

CHARTING *a* COURSE *to*
the SACRAMENTO REGION'S
***FUTURE ECONOMIC
PROSPERITY***

JOSEPH PARILLA, SIFAN LIU, and MAREK GOOTMAN

APRIL 2018

BROOKINGS



SUMMARY

In 2018, a combination of uncertainty in the face of highly disruptive trends—globalization, technological change, demographic shifts—and new leadership among the region’s business, government, and civic organizations motivated stakeholders to take a fresh perspective on the regional economy.

In late 2017, Valley Vision led a partnership with the Greater Sacramento Economic Council, Sacramento Metro Chamber, Sacramento Region Business Association, and Sacramento Area Council of Governments to collaborate with the Brookings Institution on four objectives:

- Provide stakeholders in the Sacramento region with a collective framework for gauging economic success in order to set objectives, guide decision-making, and measure results
- Produce and compile research on the global economic competitiveness of the region, increasing understanding about the challenges and opportunities and enabling a candid self-assessment of alignment with current and proposed activities
- Offer considerations to help translate findings on the region’s economy into a set of goals, strategies, and tactics, with institutional ownership to execute
- Promote stakeholder agreement on a shared regional economic philosophy and agenda that ultimately can drive individual efforts and investments

Based on these objectives, this report offers information and insights on the Sacramento region’s economic position by benchmarking the region against 15 peer regions based on economic size, wealth, productivity, industrial structure, and competitiveness factors. Its key findings are:

The Sacramento region is relatively prosperous compared to other large metro areas, but the region has been on a troubling economic trajectory since 2006. Compared to the rest of the nation, the Sacramento region is relatively productive and prosperous; middle class earnings are higher in the region as is worker productivity. Notwithstanding this strong starting point, the region has struggled over the past decade. Between 2006 and 2016, the Sacramento metropolitan statistical area (MSA) ranks in the bottom-third of the 100 largest metro areas in composite rankings measuring improvements in growth, prosperity, and inclusion, three critical elements of regional economies that work for everybody. These long-term trends reflect that the downturn during the Great Recession was deeper and more sustained in the Sacramento MSA than in other parts of the nation. As a result, the region’s economic performance has looked better over the past five years. This progress notwithstanding, 34 percent of the Sacramento region’s residents live in struggling families, defined as residents in households that do not earn enough to cover their basic household expenses. Nearly two-thirds of the region’s residents without a high school degree are in struggling families, as are 47 percent and 42 percent of black and Hispanic residents, respectively.

The Sacramento region can take advantage of changing market, technology, and demographic trends, but it must focus on the core drivers and enablers of regional competitiveness and prosperity. U.S. cities and regions must respond to global and national forces outside their control,

namely globalization, technological change, demographic transition, and declining national investment in economic growth and opportunity. This requires a focus on five key factors: competitive tradable industries, innovation ecosystems, skilled labor, spatially efficient infrastructure, and reliable governance. By building on existing strengths and addressing weaknesses, the Sacramento region has an opportunity to better deploy these five factors to increase shared prosperity:

- **Tradable industries:** Tradable industries are critical for local prosperity in their ability to improve productivity and bring in wealth from outside the region. Therefore, one notable challenge for the region is that employment growth in tradable industries has trailed the nation as a whole, suggesting competitive deficits. Partly due to these trends and partly due to its role as a government capital, exports account for a lower share of economic output in the Sacramento region than in any other peer region. Most of

the region's job creation, therefore, has been in locally serving industries such as health care and transportation and logistics, parts of the economy that do not pay as well as advanced manufacturing and tradable services. More optimistically, the Sacramento region has a notable traded cluster opportunity at the intersection of food, agriculture, and technology.

- **Innovation:** The Sacramento region has clear strengths within the early stages of the innovation pipeline. UC Davis stands out as a globally relevant innovation asset, due to its contribution to research and development, patents, and licenses, especially in the fields of agricultural and biological sciences. Innovation is occurring in other sectors and companies but, relative to other regions, these are the clearest advantages. The challenge for the Sacramento region remains translating research and development and patenting into new firms and, eventually, good job growth. The region trails its peers on measures of business dynamism,



venture capital investment, and advanced industries growth, suggesting the need for further actions to support key advanced industry clusters and help young innovative firms start and scale.

- **Talent:** By national standards, the Sacramento region has a relatively strong base of educated workers. But its labor market is changing due to two significant transformations. First, employers are demanding and rewarding workers with higher education and technology-relevant skills. The share of the Sacramento region's jobs requiring minimal digital skills has decreased from 53 percent in 2002 to 28 percent in 2016. Second, the Sacramento region's workforce supply is becoming much more racially diverse, which makes closing educational and employment disparities by race extremely urgent. Notwithstanding the region's ability to attract well-educated workers from outside California to fill workforce gaps, it must educate and train a broader, more diverse set of its homegrown population for in-demand jobs.

- **Infrastructure and built environment:**

The Sacramento region's employment base concentrates in fourteen job hubs, which together contain 41 percent of regional employment. Businesses that locate in the region's most accessible and connected job hubs—particularly those in the core and near transportation corridors—have advantages in the number of workers that can reach them in a reasonable commute. Therefore, from a spatial efficiency perspective, it makes sense to prioritize business development in these more accessible nodes. Most workers commute via automobile, although at lower rates than regional peers. Meanwhile, new housing starts are occurring in areas north and east of the region's core, the vast majority of which is single-family housing. As housing development occurs further from the core, the region's geography of opportunity remains uneven, exhibited by neighborhoods with high levels of concentrated poverty and low levels of digital broadband adoption.

- **Governance:** The Sacramento region is operating in a higher-tax, higher-regulation environment, which is partly due to decisions made at the state level. The region also has high levels of government fragmentation—due to the preponderance of many special districts. Addressing these two issues will only occur through public sector reforms, but governance also refers to the quality of private and civic institutions, and specifically their ability to work with government to help advance regional economic priorities. In this respect, there is clearly momentum on the part of many organizations in the Sacramento region to overcome existing fragmentation of economy-relevant initiatives and investments.

The Sacramento region's leaders have an opportunity to organize and invest in its economic future. As they undertake that process, this assessment concludes with high-level strategic considerations in three key areas: business and industry development, talent development, and spatial development.

- **Business and industry development** refers to the set of systems and organizations that work with companies to shape the process of job creation—from universities to entrepreneurship networking groups to economic development organizations. Our comparative assessment points to two considerations:

- Explore the potential for a **cluster initiative** at the intersection of agriculture, food, and science and technology, a promising tradable cluster opportunity.
- Identify and address gaps that hinder **business dynamism**. While we identified that young firm growth is not as robust in the Sacramento region, more work needs to be done to identify the specific reasons why young firms may not be starting and scaling locally.

- **Talent development** refers to the set of systems and organizations that influence the talent pipeline—from educational institutions to workforce development organizations to employers offering on-the-job training. Our comparative assessment points to two considerations:

- ***Invest in digital skills training***, to both grow the pool of high-skill technical workers and expand the number of workers with basic digital literacy, by making digital skills a shared priority for community colleges, universities, and workforce and economic development groups.

- ***Prepare and connect young workers, especially young workers of color, to in-demand occupations and industries*** through alignment between talent development systems and economic development systems.

- **Spatial development** refers to the set of systems that influence physical and digital access to opportunity—from transportation to broadband to housing and real estate development and land use. Our comparative assessment points to two considerations:

- ***Factor in job access to economic development activities*** such as business attraction and expansion. Factoring in job accessibility could connect economic development goals and

specific site selection activities to the goals of the region's spatial planners.

- ***Factor economic objectives into spatial planning***. Meanwhile, the reverse approach is also useful: a confluence of trends—development in the outer parts of the region; rising unaffordability; and several major potential transformative physical developments—provide an opportune moment for spatial planning leaders to engage in a new round of land use planning from the perspective of the region's economic objectives.

These considerations purposefully remain at a broad level, as the scope of this market assessment represents only the start of what will be required for Sacramento region stakeholders to achieve the economic aspirations of the region. Subsequently, the region should vet these ideas and others through local partner insights; broader civic engagement and capacity-building processes to promote local ownership, organization, and commitment to implementation of responses; and final strategy development yielding a plan and operational document.

While only a first step, this analysis makes a clear case for the Sacramento region's leaders to take on the difficult but important civic work to assure sustained growth and prosperity.

CONTENTS

SUMMARY	1
PREFACE	7
I. HOW IS THE SACRAMENTO REGION'S ECONOMY PERFORMING?	9
II. HOW IS THE SACRAMENTO REGION POSITIONED FOR FUTURE PROSPERITY?	12
Global and national dynamics demand new regional economic development approaches ...	13
Defining the Sacramento regional economy	15
A. Tradable Industries	15
Comparing the Sacramento region's "Next Economy" clusters	18
B. Innovation	22
C. Talent	28
D. Infrastructure and Built Environment	35
E. Governance	42
III. STRATEGIC CONSIDERATIONS	44
The Water Council (Milwaukee)	46
LaunchCode (St. Louis but expanded to five additional metro areas)	48
Economic Value Atlas (Portland, Ore.)	49
IV. CONCLUSION	51
NOTES	52
ACKNOWLEDGMENTS	54





PREFACE

Is the Sacramento region a highly prosperous economic region, with a very productive workforce, world-class assets generating distinctive innovations for a global market, and collaborative ethos? Or is it a middleweight metro area on a flat to declining trajectory, lagging its national peers, lacking in business dynamism, inclusive growth, and a coherent economic identity or strategy?

The definitive answer: Yes.

A combination of uncertainty in the face of highly disruptive trends—globalization, technological change, demographic shifts—and new leadership among some of the Sacramento region business, government, and civic organizations motivated stakeholders to take a fresh perspective on the regional economy. The Sacramento Area Council of Governments, Greater Sacramento Economic Council, Valley Vision, and Sacramento Metropolitan Chamber of Commerce joined together to reassess their agendas.

Although extensive quality research conducted from within the region already existed, this group desired more data and analysis to help identify shared economic issues and inform better decisions on joint or complementary action. Setting aside local assumptions and pride, they sought a candid external assessment of the real the Sacramento region position, moving toward a new plan for economic prosperity.

These stakeholders approached the Brookings Institution's Metropolitan Policy Program to do an expedited market assessment of the region's

economic performance that comprehensively applies Brookings principles, frameworks, and research. Beyond the core mission of translating our ideas and expertise into impact, Brookings' interest in the project derived from learning how our work can be aggregated and more effectively applied to problem-solving by practitioners.

During the first quarter of 2018, Brookings performed a tailored quantitative and qualitative analysis of the Sacramento region's economic performance and assets, benchmarking against comparable metro areas using local and national sources.

Ultimately, this effort intended to:

- Provide Sacramento region stakeholders with a collective framework for gauging economic success in order to set objectives, guide decision-making, and measure results;

- Produce and compile research on the global economic competitiveness of the region, increasing understanding about the challenges and opportunities and enabling a candid self-assessment of alignment with current and proposed activities;
- Offer considerations to help translate findings on the region's economy into a set of goals, strategies, and tactics, with institutional ownership to execute;
- Promote stakeholder agreement on a shared regional economic philosophy and agenda that ultimately can drive individual efforts and investments

While only a first step, we hope this report serves as a useful assessment of the region's economy and can guide the region's leadership as they undertake the important work of building a Sacramento region that works for all.



I. HOW IS THE SACRAMENTO REGION'S ECONOMY PERFORMING?

By many indications, the Sacramento region—the six-county region inclusive of the counties of El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba—finds itself in an enviable position. From a national perspective, the Sacramento region stands out as home to the political capital of one of the country's most dynamic state economies, a notable set of world-leading companies and universities, and a workforce that embodies the diversity that will define the nation's demographic future.

As a result, the region is relatively productive and prosperous. The average worker's productivity in the Sacramento region is among the highest in the nation and the region's median household income is among the top quarter of the nation's 100 largest metropolitan areas.

Yet, despite this existing level of high productivity and income, recent economic trends suggest that this prosperity may not persist. Economic success in any regional economy derives from its ability to achieve long-run **growth**, by improving the productivity of individuals and firms in order to raise local standards of living (**prosperity**) for all people (**inclusion**).

These three areas are related and mutually reinforcing. For businesses to adapt successfully to rising competition from abroad and disruptive technological change, they must be able to draw from local communities that are adequately preparing people for the rigors of the modern economy, regardless of race or class. Thus, inclusion matters for growth. In turn, while economic expansion has not always led to inclusive prosperity, it will be hard to achieve inclusion without sustained overall growth.¹

Brookings' Metro Monitor uses a series of indicators to track performance in these three areas:

- **Growth:** jobs; gross metropolitan product (GMP); jobs at young firms
- **Prosperity:** productivity (GMP per job); standard of living (GMP per capita); average annual wage
- **Inclusion:** median wage; relative poverty rate; employment rate

Brookings tracks the nation's 100 largest metropolitan areas on these three sets of metrics over various periods. Over the longest time period tracked in our data (2006-2016), the Sacramento metropolitan statistical area (MSA) ranks in the *bottom-third* of the 100 largest metro areas in composite rankings measuring improvements in growth, prosperity, and inclusion. For core sub-measures within prosperity and inclusion, the region's progress has trailed the nation as a whole over this long-run period (Figure 1).

These long-term trends reflect that the downturn during the Great Recession was deeper and more sustained in the Sacramento MSA than in other parts of the nation, and therefore the full recovery took longer. Coming out of the downturn, the region's

economic performance has looked better over the past five years. For example, between 2011 and 2016, the MSA ranked in the top-third of the 100 largest metro areas in metrics of growth, prosperity, and inclusion.²

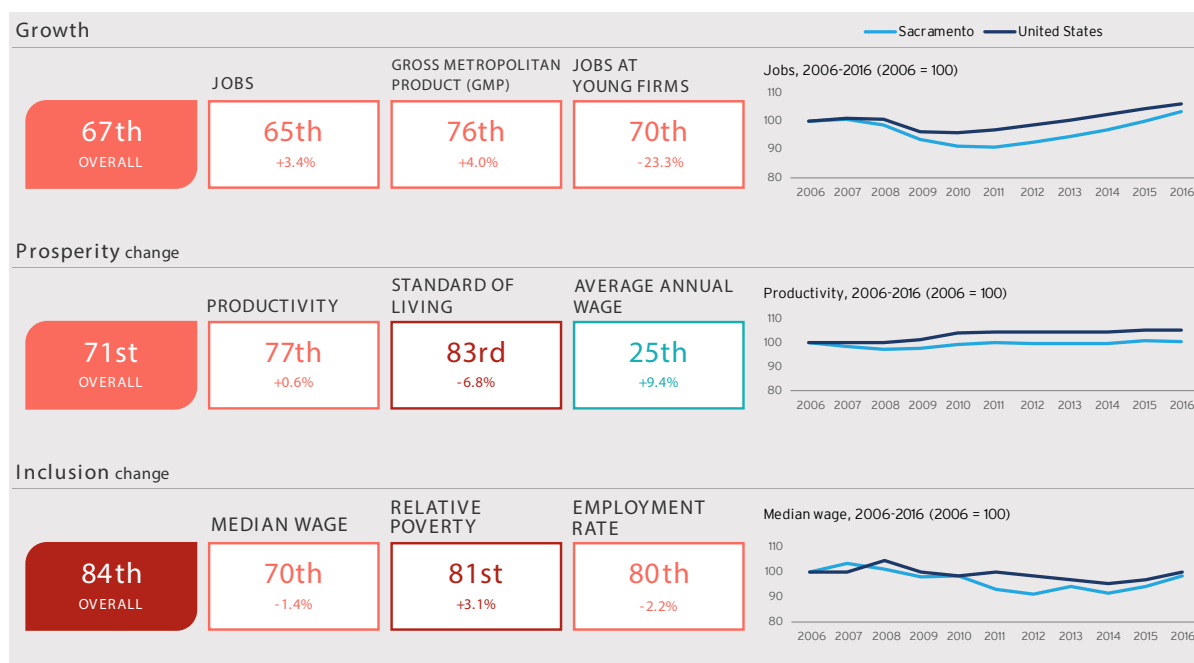
Even with the improved labor market, many families and communities are still struggling. As of 2016, 34 percent of the Sacramento region's residents lived in struggling families, defined as residents in households that do not earn enough to cover their basic household expenses, including housing, transportation, and child care (Figure 2).³ While this share of residents declined from its peak in the wake of the Great Recession, it is still substantial,

particularly among individuals with lower levels of education and people of color. Nearly two-thirds of the region's residents without a high school degree are in struggling families, as are 47 percent and 42 percent of black and Hispanic residents, respectively (Figure 3).

