017, https://development.ohio.gov/bs_thirdfrontier/impact.htm.
- 107** Katie Byard, "Developing an Alternative to Opioids: UA Professor's Research Gains \$2 Million State Grant and Interest of Large Drug Company," January 16, 2018, <https://www.ohio.com/akron/writers/katie-byard/developing-an-alternative-to-opioids-ua-professors-research-gains-2-million-state-grant-and-interest-of-large-drug-company>.
- 108** Steve Lohr, "As Silicon Valley Gets 'Crazy,' Midwest Beckons Tech Investors," *The New York Times*, November 19, 2017, sec. Technology, <https://www.nytimes.com/2017/11/19/technology/midwest-tech-startups.html>.
- 109** Peter Wilkins, "Why Ohio Health Care Startups Saw a 206% Funding Increase in 2017," *VentureBeat* (blog), December 18, 2017, <https://venturebeat.com/2017/12/18/why-ohio-health-care-startups-saw-a-206-funding-increase-in-2017/>.
- 110** Scott Suttell, "JumpStart Inc.'s Focus Fund Makes the Case for Inclusion," *Crain's Cleveland Business*, April 26, 2016, <http://www.crainscleveland.com/article/20160426/BLOGS03/160429850/jumpstart-inc-s-focus-fund-makes-the-case-for-inclusion>.
- 111** Scott Suttell, "JumpStart Inc. Invests in Cincinnati Software-as-a-Service Company," *Crain's Cleveland Business*, February 28, 2017, <http://www.crainscleveland.com/article/20170228/NEWS/170229800/jumpstart-inc-invests-in-cincinnati-software-as-a-service-company>; Chuck Soder, "At StartupScaleup, JumpStart Unveils Investments from Diversity-Focused Fund," *Crain's Cleveland Business*, June 27, 2016, <http://www.crainscleveland.com/article/20160628/NEWS/160629794/at-startupscaleup-jumpstart-unveils-investments-from-diversity>.
- 112** Kevin T. Leicht and J. Craig Jenkins, "State Investments in High-Technology Job Growth," *Social Science Research* 65 (July 1, 2017): 30-46, <https://doi.org/10.1016/j.ssresearch.2017.03.007>.
- 113** John Austin, "A Tale of Two Rust Belts, Continued: Can the Midwest's Smaller Communities Succeed?," *Brookings* (blog), December 5, 2017, <https://www.brookings.edu/blog/the-avenue/2017/12/05/a-tale-of-two-rust-belts-continued-can-the-midwests-smaller-communities-succeed/>.
- 114** Lindsey Christy, "Who We Are," *ECO Network* (blog), accessed January 18, 2018, <http://econetworks.org/about-eco/who-we-are/>.
- 115** "The Digitalization of the American Workforce," *Brookings* (blog), November 21, 2017, <https://www.brookings.edu/events/the-digitalization-of-the-american-workforce/>.
- 116** "LaunchCode," accessed December 18, 2017, <http://www.launchcode.org>.

- 117** Robert Putnam, *Bowling Alone: The Collapse and Revival of American Community* (Simon and Schuster, 2000), <http://bowlingalone.com/>.
- 118** Alan Berube and Brad McDearman, "Good Fortune, Dire Poverty, and Inequality in Baltimore: An American Story," *Brookings* (blog), May 11, 2015, <https://www.brookings.edu/blog/the-avenue/2015/05/11/good-fortune-dire-poverty-and-inequality-in-baltimore-an-american-story/>.
- 119** Heather Joslyn, "Baltimore Youth Charity Fights Poverty the Hard Way," *The Chronicle of Philanthropy*, July 19, 2017, <https://www.philanthropy.com/article/Baltimore-Youth-Charity-Fights/240680>.
- 120** "Detroit Future City," accessed December 18, 2017, <https://detroitfuturecity.com/about/>.
- 121** John Gallagher, "See What's in Detroit Future City's Strategic Plan," *Detroit Free Press*, accessed January 18, 2018, <https://www.freep.com/story/money/business/john-gallagher/2017/11/09/detroit-future-city-plan/848131001/>.
- 122** "Transformative Development Initiative [TDI] | MassDevelopment," accessed December 18, 2017, <https://www.massdevelopment.com/what-we-offer/key-initiatives/gateway-cities/>.
- 123** Randall Eberts, George Erickcek, and Jack Kleinhenz, "Dashboard Indicators for the Northeast Ohio Economy: Prepared for the Fund for Our Economic Future" (Kalamazoo, MI: Upjohn Institute, 2006).
- 124** Emily Garr Pacetti, "What Matters to Metros: Foundational Indicators for Economic Competitiveness" (Cleveland, OH: The Fund for Our Economic Future, 2013).
- 125** "The Two Tomorrows: Regional priorities for a better tomorrow from the Fund for Our Economic Future" (Cleveland, OH: The Fund for Our Economic Future, 2018).
- 126** Brookings analysis of Bureau of Labor Statistics data.
- 127** The Right Place, "About Us," text/html, The Right Place, January 17, 2018, <https://www.rightplace.org/about-us>.
- 128** Jamie Merisotis, *America Needs Talent | Attracting, Educating & Deploying the 21st Century Workforce* (Rosetta Books, 2015), <https://americaneedtalent.com/>.
- 129** U.S. Bureau of the Census, Estimate of Median Household Income for Roanoke City, VA, retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/MHIVA51770A052NCEN>.
- 130** "About Us," *Roanoke Regional Partnership* (blog), accessed February 16, 2018, <https://roanoke.org/about-us/>.
- 131** Mason Adams, "The Small Appalachian City That's Thriving," *CityLab*, December 12, 2017, <https://www.citylab.com/life/2017/12/roanoke-virginia-downtown-housing-revitalization/547589/>.
- 132** Lyman Stone, "Is Roanoke Really An Appalachian Comeback Story?," *In a State of Migration* (blog), November 8, 2016, <https://medium.com/migration-issues/is-roanoke-really-an-appalachian-comeback-story-acc7d407fac9>.
- 133** Colin Woodard, "Trains Built Roanoke. Science Saved It.," *POLITICO Magazine*, September 15, 2016, <https://www.politico.com/magazine/story/2016/09/roanoke-virginia-redevelopment-what-works-214247>.
- 134** Jacob Demmitt, "Virginia Tech and Carilion Form \$15 Million Venture Capital Fund," *Roanoke Times*, February 27, 2017, http://www.roanoke.com/news/education/higher_education/virginia_tech/virginia-tech-and-carilion-form-million-venture-capital-fund/article_8601bfba-dda7-5e52-874f-6e54cc064800.html.
- 135** Martha Park, "When the Ghosts of Urban Renewal Return," *CityLab*, January 19, 2018, <https://www.citylab.com/equity/2018/01/even-the-dead-could-not-stay/550838/>.
- 136** Vey, "Restoring Prosperity."

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