In sum, the region's economic trajectory has improved significantly from the depths of a very difficult recession, and now is displaying some forward momentum. Yet, that recovery has been unable to counteract worrying long-term challenges related to shared prosperity and economic and racial inclusion.

FIGURE 1

Sacramento MSA's performance on growth, prosperity, and inclusion

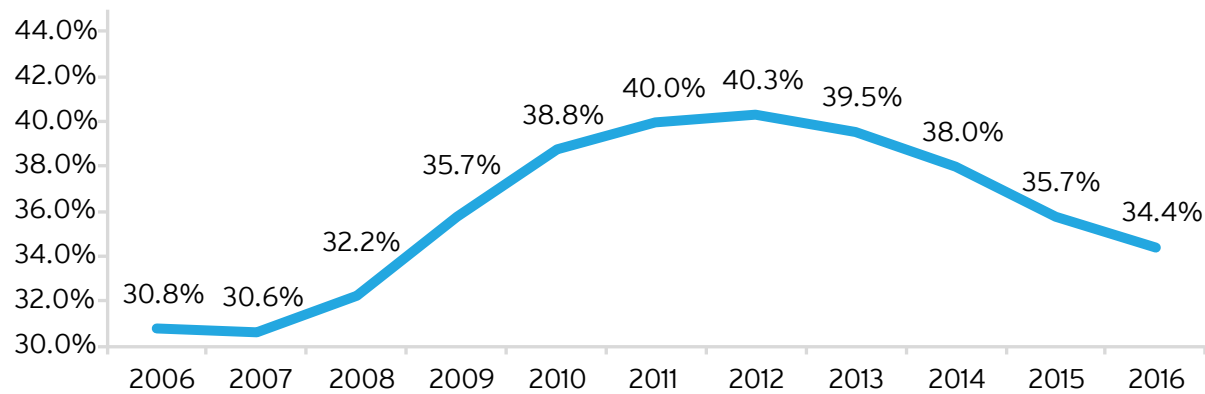


Source: "Metro Monitor 2018," Brookings, 2018

FIGURE 2

More than one-third of the residents in the Sacramento region struggle to make ends meet

Share of residents in struggling families (Sacramento region)

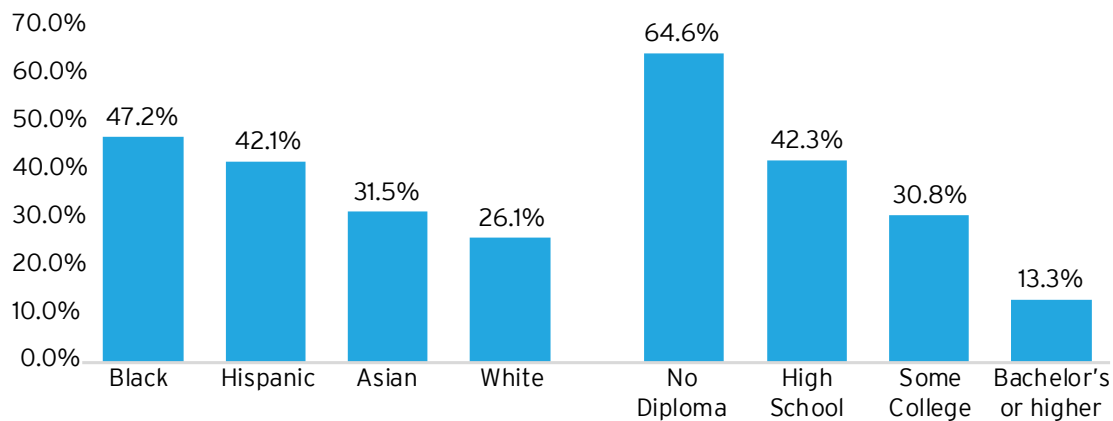


Source: Brookings analysis of the University of Washington Center for Women's Welfare County-Based Sufficiency Standard

FIGURE 3

These struggling adults are disproportionately people of color and individuals with lower levels of education

Share of residents in struggling families (Sacramento region, 2016)



Source: Brookings analysis of the University of Washington Center for Women's Welfare County-Based Sufficiency Standard

II. HOW IS THE SACRAMENTO REGION POSITIONED FOR FUTURE PROSPERITY?

Future prosperity in the Sacramento region, like all U.S. regions, depends partly on how it can navigate wider national and global dynamics. Foremost among these dynamics are technological change, global integration, demographic change, and national political realities.

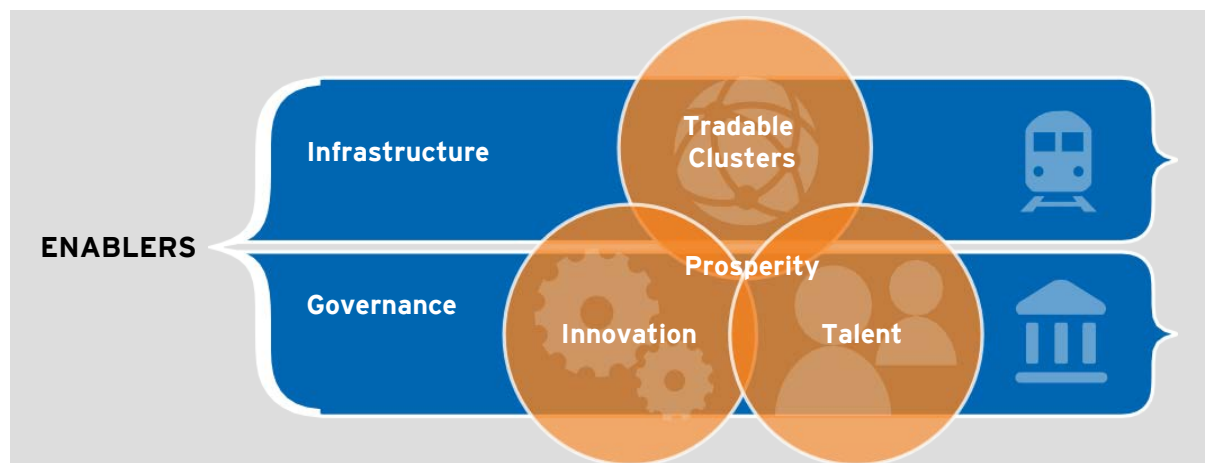
These shifts demand new approaches to economic development that:

- Recognize, adopt, and adapt to new technologies
- Pursue resiliency amid global competition
- Endow a more diverse workforce with the skills to thrive in the labor market
- Plan and execute in a local self-help environment with diminished national investment.

This section provides an assessment of the Sacramento region's economic position amid these dynamics through a five-factor framework—trade, innovation, talent, infrastructure, and governance. The first three factors—competitive tradable industries, innovation ecosystems, and skilled labor—are the key drivers of overall productivity, employment creation, and income growth. The other two factors—well-connected, spatially efficient infrastructure, and reliable governance, public services, and business environment—enable these drivers.

FIGURE 4

Prosperity framework



Source: Brookings Institution, RW Ventures, and McKinsey and Company

GLOBAL AND NATIONAL DYNAMICS DEMAND NEW REGIONAL ECONOMIC DEVELOPMENT APPROACHES

Four significant dynamics are demanding that regional leaders respond with new types of economic development strategies:

Technological change is restructuring the labor market. Technology has profoundly changed labor market demand: In manufacturing, Ball State's Michael Hicks and Srikant Devaraj estimate that 88 percent of job losses are due to the productivity gains of the information technology revolution.^a As breakthroughs spawn new products and services, they may displace workers with obsolete skills. While few occupations have been completely mechanized, a recent McKinsey Global Institute report estimated that half of all work tasks could be automated by 2055.^b This digital revolution is revaluing the workers with the cognitive abilities and technical training to complement new technologies. Due in part to this trend, the earnings gap between the typical college and high school graduate has increased from 38 percent in 1980 to 73 percent in 2015.^c

Global competition continues to expand. The same technological forces changing labor market demand have promoted globalization. In the 1970s and 1980s, low and medium-skilled jobs moved overseas. As multinational companies launched or expanded their foreign operations, this global workforce increased by 1 billion, tripling from 1980–2000.^d While the global trade from these supply chains created new opportunities for U.S. firms and

workers, it also sparked job losses, especially for workers and communities that specialized in export industries that relocated to emerging markets.^e

Demographic shifts are diversifying the workforce. The country's demographics are undergoing a historic transition: The U.S. will become a majority-minority nation in 2044, as the nation's white population declines with the aging of the baby boomer generation while the population of Asians, Hispanics, and multi-racial persons increases rapidly. Today, whites make up over 80 percent of Americans who are 65 or older, but just under 52 percent of those who are 17 or younger.^f Education and training systems must respond to ensure that this younger, more diverse generation has the education and skills needed to meet the demands of the advanced economy.

Political and budget realities constrain Washington's investments in growth and opportunity. America's rapidly-changing economy and society are roiling our political system. Both within and across regions, the 2016 election revealed stark divisions, fueled by divergent economic fortunes and social and cultural views. This polarization is being expressed in our national politics, which means that major legislative compromises between the two major parties appear unlikely. And, as entitlements and interest on the debt absorb more of the federal budget (a projected 91 percent by 2027), the federal government's inability to invest in the main drivers of inclusive growth will burden local and state actors more.^g

a. Michael J. Hicks and Srikant Devaraj, "The Myth and Reality of Manufacturing in America" (Muncie, IN: Conexus Indiana and Ball State University, 2017).

b. James Manyika et al., "Harnessing automation for a future that works" (San Francisco: McKinsey Global Institute, 2017).

c. Brookings analysis of U.S. Census data. Rebecca Diamond, "U.S. Workers' Diverging Locations: Causes and Inequality Consequences." In Susan M. Wachter and Lei Ding, eds., *Shared Prosperity in America's Communities* (Philadelphia: University of Pennsylvania Press, 2016).

d. Richard Freeman, "The Great Doubling: The Challenge of the New Global Labor Market," Working Paper (2006).

e. Joseph Parilla and Mark Muro, "Where global trade has the biggest impact on workers," *The Avenue*, December 14, 2016. David H. Autor et al., "Trade Adjustment: Worker-Level Evidence," *The Quarterly Journal of Economics* (2014): 1799-1860.

f. William H. Frey, "The Millennial Generation: A Demographic Bridge to America's Diverse Future" (Washington: Brookings Institution, 2018).

g. "An Update to the Budget and Economic Outlook: 2017 to 2027," Congressional Budget Office, June 29, 2017, <https://www.cbo.gov/publication/52801>.

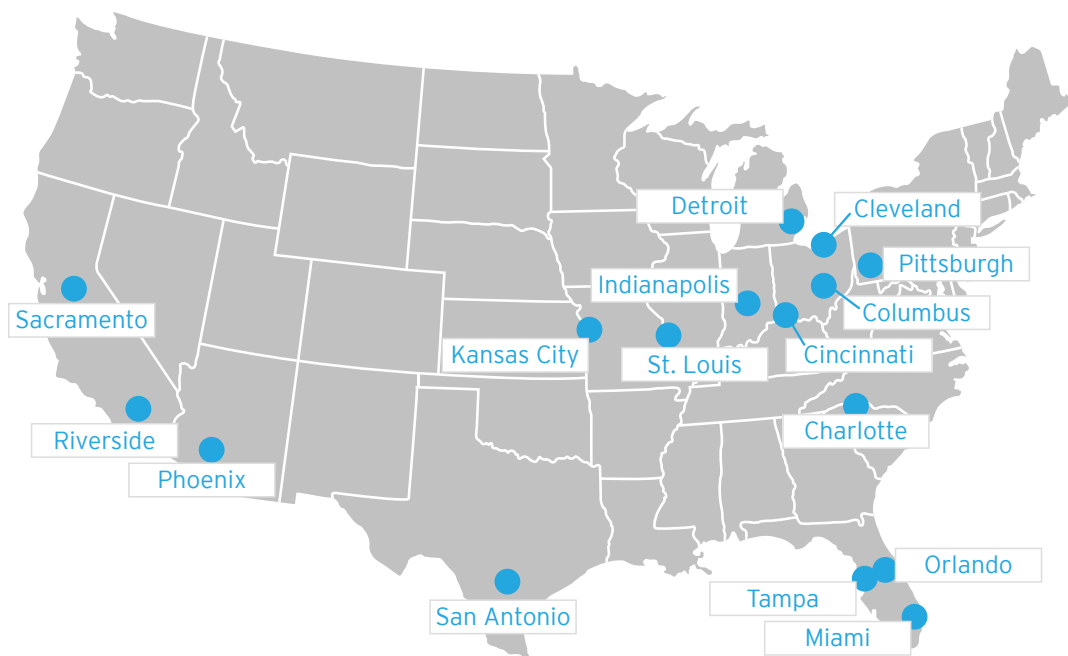
American Middleweight regions have a base of educated workers, research universities and hospitals, and tradable clusters, but are still striving to translate those assets into a sustained economic niche in the global economy.

This market assessment compares the Sacramento region economy along these factors against the nation and a select group of U.S. metropolitan areas. To do so, we created a comparison group of metropolitan peers based on a typology developed in the 2016 Brookings report “Redefining Global Cities.” To select peers, that report utilized a combination of principal components analysis (PCA), k-means clustering, and agglomerative hierarchical clustering to group the 120 largest metropolitan economies in the world into seven groups based on their economic characteristics and competitiveness factors. Of those seven groups, the Sacramento region is one of 16 regions identified as “American Middleweights” (Figure 5).

American Middleweight regions have a base of educated workers, research universities and hospitals, and tradable clusters, but are still striving to translate those assets into a sustained economic niche in the global economy. Metropolitan areas in

FIGURE 5

The Sacramento region is one of 16 American Middleweight regions



Source: “Redefining Global Cities,” Brookings, 2016

this group are almost evenly divided between mid-sized production centers in America's North and East (Cincinnati, Cleveland, Pittsburgh, Indianapolis, Detroit) and Southern cities that have experienced significant population growth (Miami, Phoenix, Orlando, Tampa). The average metropolitan area has 3 million inhabitants, generates \$149 billion in nominal output, and has a GDP per capita of \$52,000.⁴

A. TRADABLE INDUSTRIES

Why they matter: Tradable industries are a critical driver of prosperity and competitiveness. Firms selling outside the region inject new wealth from outside. When this wealth is spent locally, it creates a multiplier effect in the regional economy, spurring new jobs, growth, and increased tax revenue to be reinvested locally.⁵ Participating in trade also makes metro areas more competitive and productive. Firms that generate revenue from outside their home markets—from either other domestic markets or abroad—must provide goods and services faster, better, and more affordably than competitors. We focus particular attention to global trade and investment, as local companies that embed themselves in global value chains gain access to high-quality inputs, lower their overall costs, and as a result, become more globally competitive. This process tends to boost productivity and wages.⁶ A 1 percent increase in international trade leads to a 0.5 to 2 percent gain in income per capita.⁷

The Sacramento region's tradable employment base includes a diversity of advanced manufacturing, food and agriculture, and business and technical services. Understanding the tradable portions of a regional economy are particularly important in assessing what makes it industrially unique. Tradable industries account for 17 percent of regional employment and 26 percent of regional GDP in the Sacramento region. By contrast, those shares are 28 percent and 43 percent, respectively, for the U.S. economy overall.⁸ Well-established tradable industries consist of a mix of advanced manufacturing (particularly computers and

DEFINING THE SACRAMENTO REGIONAL ECONOMY

To align with available data, this report uses two different geographic definitions of the Sacramento regional economy. Wherever possible, the report presents data for the six-county region, defined as "Greater Sacramento" and inclusive of El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba counties. At times, however, we use the four-county region (El Dorado, Placer, Sacramento and Yolo) due to data constraints, which we refer to as the "Sacramento metropolitan statistical area" or the "Sacramento MSA."

equipment), advanced services such as management consulting (which we label as tradable even though it draws on the large client base within state government), research and development services, and a set of industries that cut across agricultural and food sciences, production, processing, and distribution. Previous assessments have identified six industry cluster targets for the region—food and agriculture, advanced manufacturing, information and communication technology, clean economy, life sciences and health services, and education and knowledge creation.⁹ These cluster definitions cut across a mix of tradable and non-tradable industries (see sidebar "Examining the Sacramento region's 'Next Economy' Clusters").

Parsing the Sacramento region's tradable industry base is a more complicated exercise than in most regions due to the presence of the state government. Traditionally defined, government is not included in the tradable part of an economy even though in the Sacramento region it does provide a somewhat similar function. State government is geographically concentrated, draws in income from outside the region (in the form of taxes paid to support government agencies), provides a large direct base of well-paid jobs, and supports

additional economic activities such as private sector consulting services to the public sector and technical services. California's size and wealth means that this capital function can support a larger local base of employment than in other state capitals. Where it differs from traditional tradable industries, though, is that the Sacramento region's government base is not subject to the same competitiveness pressures that a tradable industry typically faces. It grows or declines based on the growth of the broader state economy and policy, political, and budget decisions that shape the size of government, not the continuous productivity growth typical traded sector firms must deliver to win market share within national and global markets. To be sure, the region's government presence has been a source of good job growth, and may continue to be, but recent trends make it

clear that the region needs to develop additional capabilities to deliver broad-based prosperity.

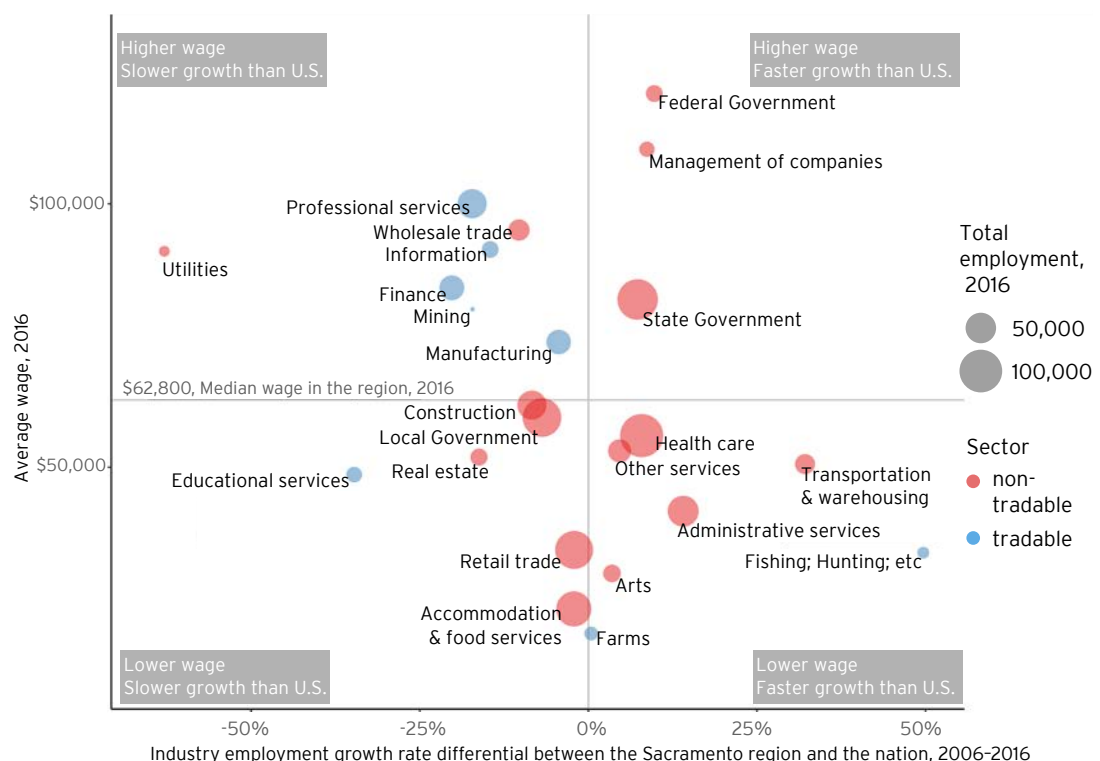
Employment in the Sacramento region's tradable industries is growing slower than the nation's.

Competitive regions tend to grow faster than the nation within core tradable industries. Figure 6 measures the Sacramento region's industrial activities over the last 10 years, with tradable industries in blue and non-tradable industries in red. Ideally, a regional economy wants as many industries as possible in the upper right quadrant of the graph—meaning they pay well and are competitive relative to the nation (as measured by the growth differential between the region and the nation in that industry). In the Sacramento region, the industries that are growing faster than the nation are mostly non-tradable and pay an average wage below the

FIGURE 6

Region's competitive shifts are in lower wage, locally serving industries

Average wage and competitive shifts of jobs by industry (Sacramento region)



Source: Brookings's analysis of Moody's analytics data

region's median wage, led by transportation and warehousing, administrative services, health care, and state government (which we define as non-tradable for the reasons listed above). By contrast, higher-wage tradable industries—across both manufacturing and services—increased employment more slowly than the nation.

While the region does have export industries that are growing faster than the nation as a whole, goods and services exports account for a relatively small share of the economy. In 2016, the local production associated with goods and services exports accounted for about 6 percent of the Sacramento region's economy, the lowest export intensity among its American Middleweight peer group (Figure 7). This lower share derives partly from the significant presence of government in the region (Columbus and Phoenix are also state capitals with relatively low export shares although Indianapolis differs) but also due to the challenges outlined in the previous finding related to traded sector competitiveness. That noted, the Sacramento region does have narrower export specializations that are

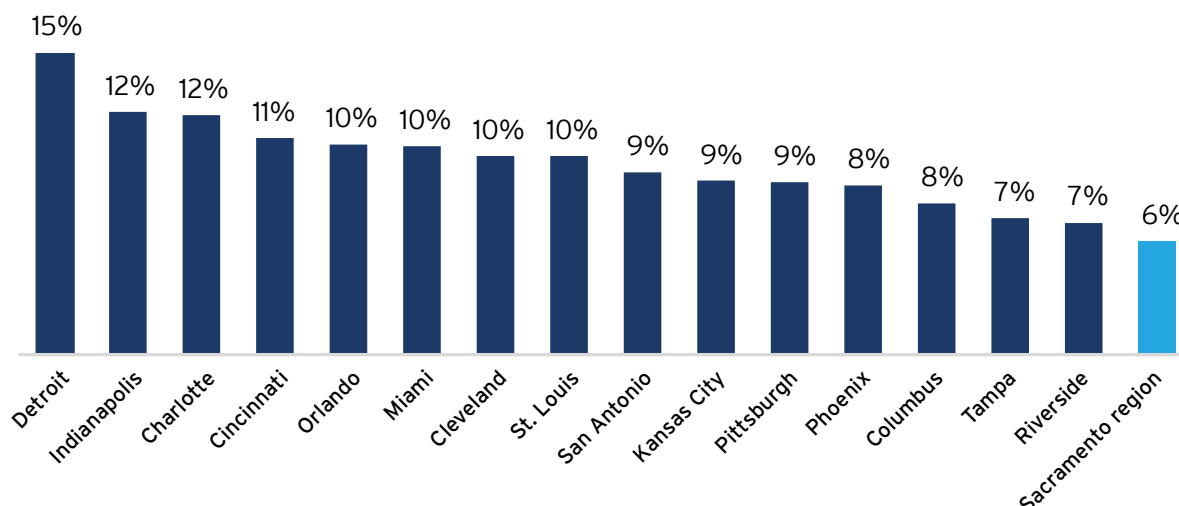
Employment in the Sacramento region's tradable industries is growing slower than the nation's.

growing faster than the national share: the tech sector (technology-intensive services) and the small share of the overall educational and medical service economy that is exported (e.g. foreign students at UC Davis). These are not always the largest export industries in the region, but they do represent core industrial competencies that can serve as sources of enduring competitive advantage and better paying jobs (Figure 8).

FIGURE 7

The Sacramento region relies less on exports than peers

Export share of regional output, 2016



Source: "Export Monitor 2017," Brookings, 2017

COMPARING THE SACRAMENTO REGION'S "NEXT ECONOMY" CLUSTERS

Cluster analysis is a common tool in regional economic planning to organize and design interventions for groups of firms that are locally interdependent in some way, whether through supply chains, labor pools, or shared technologies. In 2016, Valley Vision undertook a cluster analysis exercise for the Sacramento region, revealing six "Next Economy" clusters. While a robust new cluster analysis is well beyond the scope of this report, Brookings examined the Sacramento region's positioning on those clusters on two basic metrics—size and specialization—relative to both the nation and the 100 largest metro areas in the United States.

Table 1 summarizes how each cluster compares to the nation as a whole in terms of the scale of employment and its relative specialization, as measured by location quotients (LQs > 1 indicates a higher concentration of employment than the national average). In terms of overall employment, the health and life sciences and education and knowledge creation clusters account for the most jobs. Each cluster includes major employers such as universities, hospitals, and medical centers. However, these clusters have a small tradable component; most schools and hospitals serve local residents.

Food and agriculture represents the region's most distinct tradable cluster, as measured by its

location quotient rank relative to the 100 largest metro areas. It has a lower specialization in food and agriculture than the nation as a whole (due to the significant role of agriculture in many smaller metros and rural areas), but among larger metropolitan areas it is among the top fifth in terms of specialization. Our interviews with local firms in this cluster—researchers, producers, processors, and sellers—confirmed that there are unique assets that attract and retain them in the region. For growers, obviously the natural and land advantages in the region are conducive to agriculture and have been for generations. For R&D operations, access to UC Davis's research prowess in agricultural and life sciences is an advantage, as is the ability to test new technologies with a large local market of growers. Meanwhile, processors desire close proximity to growers, and noted they source much of their equipment locally as well. Additionally, retailers highlighted the marketing and quality advantage of being so close to fresh food.

We also examined employment growth in these clusters since 2006 using a concept called competitive shift. A metro area's competitive shift represents the difference between the actual job growth and the expected job growth. It indicates whether the metro area overperformed or underperformed in a given industry cluster. On this metric, food and agriculture, clean technology,

TABLE 1

Employment and location quotient of the Sacramento region's Next Economy Clusters

Clusters	Total employment	Rank (among 100 largest metros)	Location quotient (relative to national employment)	Rank (among 100 largest metros)
Food & Agriculture	32,116	26	0.9	20
Education and Knowledge Creation	94,804	29	1.0	35
Life Sciences & Health Services	146,227	29	1.0	40
Information & Communications Technologies	30,593	36	0.9	43
Clean Technology	10,752	37	0.9	59
Advanced Manufacturing	15,507	59	0.4	80

Source: Brookings's analysis of EMSI data

and life sciences and health services all displayed positive competitive shifts between 2006 and 2016.

Finally, within these broad clusters, certain detailed industries maintain higher relative specializations and have demonstrated positive competitive shifts over the past 10 years. Our analysis revealed 20 detailed six-digit NAICS industries within these clusters that have LQs greater than 1.5, employment levels above 200, and a positive competitive shift. Reflecting

the finding above, food and agriculture and life sciences and health services have the most number of industries that satisfy these criterion, although most of the health and life sciences industries refer to locally serving aspects of healthcare. An additional six-digit industry—research and development in physical, engineering, and life sciences—was not included in any of the cluster definitions but clearly relates to the two clusters mentioned above. This industry's performance reflects the Sacramento region's potential to be an R&D leader.

TABLE 2

Employment and location quotient of selected industries within Next Economy Clusters, 2016

Cluster	Industry	Location Quotient	Total Employment
Advanced Manufacturing	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	14.2	969
Advanced Manufacturing	Printing Machinery and Equipment Manufacturing	4.6	238
Advanced Manufacturing	Railroad Rolling Stock Manufacturing	3.3	600
Clean Technology	Biomass Electric Power Generation	19.8	214
Clean Technology	Electric Bulk Power Transmission and Control	3.3	613
Education and Knowledge Creation	Other Technical and Trade Schools	1.9	856
Education and Knowledge Creation	Radio Networks	1.8	219
Food & Agriculture	Roasted Nuts and Peanut Butter Manufacturing	9.7	1,039
Food & Agriculture	Dried and Dehydrated Food Manufacturing	7.1	565
Food & Agriculture	Farm Labor Contractors and Crew Leaders	4.2	5,085
Food & Agriculture	Soil Preparation, Planting, and Cultivating	2.7	567
Food & Agriculture	Meat and Meat Product Merchant Wholesalers	2.4	715
Food & Agriculture	Crop Production	1.8	7,233
ICT	Cable and Other Subscription Programming	2.4	929
ICT	Computer Facilities Management Services	1.5	700
Life Sciences & Health Services	HMO Medical Centers	9.1	12,209
Life Sciences & Health Services	Hospitals (State Government)	3.1	7,835
Life Sciences & Health Services	Services for the Elderly and Persons with Disabilities	2.9	32,814
Life Sciences & Health Services	Family Planning Centers	1.9	281
Life Sciences & Health Services	Assisted Living Facilities for the Elderly	1.7	4,853
/	Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)	1.7	5,228

Note: Showing industries that employ at least 200 workers, with an LQ > 1.5 in 2016 and positive competitive shifts from 2006-2016.

Source: Brookings's analysis of EMSI data

The Sacramento region attracted \$1.7 billion in new foreign direct investment (FDI) between 2009 and 2015. Greenfield investments—new establishments in foreign markets—are another metric that reveals the extent to which multinational firms find the Sacramento region an attractive operational environment. When controlling for the size of its workforce, the Sacramento region had the eighth highest concentration of foreign direct investment during this period in its peer group, receiving \$1,800 in FDI per worker, led by major investments in alternative energy (\$900 million); machinery (\$150 million); textiles (\$100 million); and information and communications (\$80 million).¹⁰

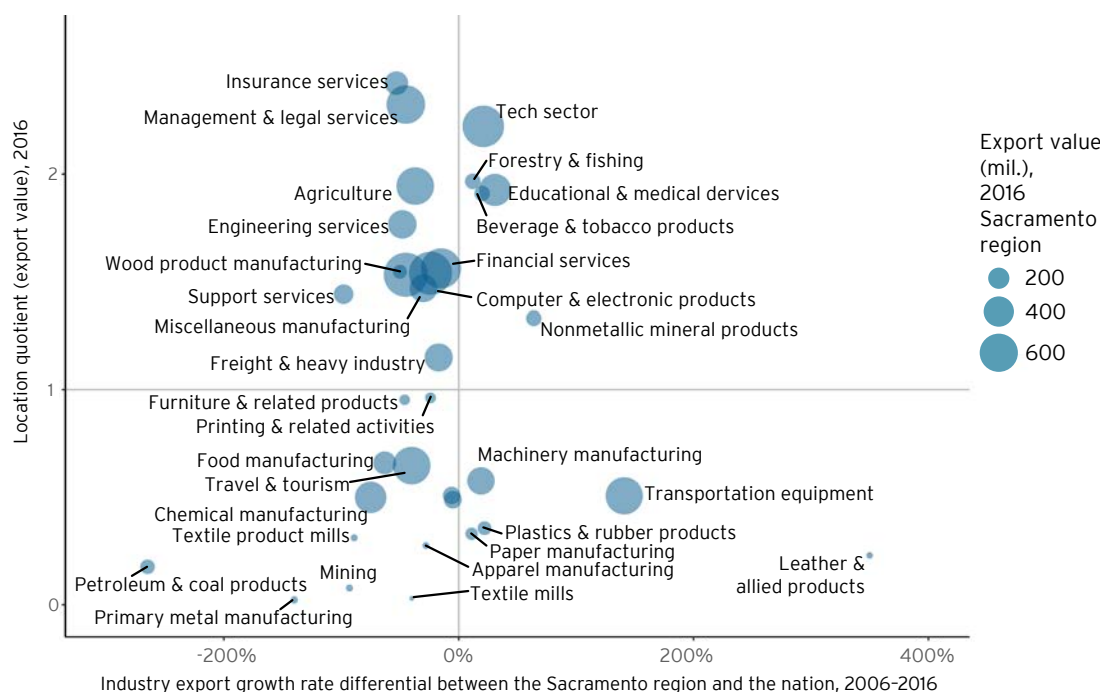
BOTTOM LINE

Two takeaways stand out from this analysis of the Sacramento region's industry dynamics. First, employment growth in the region's tradable industries has trailed the nation as a whole, suggesting competitive deficits. Partly due to these trends and partly due to its role as a state capital, exports account for a lower share of economic output in the Sacramento region than in any other peer metro. Most of the region's job creation, therefore, has been in locally serving industries such as health care and transportation and logistics, parts of the economy that do not pay as well as advanced manufacturing and tradable services. Second, and more optimistically, the Sacramento region most unique industry opportunity lies at the intersection of food, agriculture, and technology.

FIGURE 8

The Sacramento region has narrow export specializations in the tech sector and educational and medical services

Location quotient and competitive shifts of export values by industry



Note: Oil & gas extraction (competitive shifts -713%, LQ 0.22) is not shown.

Source: "Export Monitor 2017," Brookings, 2017

B. INNOVATION

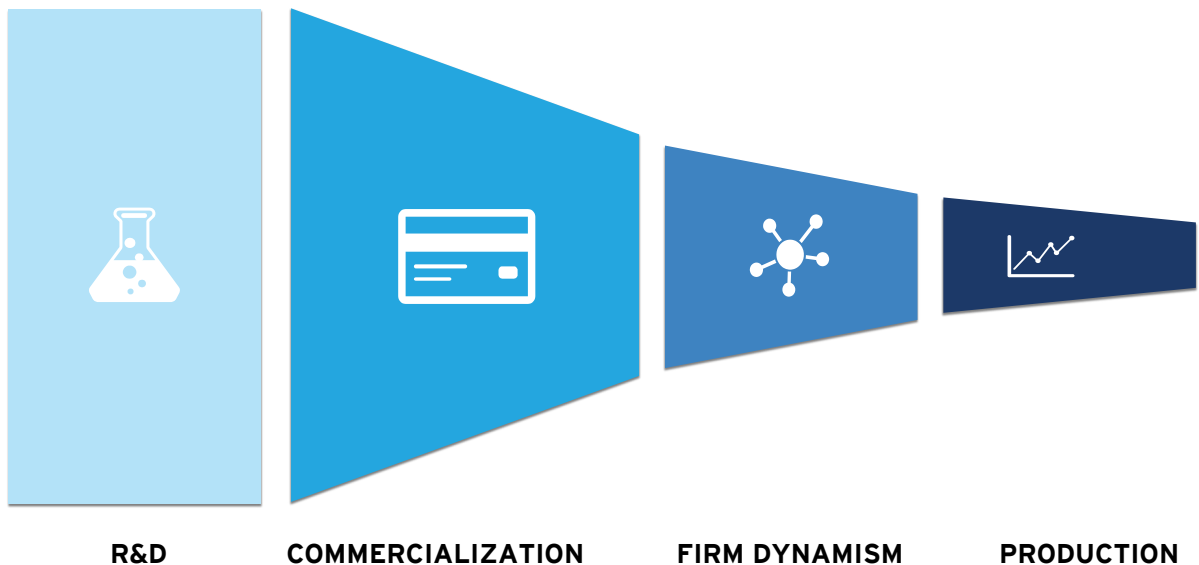
Why it matters: A region's innovative capacity directly affects its ability to develop and deploy commercial applications, start new businesses, and maintain industrial competitiveness in the face of disruptive technological change.¹¹ Innovation takes many forms and can be hard to measure, especially innovation that improves processes or management techniques. Yet the most productive and technologically advanced metropolitan economies in the world tend to have strengths in four areas: research and development, commercialization, entrepreneurial dynamism, and advanced industrial production.¹² For metro areas like the Sacramento region, the creation of new technologies and the capability to translate them into high-value growth is a critical path to a diversified and durable set of industrial advantages¹³

The Sacramento region contains significant academic research strengths in key fields, especially agriculture and biological sciences.

Most wealthy American metropolitan areas have an elite university presence, and the Sacramento region is no different. In fact, the region stands out among American Middleweights in its amount of university-led R&D. Among its peer group, the Sacramento region generated higher average levels of university R&D than all but three other regions between 2011 and 2016, led by the University of California Davis' (UC Davis) average of \$672 million per year and California State University, Sacramento's \$15 million per year (Figure 10). At UC Davis, health sciences (26 percent), biological and biomedical sciences (25 percent), and agricultural sciences (19 percent)—generate over 70 percent of all R&D. UC Davis accounts for 4.3 percent of the nation's agricultural sciences R&D and 1.4 percent of its R&D in biological and biomedical sciences.¹⁴

FIGURE 9

Sustained prosperity starts with the innovation system

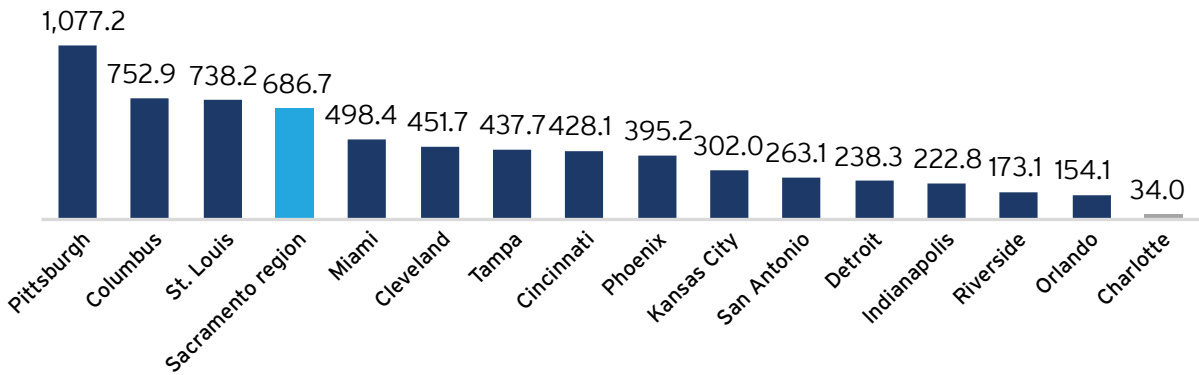


Source: Brookings Institution

FIGURE 10

The Sacramento region boasts strong research universities

Average annual R&D expenditures at higher education institutions, (millions, 2009 USD), 2011-2016



Source: Brookings's analysis of NSF data



Various university rankings highlight UC Davis's significant scientific impact. To measure the scientific impact of universities, the Centre for Science and Technology Studies (CWTS) and Leiden University have compiled metrics for 750 major universities worldwide. Within life and earth sciences, UC Davis published the largest volume of "high-impact publications"—those ranked within the top 10 percent of most cited publications—in the world, and these academic specialties clearly spillover into the commercialization of new technologies by firms in the region.

The region generates high rates of patenting activity in several key technology categories.

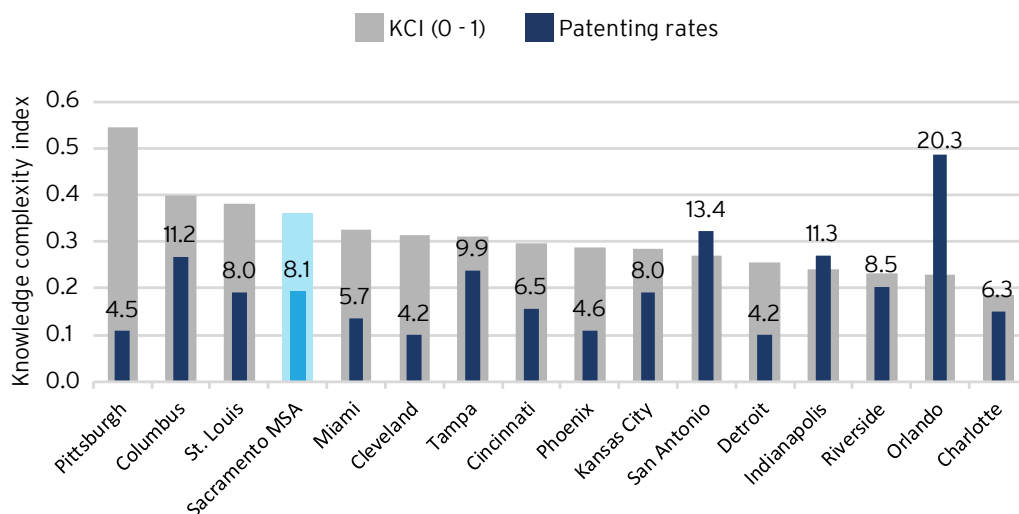
Patents provide a reliable and comparable, if imperfect, measure of new inventions that spur economic growth. Relative to the size of its employment base, the Sacramento region's patenting rate is about average among American Middleweights, lagging behind the high patenting

volumes in advanced manufacturing centers like Detroit, Cincinnati, and Cleveland. The simple volume of patenting activity, however, does not tell the whole story of a region's innovative capacity. Some technologies are rarer and more valuable than others, and thus place the regions that can create those technologies at an advantage. Dieter Kogler and David Rigby have combined measures of the diversity and ubiquity of patents into a "knowledge complexity index." The Sacramento metropolitan statistical area ranks fourth among the American Middleweights on this index (Figure 11). This suggests that the region is specializing in novel technological capabilities. The top technology subgroups in the Sacramento region, both by volume and by relative specialization as compared to the rest of the world, are in biotechnology, computer technology, basic materials chemistry, and IT methods for management. Large patentees in the region include major biotechnology and agricultural technology firms like Novozymes, AgraQuest (now Bayer

FIGURE 11

The region has average patenting output but significant levels of technological "complexity"

Average annual number of patents per 1000 workers (2000–2015) and Knowledge Complexity Index



Source: Brookings's analysis of USPTO data, Kogler and Rigby

CropScience), and Marrone Bio Innovations, as well as major manufacturers like Intel and Hewlett Packard. UC Davis, for its part, is also a major source of new patents and licenses. UC Davis has a higher rate of licenses executed per \$10 million in research funding than UC San Diego, UC Berkeley, and UCLA.¹⁵

Lagging business dynamism diminishes the Sacramento region’s ability to replenish its economic base. Dynamism measures the new firm creation rate, a critical driver of how regional economies grow, evolve, and replenish their industry base. Because net job growth disproportionately occurs in young firms, dynamic economies will offer

more labor market opportunities to local workers. The challenge is that business dynamism has been in decline nationwide, and the Sacramento region is experiencing that slowdown more so than other large metro areas. Several metrics bear this out. One study examining Inc. Magazine’s 5000 fastest growing businesses found that the Sacramento region had the fourth lowest high-growth business density among metro areas with more than 1 million residents.¹⁶ Among its American Middleweight peer group, Sacramento ranked 13th in its peer group on a comprehensive ranking of growth entrepreneurship by the Kauffman Foundation.¹⁷ These entrepreneurship statistics measure

TABLE 3

Business dynamism in the Sacramento MSA lags peers, 2017

	Metro areas	Rank (out of 40)	Share of scale-ups	Rate of startup growth	High growth company density
1	Columbus	4	2.5%	96.3%	159
2	San Antonio	7	2.5%	88.4%	41
3	Charlotte	9	2.0%	74.0%	100
4	Phoenix	12	1.7%	63.2%	138
5	Cincinnati	18	1.5%	57.5%	128
6	Cleveland	19	1.8%	70.0%	119
7	Indianapolis	20	2.2%	72.9%	117
8	Kansas City	23	1.7%	33.9%	102
9	Tampa	24	1.2%	71.4%	116
10	Pittsburgh	25	2.0%	79.7%	53
11	Orlando	27	1.0%	60.0%	122
12	St. Louis	29	1.4%	61.0%	48
13	Sacramento	37	1.6%	63.9%	55
14	Riverside	38	1.4%	51.2%	44
15	Miami	39	0.8%	60.3%	81
16	Detroit	40	0.9%	65.2%	68

Note: Share of Scale-ups—Measures the number of firms that started small but grew to employ fifty people or more by their tenth year of operation as a percentage of all employer firms ten years and younger.
 Rate of Startup Growth—Measures how much startups have grown as a cohort, on average, five years after founding—measured by change in employment.
 High Growth Company Density—Measures the number of private businesses with at least \$2 million in annual revenue reaching three years of 20 percent annual revenue growth normalized by total business population.
 Source: Kauffman Foundation calculations from BDS and Inc. 500/5000. Yearly measure.

companies outside the innovation economy, but dynamic business environments are more likely to translate innovations into economic growth.

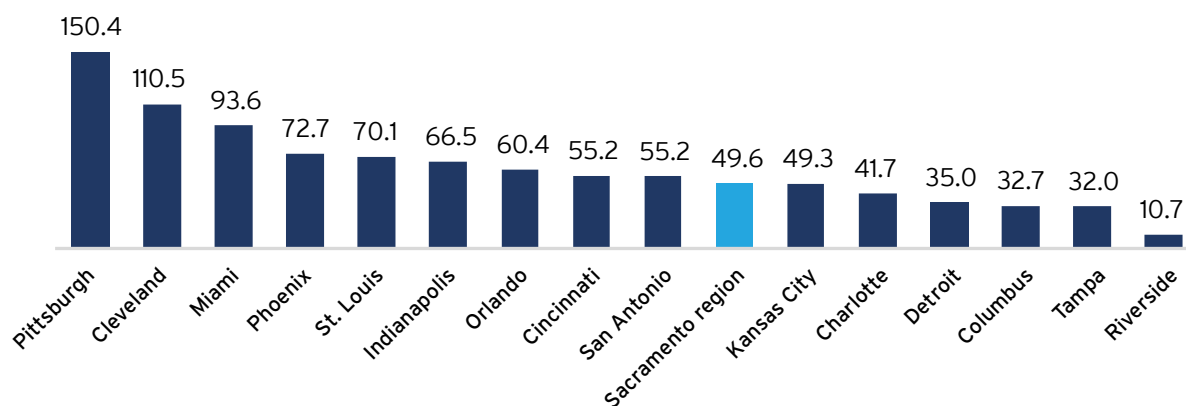
Venture capital investment is growing but flows lag regional peers. Venture capital (VC) provides funds for enterprises positioned for high growth and the potential to create and capture entire new markets.¹⁸ Specifically, we examine venture capital investment because firms that receive venture capital can be particularly important stimulants to regional economies: VC recipients are three to four

times more patent-intensive than other firms and are much more likely to translate their R&D activities into high-growth ventures.¹⁹ Several organizations within the region are devoted explicitly to addressing capital access for growth companies. According to Pitchbook, annual venture capital investment in the Sacramento region has increased from \$25 million in 2010 to \$111 million in 2016. Overall, however, the region still lags other American Middleweights in the amount of venture capital invested per 1000 workers (Figure 12).

FIGURE 12

The Sacramento region lags peers in venture capital investment

Average annual venture capital investment per 1000 workers (thousand USD, 2011-2016)



Source: Brookings's analysis of Pitchbook data

The Sacramento region’s employment growth in advanced industries lagged other American Middleweights between 2005 and 2015. Advanced industries represent the United States’ “tech” sector at its broadest and most consequential level. These 50 sectors—which encompass manufacturing, services, and energy—are characterized by deep involvement with technological research and

development and STEM workers.²⁰ Yet, even with the strong presence of innovation inputs—R&D and patents—employment growth in advanced industries only averaged 0.3 percent per year between 2005 and 2015. Only four American Middleweights exhibited slower growth (Figure 13).

BOTTOM LINE

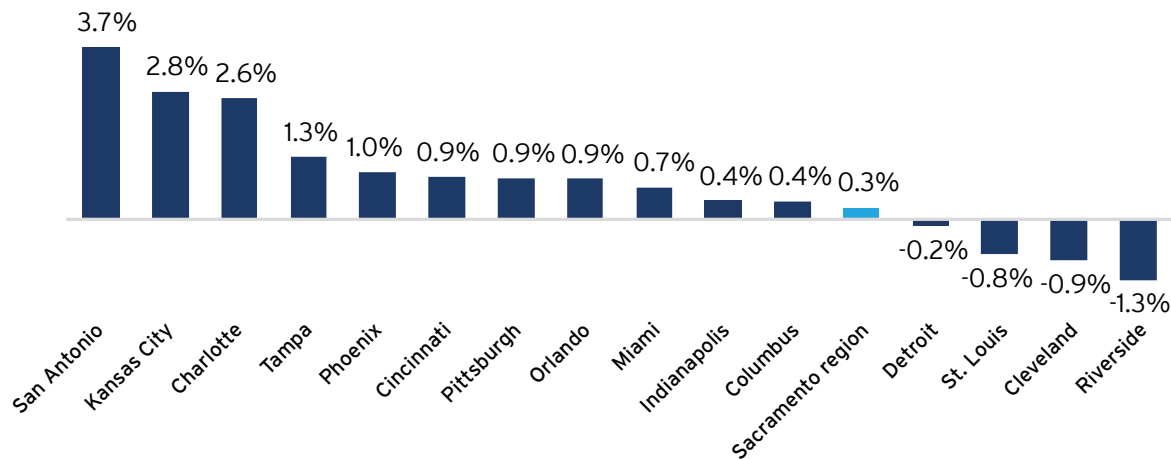
The Sacramento region has clear strengths within the early stages of the innovation pipeline. UC Davis stands out as a globally relevant innovation asset, due to its contribution to research and development, patents, and licenses, especially in the fields of agricultural and biological sciences. Our interviews revealed that these university-led strengths intersect with the research activities of some of the region’s leading agriculture, food, and biotechnology companies. Of course, innovation is occurring in other sectors and

companies but, relative to other regions, these are the clearest advantages. The challenge for the Sacramento region remains translating those distinct innovation strengths into new firms and, eventually, good job growth. The region trails its peers on measures of business dynamism, venture capital investment, and advanced industries growth, suggesting the need for further actions to support key advanced industry clusters and help young, innovative firms start and scale.

FIGURE 13

The Sacramento region experienced relatively slow job growth in advanced industries

Employment CAGR in advanced industries, 2005-2015



Source: “America’s Advanced Industries: What They Are, Where They Are, and Why They Matter,” Brookings, 2015

C. TALENT

Why it matters: Human capital—the stock of knowledge, skills, expertise, and capacities embedded in the labor force—is of critical importance to enhancing productivity, raising incomes, and driving economic growth.²¹ Producing, attracting, and retaining educated workers, creating jobs for those workers, and connecting those workers to employment through efficient labor markets all effect regional competitiveness and ensuring broad-based economic opportunity.²²

The Sacramento region has a relatively well-educated workforce. Structural shifts in the labor market now mean that educational attainment—the core metric for gauging knowledge and skills—is one of the best predictors for individual, community and regional economic success.²³ This is because employers continue to demand workers who have levels of skills and training beyond high school—prerequisites for a foothold in the middle class.²⁴

In this environment, the Sacramento region starts from a position of educational strength. In 2016, 65 percent of the region's residents had at least a high school education and 32 percent had a bachelor's degree or higher.²⁵ The supply of well-educated workers partly stems from the region's stable of four-year universities, led by UC Davis, Sacramento State, and the University of the Pacific.

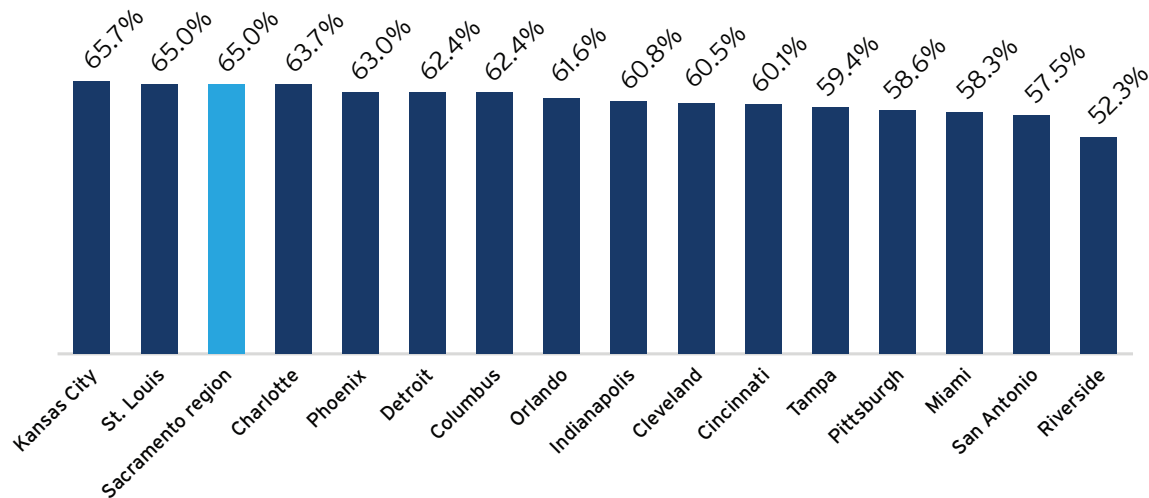
The Sacramento region's labor market is requiring and rewarding more education and training. Even with this existing supply of college-educated workers, earnings growth data suggests that the demand for employees with a college education exceeds supply. Notwithstanding increases in earnings among workers without a high school degree between 2010 and 2016 (likely due to wage growth of 11 percent in the construction, accommodation, and food services industries), the largest earnings gains occurred among workers with a bachelor's degree or higher, while those with a high school degree or some college registered earnings declines (Figure 15).



FIGURE 14

The Sacramento region starts from a position of educational strength

Share of population have completed high school or beyond (Sacramento region, 2016)

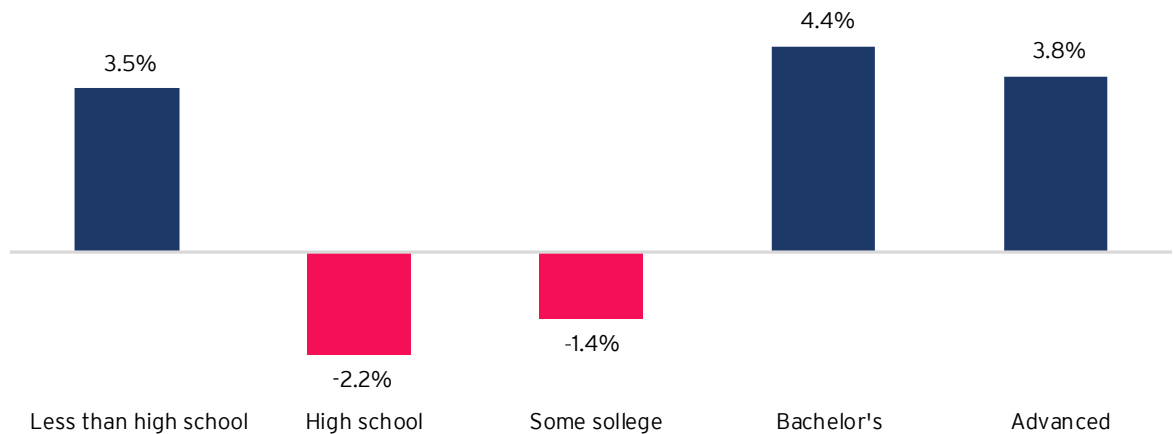


Source: Brookings's analysis of ACS data

FIGURE 15

Labor market is rewarding education with greater earnings gains

Sacramento region, 2010-2016



Source: Brookings's analysis of American Community Survey (ACS) data

The Sacramento region's mean digital occupation score is second highest among American Middleweights.

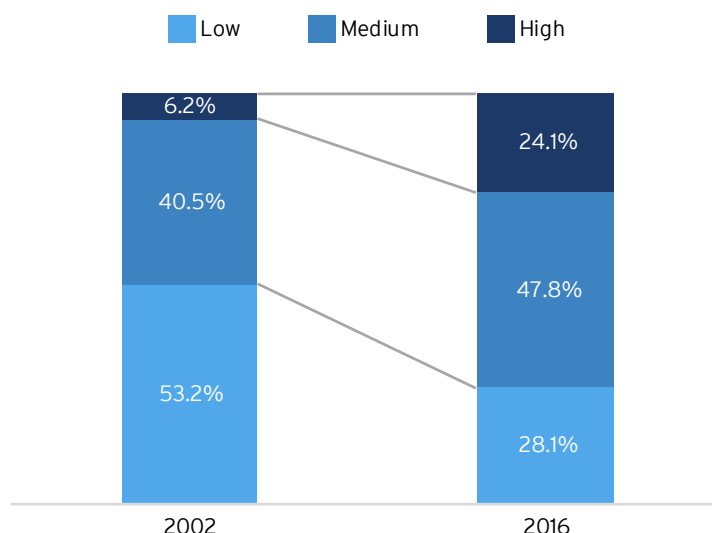
The Sacramento region's labor market is also demanding, and rewarding, workers with digital skills. In addition to a demand for higher education, the demand side of the labor market is also being disrupted by the rapid diffusion of digital technologies into occupations and industries.²⁶ In

2002, 53 percent of the Sacramento region's jobs required minimal digital skills. By 2016, that share had plummeted to 28 percent (Figure 16). Digitalization is occurring nationwide but the trend is more pronounced in the Sacramento region, where the share of occupations requiring high or medium levels of digital skills exceeds the national average, and the region's mean digital occupation score is second highest among American Middleweights. Moreover, according to EMSI data, many of the hardest-to-fill jobs in the Sacramento region labor market have high digital skills: software developers (digital score of 94/100), all other computer occupations (79/100), medical and health services managers (69/100), and sales occupations in manufacturing, technology, and science products (49/100). After decades of wage stagnation, digital skills can be a path to higher earnings. Nationwide, workers in occupations with medium or high digital skills earned significantly more than those in low-digital occupations (Figure 17). Even when controlling for education levels, the more an occupation relies on digital technologies, the greater the earnings.

FIGURE 16

Close to three-quarters of occupations in the region now require high or medium levels of digital skills

Share of occupations by digital skill level, Sacramento region

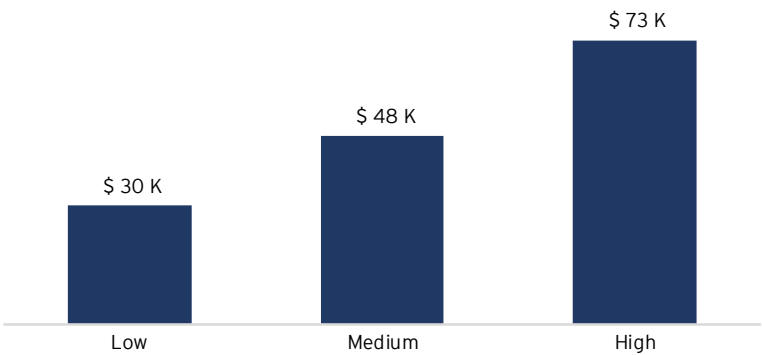


Source: "Digitalization and the American Workforce," Brookings, 2017

FIGURE 17

Labor market is rewarding digital skills

Average annual wage by digital skill level, United States, 2016



Source: "Digitalization and the American Workforce," Brookings, 2017



The Sacramento region's future workforce will be majority-minority, adding urgency to addressing existing educational disparities by race. Racial disparities in educational attainment persist in the Sacramento region. Currently, whites and Asians have much higher levels of educational attainment than blacks and Hispanics (Figure 18). As technology changes the demand for worker skills, the demographic profile of the Sacramento region's workforce is changing as well. Today, the Sacramento region's 18-to-34 year-old millennial population is 54 percent non-white, 10 percentage points higher than the nation as a whole (44 percent). Providing this more diverse, young population with in-demand skills and capabilities is critical for the region's future competitiveness and prosperity (Figure 19).

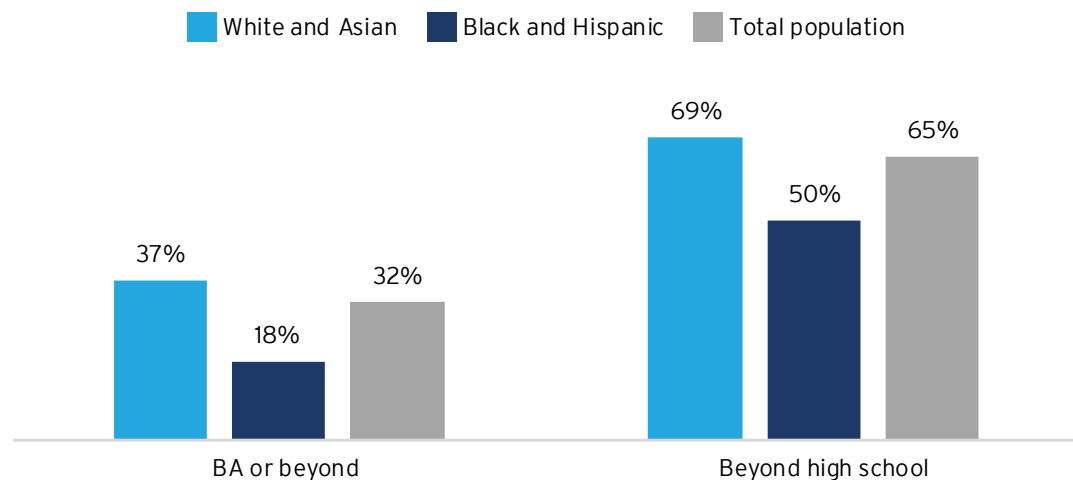
Training for digital occupations could offer a promising path toward greater earnings, but workers of color remain underrepresented in digital jobs. Overall, employment rates are much lower for blacks than other races in the Sacramento region (Figure 20). Specifically, focusing on high-demand digital skills offers both a compelling path toward address workforce shortages in high-demand



FIGURE 18

The Sacramento region exhibits educational disparities by race

Sacramento region, 2016

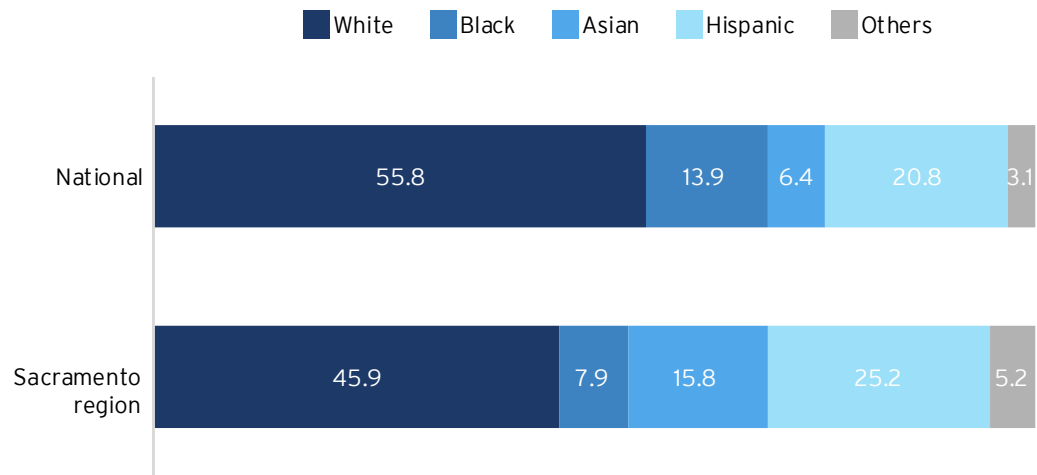


Source: Brookings's analysis of American Community Survey (ACS) data

FIGURE 19

The Sacramento region's millennials are more diverse than the nation as a whole

Race-ethnic composition of millennial population (age 18-34), 2015

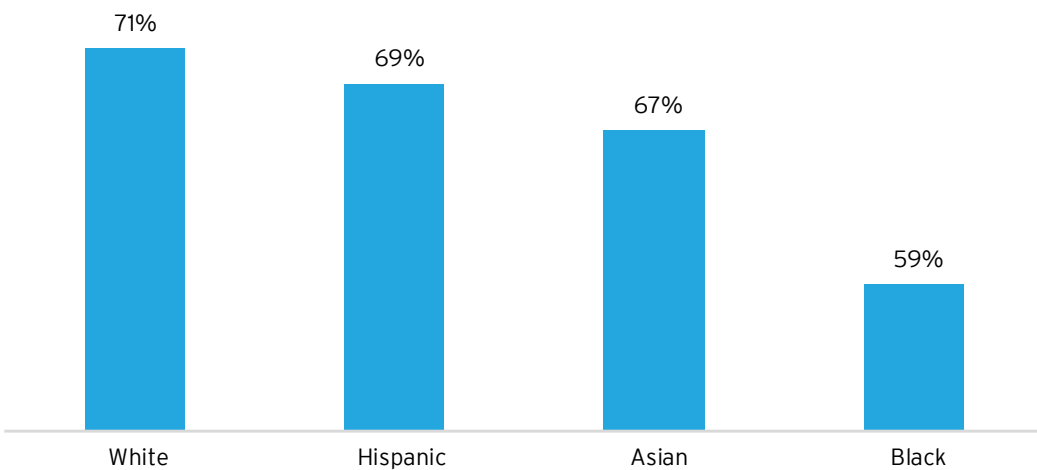


Source: "The Millennial Generation: A Demographic Bridge to America's Diverse Future," Brookings, 2018

FIGURE 20

Employment rates differ significantly by race

Share of individuals ages 18 to 64 who are currently employed (Sacramento region, 2016)



Source: Brookings's analysis of American Community Survey (ACS) data

occupations and raising earnings for underemployed groups as well as help. Yet, technological change could lock in patterns of racially based labor market exclusion should those skills not extend to the Sacramento region's diversifying workforce. Current trends are alarming in this regard. The higher an occupation's digital score, the lower the share of black and Hispanic workers employed in that occupation (Figure 21).

In-migration is adding educated workers to the labor market, but net new arrivals are still a relatively small share of the region's workforce.

Nearly every U.S. region is concerned with attracting talented workers. In this global competition, the Sacramento region has the luxury of a warm climate, access to beautiful natural amenities, and proximity to the highly dynamic but increasingly unaffordable Bay Area. On net, the Sacramento region gained

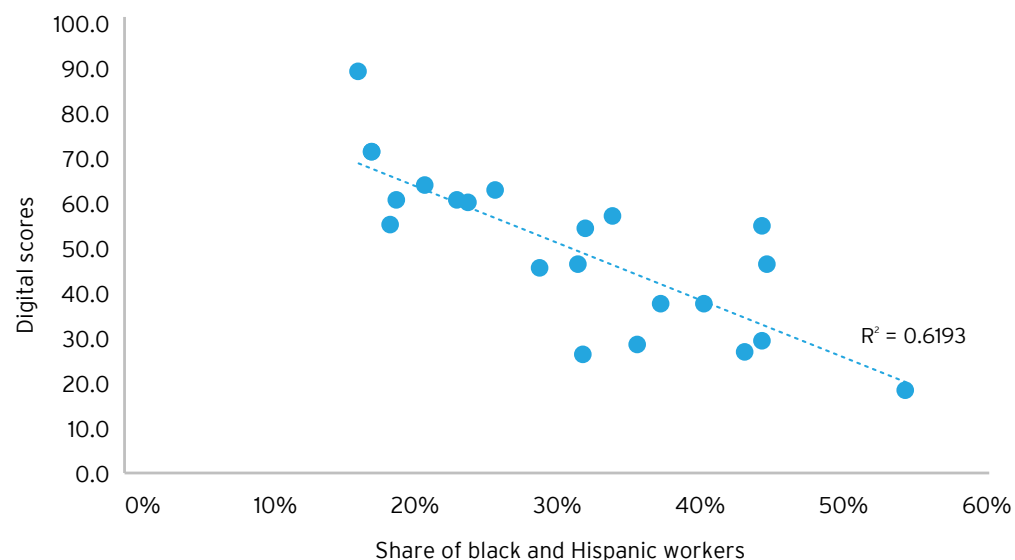
nearly 17,000 more people than it lost in 2016, a volume which placed it ninth in its peer group. Between 2011 and 2015, the largest sources of net in-migration came from the Bay Area (5,500 net in-migrants) and Los Angeles (2,000).

In-migrants—especially those from another U.S. state or a foreign country—are more educated than the workforce as a whole, suggesting that well-educated workers are being attracted to the Sacramento region labor market (Figure 22). The share of movers from outside the region was about 5 percent of residents in 2016, the second highest share among its peer group after Orlando, but still only a small subset of the overall population. Talent attraction is a viable part of a broader talent development strategy, but realistically it will only represent a small, albeit disproportionately educated, slice of the labor market.

FIGURE 21

Black and Hispanic workers are underrepresented in medium and high digital occupations

Digital scores vs. share of Black and Hispanic workers by occupation groups (Sacramento region, 2016)

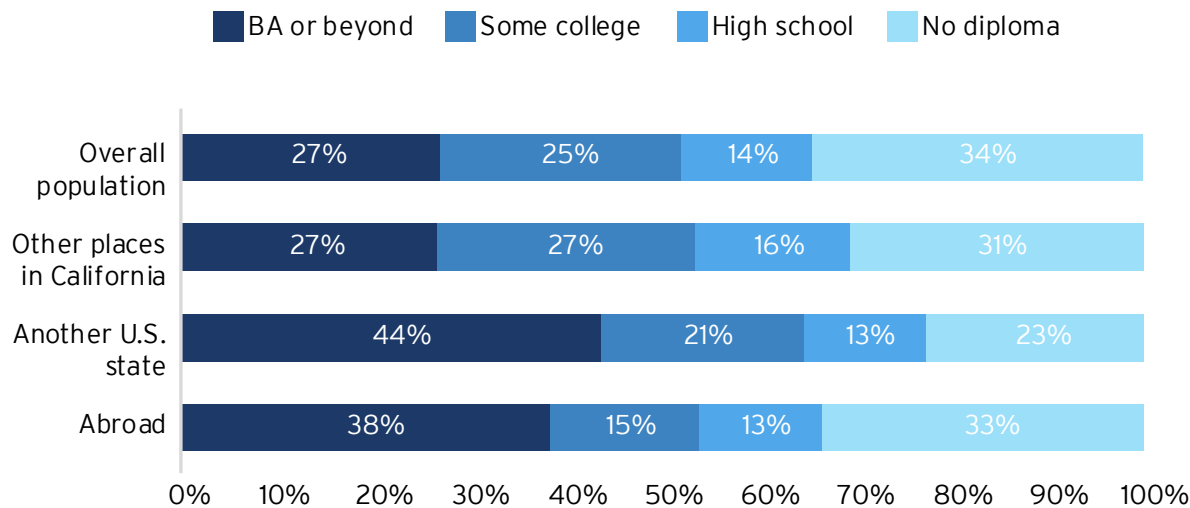


Source: "Digitalization and the American workforce," Brookings, 2017; Brookings's analysis of CPS data

FIGURE 22

In-migrants are better educated than the Sacramento region's homegrown population

Educational attainment of people who are currently in the workforce, by migration status (2016)



Source: Brookings's analysis of PUMAs data

BOTTOM LINE

The Sacramento region's labor market is undergoing two significant transformations. First, employers are demanding and rewarding workers with higher education and digital skills. Second, the Sacramento region's workforce supply is becoming much more racially diverse, which makes closing educational and employment disparities by race all the more urgent. Notwithstanding the region's ability to attract well-educated workers from outside California to fill workforce gaps, it must educate and train a broader, more diverse set of its homegrown population for in-demand jobs.

D. INFRASTRUCTURE AND BUILT ENVIRONMENT

Why it matters: Transportation and broadband help connect people to essential opportunities—jobs, vital services, and recreation—and enable firms to trade goods and services all across the world.²⁷ Local land use policies like zoning and construction permitting influence where people live, where businesses locate, and at what densities overall development occurs.²⁸ Just as importantly, the combination of local infrastructure networks and local land use policies strongly influence how people choose to travel around a region, creating deeper feedback loops that influence future development patterns.²⁹

The Sacramento region's employment is spatially concentrated in 14 job hubs, which largely contain the region's tradable industries. The Sacramento Area Council of Governments has identified 14

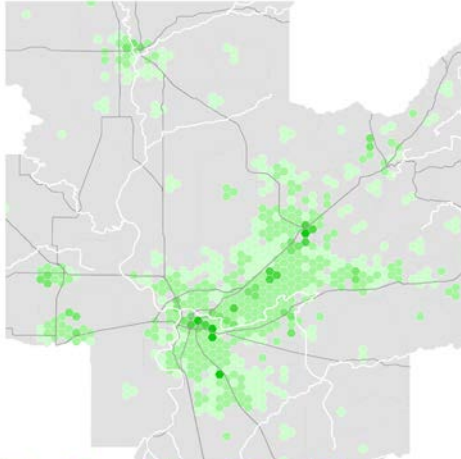
FIGURE 23

The six Next Economy clusters have their own unique spatial layout

Employment of New Economy clusters by census block group

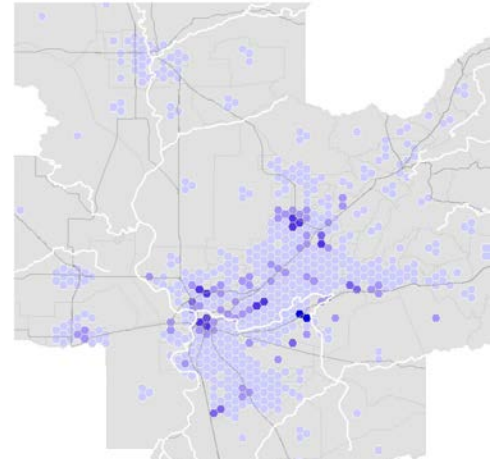
Life sciences

- 0-100
- 101-1000
- 1001-2500
- 2501-5000
- 5000+



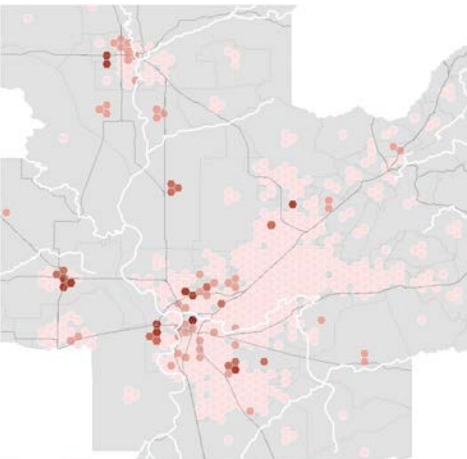
Information technology

- 0-100
- 101-300
- 301-500
- 501-1000
- 1000+



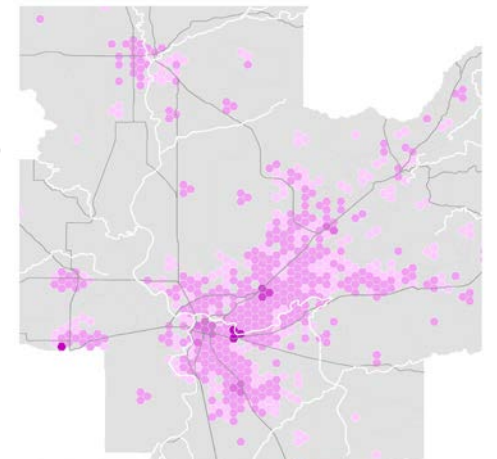
Food and agriculture

- 0-100
- 101-300
- 301-500
- 501-1000
- 1000+



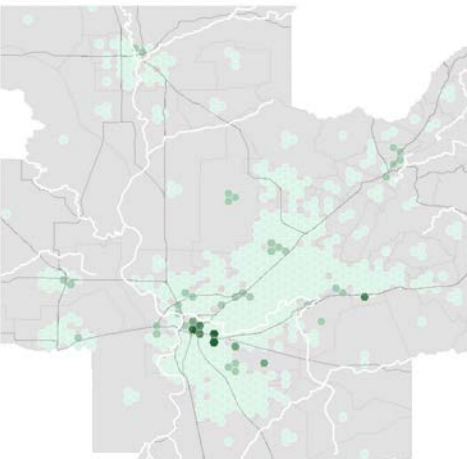
Education services

- 0-100
- 101-1000
- 1001-2500
- 2501-5000
- 5000+



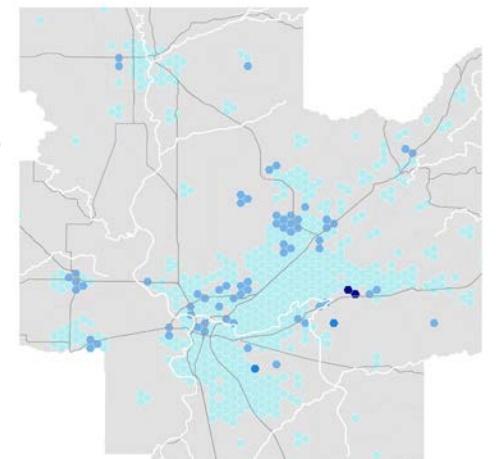
Clean technology

- 0-100
- 101-300
- 301-500
- 501-1000
- 1000+



Advanced manufacturing

- 0-100
- 101-1000
- 1001-2500
- 2501-5000
- 5000+



employment hubs across the Sacramento region, which together hold 41 percent of the region's jobs but only 6.7 percent of the region's population. Within these concentrations, the six Next Economy industry clusters have their own unique spatial layout (Figure 23). The health and life sciences cluster, while spread across the region, concentrates most in East Sacramento (UC Davis Medical Center) and along the I-80 corridor (Mercy San Juan Medical Center). The food and agriculture sector has a different geography, clustering near Sacramento's core but also in Woodland and Yuba City. Advanced manufacturing has a large footprint in Roseville (Hewlett Packard) and Folsom (Intel) while clean technology gravitates more toward the central core.

Population growth and new housing development have occurred in suburban areas, and housing costs have increased much faster than wages.

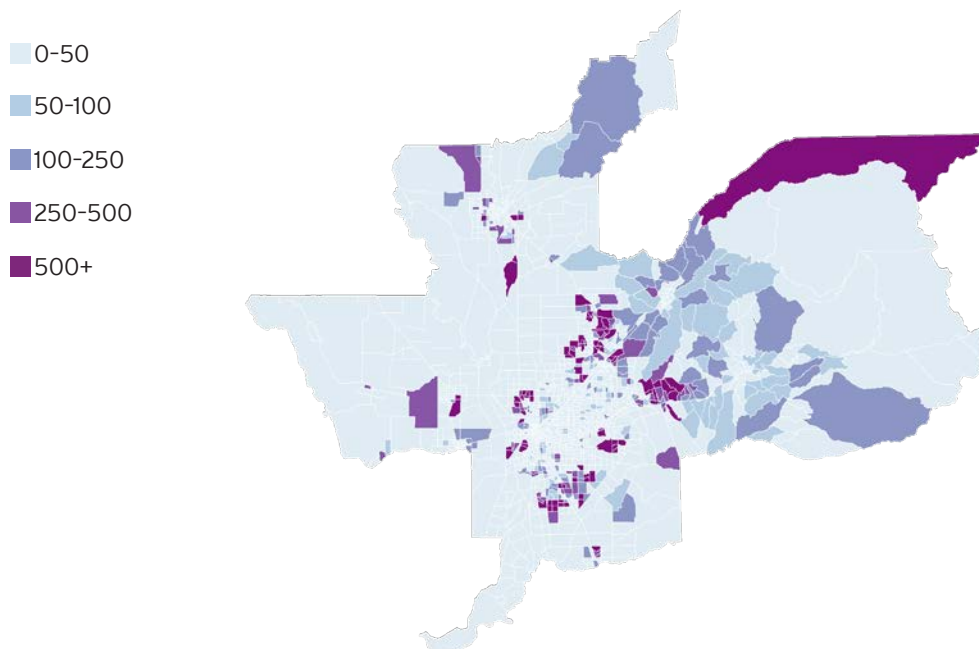
Since 2001, the region has added approximately 460,000 new people. The largest supply of new

housing development has occurred in Roseville and Lincoln to the northeast, the communities southeast of Folsom Lake to the east, Elk Grove to the south, and the northwest corner of the city of Sacramento. Most of these units continue to be single-family homes. In 2016, 1.4 percent of new housing permits were issued to multifamily houses, although those accounted for 18 percent of total new units. Home prices have increased dramatically since their lowest point in March 2012. The median sales price across all types of homes increased by 86 percent to \$387,000 during this period. Similarly, rents have increased from a trough of \$1,444 per month in November 2011 to \$1,871 per month in January 2018, an increase of 30 percent, but median wages have failed to keep pace during this same period.³⁰ Between 2011 and 2016, median wage growth was only 6 percent, suggesting that even as the labor market improves, it has not delivered middle-income wage gains to offset rising prices.

FIGURE 24

New housing development has occurred in suburban areas

Total number of permits granted for new housing construction by traffic analysis zone, 2001-2016



Source: Brookings's analysis of SACOG data

Job access varies significantly across the Sacramento region's 14 job hubs, and overall job accessibility declined between 2000 and 2012. Job access is a central concern of the region's transportation planners, a metric that varies across the region's major employment centers. Downtown Sacramento, Rancho Cordova, Power Inn, and Roseville are the region's four largest job hubs, together concentrating 21 percent of the six-county region's employment. Comparisons between job hubs reveals significant differences in job accessibility within a reasonable commute time (under 30 minutes for drivers and under 45 minutes for transit) (Figure 25). For instance, about 69 percent and 6 percent of workers can reach downtown Sacramento within a 30-minute drive or 45-minute transit commute, respectively. This is a higher share than those who can access jobs in Rancho Cordova (65 percent via car; 3 percent via transit), Power Inn (63 percent; 3 percent), and Roseville (43 percent; 1 percent).

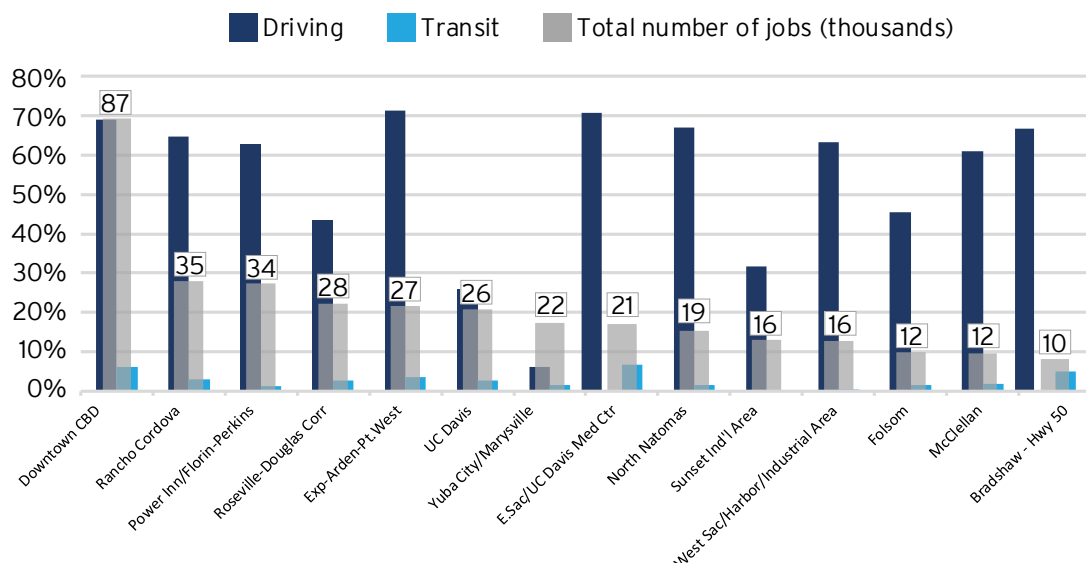
Overall, the number of jobs near the average resident of the four-county metro area declined by about 7 percent between 2000 and 2012, as employment opportunities sprawled more to outlying areas.³¹ This job sprawl reflects the importance of land use decisions in determining where jobs and housing locate, and how workers travel from home to work and other activities. These dynamics matter for businesses as well: locating in the core—where densities are higher and transit mode options are better—offers access to a greater share of the regional labor force than in the peripheral job hubs.

Because of these jobs access dynamics the Sacramento region's workforce commutes mainly via automobile, although the region has a higher share of non-driving commuters than its American Middleweight peer regions. Analyzing how workers access jobs in the Sacramento region requires both a local and national comparative perspective. In 2016, most workers drove alone to work (77 percent) and about 10 percent carpooled

FIGURE 25

Job access varies significantly across the Sacramento region's 14 job hubs

Share of workers who can reach job center within 30 minutes' driving or 45 minutes' transit



Source: Brookings's analysis of SACOG data

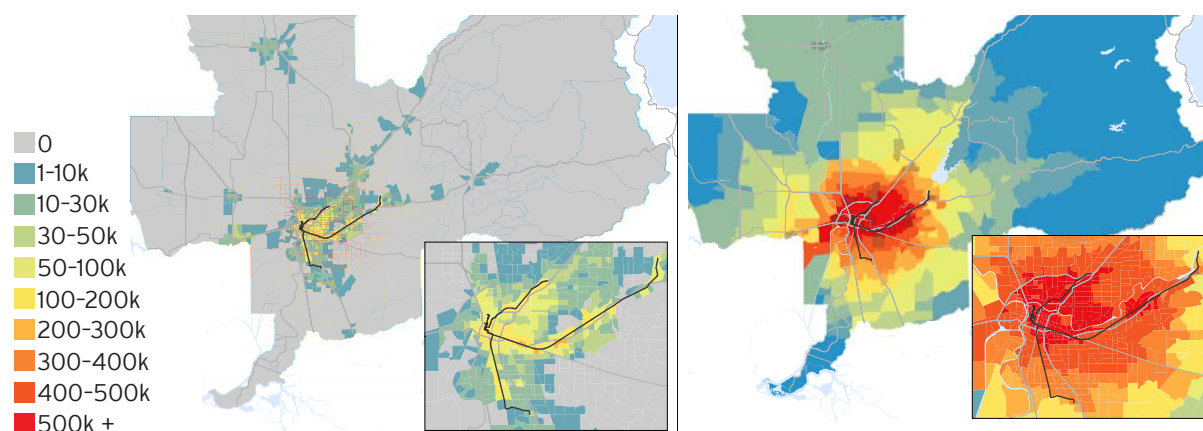
(Figure 27). The remaining 13 percent either worked from home or commuted to work by biking, walking, or transit. Most residents live in households that have access to a car (93 percent), but these shares

differ by race. Twelve percent of black residents live in households without access to a car, as compared with 5 percent of white residents and 7 percent of both Asian and Hispanic residents.³²

FIGURE 26

Striking differences between job accessibility by transit and driving

Number of jobs reachable by 45 minutes' transit (left) or 30 minutes' driving (right)

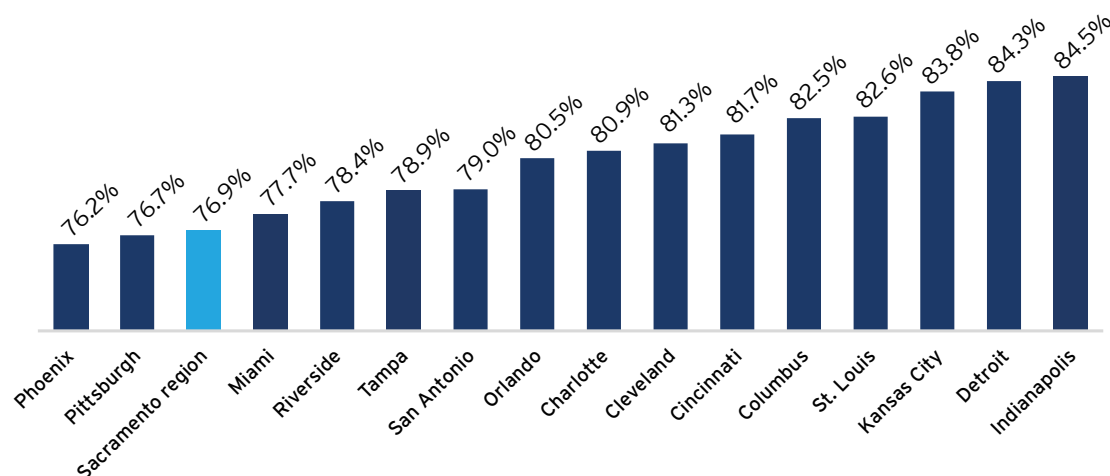


Source: Brookings's analysis of SACOG data

FIGURE 27

The Sacramento region has relatively fewer driving commuters

Share of workers driving to work, 2016



Source: Brookings's analysis of American Community Survey (ACS) data

In sum, the prevalence of automobile ownership and the share of jobs accessible by cars versus transit make the decision to drive to work quite rational for the individual worker. Figure 26 documents the differences in job accessibility, with red areas representing those areas with the highest number of accessible jobs. Comparing modes within the Sacramento region only, however, masks the fact that the Sacramento region actually has a higher percentage of non-driving commuters than all of its peers but Phoenix and Pittsburgh. So while a majority of workers in the Sacramento region still commute via cars, that share is actually lower than this sample of mid-sized American metropolitan areas.

The geography of opportunity is uneven in the

Sacramento region. The way the Sacramento region's residents access jobs, schools, and social networks depends partly on the communities in which they live, the personal relationships they form, and the social environment in which they

operate. In other words, home matters for accessing opportunity. This is especially true for families living in neighborhoods where more than 20 percent of households live below the poverty line, as growing up in a high-poverty neighborhood can influence a young person's health, safety, educational outcomes, and future earnings.³³ Currently, 169 (out of 521) neighborhoods qualify for this designation in the Sacramento region, which together comprise 32 percent of the region's population and tend to concentrate in and around the city of Sacramento's core (Figure 28). In line with the overall regional trend, spatial access to jobs declined for residents in lower-income neighborhoods by 6 percent between 2000 and 2012.

Access to critical digital infrastructure varies

across neighborhoods as well. As Figure 29 shows, neighborhood-level broadband subscription rates differ considerably in the Sacramento region. Low subscription rates (under 40 percent) are visible on

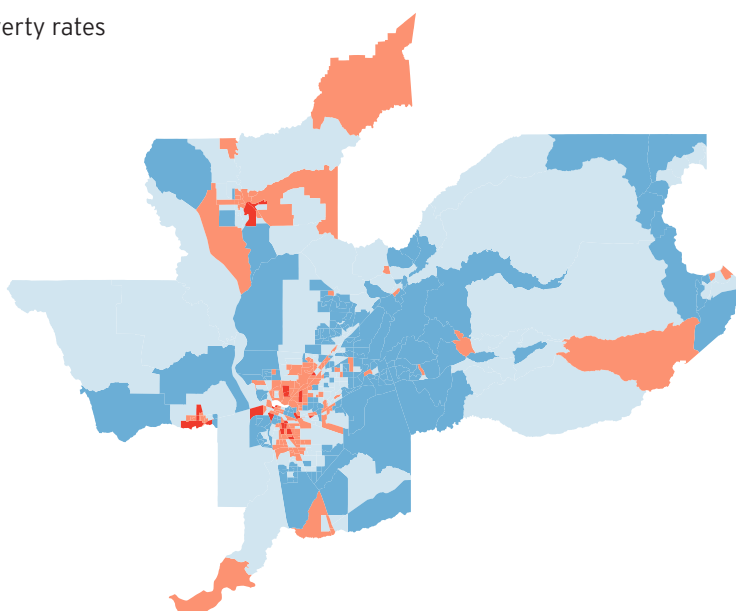
FIGURE 28

High-poverty neighborhoods tend to concentrate in and around the City of Sacramento's core

Share of poor population by census tract, 2016

Neighborhood poverty rates

- 0-10%
- 10-20%
- 20-40%
- 40-70%
- NA



Source: Brookings's analysis of ACS data

the outer fringes of the region as well as in a cluster of neighborhoods in South Sacramento. Without access to broadband, the individuals living in these communities are less prepared for a labor market that is, as mentioned earlier, increasingly demanding

digital skills. Neighborhood-level broadband subscription does intersect with poverty; both central city and outlying neighborhoods with high poverty rates also contain households less likely to subscribe to broadband.

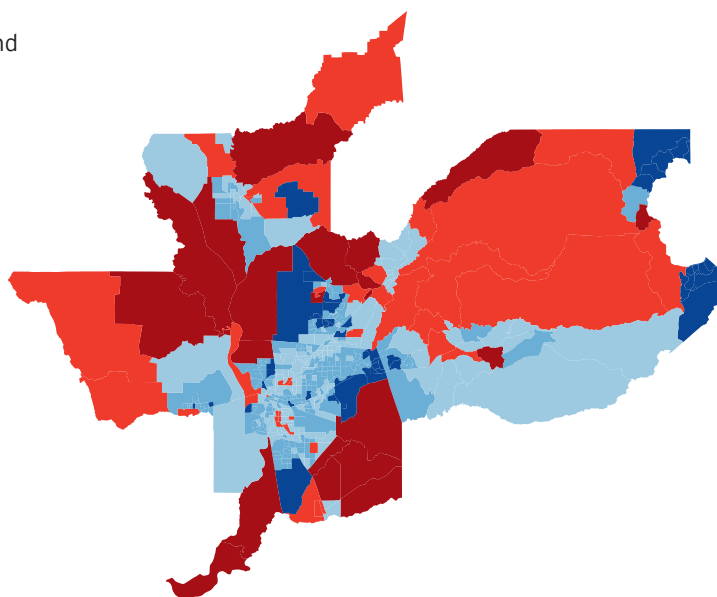
FIGURE 29

Broadband subscription rates differ considerably in the Sacramento region

Neighborhood broadband subscription rates by census tract, 2015

Neighborhood broadband subscription rates

- 0-20%
- 20-40%
- 40-60%
- 60-80%
- 80-100%
- NA



Source: "Signs of Digital Distress: Mapping Broadband Availability and Subscription in American Neighborhoods," Brookings, 2017

BOTTOM LINE

This analysis focused on how economic activity is distributed spatially across the region and how infrastructure and land use shape commuting and development patterns. On the former, 14 job hubs contain 41 percent of regional employment. Businesses that locate in the region's most accessible job hubs—particularly those in the core and near transportation corridors—have advantages in the number of workers that can reach them in a reasonable commute. Therefore, from a spatial efficiency perspective, it makes

sense to prioritize business development in these more accessible nodes. Most workers commute via automobile, although at lower rates than regional peers. Meanwhile, new housing starts are occurring in areas north and east of the region's core, the vast majority of which is single-family housing. A final regional challenge is connecting pockets of concentrated poverty to regional employment and the digital opportunities afforded by broadband.

E. GOVERNANCE

Why it matters: Broadway and Shah define governance as “the formulation and execution of collective action at the local level.”³⁴ Therefore, we consider governance to include formal government structure as well as the quality and capacity of private, public and civic institutions to positively influence economic development, as a proactive government in collaboration with the private sector and civic groups can marshal investment from a wide variety of sources to enable new growth strategies.³⁵

The Sacramento region has higher government fragmentation than other peer regions. Horizontal fragmentation refers to multiple governments within one broader regional economy. The OECD uses territorial fragmentation—the number of local governments in comparison to the total population of the metropolitan area—as a proxy for horizontal fragmentation. By this metric, the Sacramento region exhibits significant levels of fragmentation. When municipal governments, township governments, and special districts are included, the region had about 15.9 governments per 100,000 inhabitants in 2012, a higher ratio than all but three of its American Middleweight peers (Figure 30). This

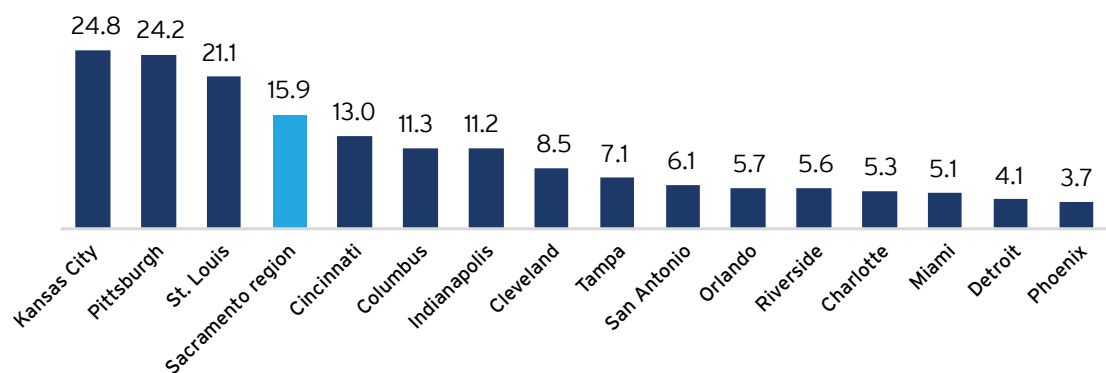
government structure and coordination matter for competitiveness: the OECD finds that, all else equal, more fragmented metropolitan economies are less productive.³⁶

The Sacramento region operates in a business environment that requires it to compete on productivity, not cost minimization. Localities and states differ in their tax, regulatory, and permitting policies. A cottage industry of “business environment” rankings now exists to document these differences through a variety of state rankings, while fewer resources document local business environments. On rankings that emphasize low tax rates, affordable labor costs, and limited regulatory compliance as indicators of a competitive business environment, California typically ranks low, as it is a high-cost, regulation-heavy, and high-tax state.³⁷ Yet, when factors such as entrepreneurship or innovation capacity are included, California tends to rank higher.³⁸ An analysis by the Public Policy Institute of California concluded that the state—due to factors related to weather and other natural advantages—has been able to overcome poor rankings on traditional business climate measuring indicators like the tax and regulatory environment.³⁹

FIGURE 30

The Sacramento region exhibits relatively high levels of fragmentation

Number of local governments per 100,000 inhabitants of the metropolitan area (2012)



Note: Type of governments include municipal governments, township governments and special district governments.

Source: Brookings analysis of 2012 Census of governments

Moody's Analytics ranks the Sacramento region lower than all of its American Middleweight peers on a business environment index. Interviews with businesses, especially in manufacturing, did cite concerns with the business environment (e.g. delays to acquire permitting from local governments, confusing state environmental regulations, and other cost of business factors). Undoubtedly, addressing some of these regulatory inefficiencies would improve the prospects for local businesses, but those same businesses acknowledged the unique assets (e.g. climate, arable land, etc.) that keep them in the region and the state despite their criticisms.

Strong, networked institutions—and their ability to collaborate with one another—will be critical for the Sacramento region to implement its economic priorities. Urban economies are subject to many factors outside local control. Effective and forward-thinking metro leadership can be the difference between those metro areas that are successfully competing in the global economy, and those that are struggling. New evidence suggests that firms benefit from being in regional economies that have strong, networked organizations that have bred the trust and created the capacities to enact strategies that lead to transformational change.⁴⁰ And business involvement in metropolitan economic strategies has grown in recent years as governance itself has become increasingly networked, inclusive of a wider range of actors.⁴¹ In the Sacramento region, these networks of institutions—economic development groups, chambers, civic leadership organizations, universities, and local and regional governments—are present, appear highly collegial, but remain a bit fragmented. In other words, there are many organizations undertaking initiatives related to the economy—and those organizations may be aware of and in support of one another’s efforts—but these initiatives are not aligned around significant shared priorities. In this respect, the recent introduction of a new economic development organization—the Greater Sacramento Economic Council—has been a welcome addition to region’s private and civic governing networks, helping galvanize a stronger focus on economic priorities.

TABLE 4

Moody’s business environment ranking of 65 US metros

Metro area	Rank
San Antonio	5
Charlotte	8
Orlando	15
Indianapolis	18
Miami	20
Tampa	24
Phoenix	26
Cincinnati	31
Columbus	33
Pittsburgh	38
Detroit	41
Kansas City	42
Riverside	45
St. Louis	49
Cleveland	55
Sacramento MSA	59

Note: Rankings are based on state incentives, metro credit, state credit, tax environment and job growth. Source: Moody’s analytics, 2017

BOTTOM LINE

Three takeaways arise from our review of governance in the Sacramento region. First, the region is operating in a higher-tax, higher-regulation environment, which is partly due to decisions made at the state level. Second, the region also has high levels of government fragmentation—due to the preponderance of many special districts. Third, institutions matter in stewarding and shaping economies and, in this respect, there is clearly momentum on the part of many civic and private institutions in the Sacramento region to overcome existing fragmentation of economy-relevant initiatives and investments.

III. STRATEGIC CONSIDERATIONS

Governance refers to the capacity of a region's private and civic institutions to work with the public sector on shared economic and social priorities. Modern metro governance therefore requires that ***the Sacramento region set a vision of what economic success means for the region.*** Individual regions are distinct in their values and priorities, and we are not advocating a one-size-fits-all approach. Nevertheless, there are frameworks for measuring economic success at a regional scale that provide a useful starting point. Brookings' Metro Monitor offers one example for measuring inclusive growth, providing standardized annual metrics across the nation's 100 largest metro areas for growth, prosperity, and inclusion.

Other regions have adopted different ways to track regional progress. In Northeast Ohio, this involves a set of metrics around both growth and opportunity, including both overall job creation and investment levels along with the wage levels and spatial footprint of job creation relative to disadvantaged communities.⁴² The Columbus region measures progress slightly differently, but involves indicators related to jobs, investment, and income growth.⁴³ In Kansas City, the region has established a scorecard that measures economic outcomes and indicators related to key drivers such as tradable sectors, innovation, and human capital.⁴⁴

While the metrics matter, the takeaway from these examples is more so about the process by which the metrics were determined, which typically required aligning perspectives and strategic goals across a diverse set of organizations.

From visioning, ***the Sacramento region should continue a strategy development process to determine a few focused priorities.*** During our discussions with regional leaders over the past several months, we learned about how the Sacramento region's civic infrastructure, which

has activated itself before in service of regional strategies, specifically to conduct strategic regional planning, including the Sacramento Area Council of Government's Blueprint 2050 strategy and Valley Vision's Next Economy plan. Those processes brought together hundreds of stakeholders to develop priorities and tactics, some of which were acted upon successfully.

However, the sheer number of priorities arising from those efforts overwhelmed the region's ability to convert strategy to sustained action. The challenge for any regional economic strategy is to demonstrate tangible early successes that can be built upon to do bigger things. Inevitably, this involves focusing on what local and regional actors have power over, either through public policy or civic and private investments. This market assessment represents an initial contribution to what will need to be a longer civic process, involving both additional analysis and strategy development.

Drawing from our quantitative assessment and conversations with dozens of stakeholders, we conclude this assessment with a set of key

considerations for regional leaders within three areas:

- Business and industry development
- Talent development
- Spatial development

BUSINESS AND INDUSTRY DEVELOPMENT

Building strong industry clusters and creating good-paying jobs occurs through a dynamic process of research and knowledge generation, technology commercialization, and business creation, expansion, and retention. Business and industry development refers to the set of systems and organizations that work with companies to shape this process—from universities to entrepreneurship networking groups to economic development organizations. In the endeavor to grow firms, jobs, and industries, our comparative assessment points to several takeaways for the Sacramento region:

- The region demonstrates relatively strong **knowledge creation**—as measured by research and development, patents, and licenses—especially in the fields where UC Davis is a global leader, ranging from agriculture sciences to life sciences.
- Growth in the region’s **tradable industries has trailed the nation**, and the structures for advancing them appear less robust than in some other metro areas; however, the Sacramento region’s unique combination of agricultural and life sciences research expertise alongside food production and processing capabilities present one obvious opportunity to drive tradable cluster growth.
- The Sacramento region’s **business dynamism is lower** than in peer regions, as measured by entrepreneurship rates and growth capital investments.

These findings point to some strategic considerations to support the region’s business and industry development:

- Explore the potential for a **cluster initiative** at the intersection of agriculture, food, and science and technology. The prominence of both research and commercial activity in these established sectors quickly emerged from the data and interviews, as well as the lack of ownership for a sustained focus on maximizing the opportunities at scale. Therefore, a leader with support and commitment from relevant firms, university research centers and scientists, and economic development and entrepreneurship organizations would be needed to identify and address shared needs and opportunities. Cluster initiatives have proven successful in explicitly defining the unique local dynamics within and across sectors, identifying distinct opportunities, and coordinating investments—be they in research and development, capital, talent development, or infrastructure. For instance, Milwaukee has always had a unique concentration of water-related companies but did not fully leverage that strength until it pursued an explicit cluster initiative to fill market inefficiencies, coordinating investments with local universities, local and state government, and the private sector (see sidebar).
- Identify and address gaps that hinder **business dynamism**. Young companies are critical drivers of net job creation, but we identified that young firm growth is not as robust in the Sacramento region as elsewhere. More work needs to be done to identify the specific reasons why young firms may not be starting and scaling locally. This scan could include the role of licensing and permitting regulations, access to financing, access to research facilities, or technology adoption. Depending on the constraints, regions are experimenting with new approaches to support business growth, including:
 - Policy and regulatory reforms (e.g. licensing and permitting reforms, incentives reforms, etc.)

THE WATER COUNCIL (MILWAUKEE)

Goal

To drive economic, technology and talent development in support of a water cluster anchored by 180 water-related businesses.

Summary

Once the brewing and tanning capital of the Midwest, Milwaukee has developed a water specialization, including instruments and equipment manufacturers (e.g. valves, pumps, and sensors, etc.) and service providers in purification, sewage and treatment, pumping, delivery and conservation. Cutting across traditional industry classifications, the water cluster revealed itself in a survey of 150 local firms in the late 2000s. In 2009, Milwaukee 7, the region's economic development organization, founded the Water Council to lead the cluster's organization, strategy development, and promotion. Specifically, it has focused on building up the cluster's global brand, facilitating business-to-business linkages within the cluster, and infusing joint research into the cluster through partnerships with the University of Wisconsin-Milwaukee and Marquette University.

Key organizations

The Water Council is the cluster's anchor organization, with 11 full-time staff and 185

members. The Council itself has its own initiatives, including a water-focused accelerator and startup competition, export assistance, and matchmaking services for research and development. Other significant actors in the cluster include the University of Wisconsin-Milwaukee, which has created the nation's first School of Freshwater Sciences; the Global Water Center, the physical development at the heart of the cluster's Water Technology District; and the city of Milwaukee and Wisconsin Economic Development Corporation. Business and academic organizations helped catalyze the cluster but ramping up has required millions of dollars in government funding for infrastructure and economic development support.

Impact to date

The Water Council claims impact in several areas. Since 2013, 34 water tech startups have gone through its BREW Accelerator. In 2017, five global water companies made investments in Milwaukee locations. The Water Technology District has attracted over \$200 million worth of development since 2012.

For more information

<https://thewatercouncil.com/>

- Business acceleration services (e.g. management training, technology extension, job training support, etc.)
- Business acceleration networks (e.g. incubators, accelerators, shared working spaces, networking organizations, etc.)
- Engagement with research universities on tech transfer and tech adoption (such as Venture Catalyst's role at UC Davis)
- Development of shared infrastructure (e.g. innovation districts, applied research centers, etc.)

TALENT DEVELOPMENT

Perhaps the most important factor that will determine long-run economic prosperity in the Sacramento region is its ability to grow, retain, and attract a strong workforce. Talent development refers to the set of systems and organizations that

influence the talent pipeline—from educational institutions to workforce development organizations to employers offering on-the-job training. In the endeavor to build a skilled workforce, our comparative assessment points to several takeaways for the Sacramento region:

- The Sacramento region has a well-educated workforce, but any efforts related to talent development will need to recognize that two structural changes in the U.S. labor market—**digitalization and demographic change**—are occurring more intensely in the Sacramento region.
- On the demand side of the labor market, the **digital skills** requirements of the Sacramento region's occupation base have increased dramatically over the past 15 years, requiring basic digital competencies to acquire a foothold in the labor market, as well as creating notable current hiring shortages in the region.
- The Sacramento region's millennial generation—its workforce of the future—is already **majority-minority**, but too many Hispanic and black youth are not receiving the education and training necessary to thrive in the labor market.

These findings point to some strategic considerations to support the region's talent development:

- **Invest in digital skills training**, to both grow the pool of high-skill technical workers and expand the number of workers with basic digital literacy. Interviews with employers revealed two types of digital skills needs: 1) well-trained computer and information technology professionals such as software developers and engineers; and 2) entry-level employees that can meet basic job requirements for digital software like Excel and other programs. On-the-job training can ameliorate some of these issues, but it would be sensible for digital skills—both basic and advanced—to be a shared priority for community colleges, universities, and workforce and economic development groups. Digital skills can be an

on-ramp to greater earnings for disadvantaged groups, but only if current patterns are broken; as of 2016, black and Hispanic workers are much more likely to be working in low-digital skill jobs. The Sacramento region's education and workforce stakeholders are already convening around digital skills and could look to best practices from other metro areas that have taken an intentional approach to creating on-ramps to technology jobs.⁴⁵ LaunchCode—an effort piloted in St. Louis now spread to five additional cities—has a particular focus on connecting people of color to opportunities in the tech field (see sidebar).⁴⁶

- **Prepare and connect young workers, especially young workers of color, to in-demand occupations and industries** through alignment between talent development systems and economic development systems. Addressing the stark educational and employment gaps between whites and Asians and blacks and Hispanics is not

Perhaps the most important factor that will determine long-run economic prosperity in the Sacramento region is its ability to grow, retain, and attract a strong workforce.

LAUNCHCODE (ST. LOUIS BUT EXPANDED TO FIVE ADDITIONAL METRO AREAS)

Goal

To create pathways to economic opportunity and upward mobility for people of all backgrounds, LaunchCode helps jobseekers enter the tech field by providing free accessible tech training and paid apprenticeship job placement.

Summary

In 2013, Jim McKelvey founded LaunchCode in his hometown of St. Louis, Mo. when he struggled to find skilled tech talent for his new company Square. LaunchCode has since bridged this talent gap by educating thousands in various programming languages, webpage design, and development platforms, as well as connecting companies to trained candidates who lack traditional educational credentials. They have now expanded from their base in St. Louis to Kansas City, Seattle, Portland, South Florida, and Tampa Bay.

LaunchCode has also paid particular focus to gender and racial disparities in digital skills, with 49 percent female students and 45 percent people of color. The CoderGirl program works to engage

and educate women of all skill levels to network, learn, and create in the tech field.

Key organizations

Both education partners and hiring partners are key to LaunchCode's operation. Education partners including local universities, digital training platforms, and online education service providers offer free or discounted training resources to LaunchCode students. Hiring partners would tell LaunchCode where exactly they were having the most trouble finding talent so that LaunchCode could build training solutions tailored to the specific skill gaps and geographic locations.

Impact to date

Since 2013, LaunchCode has graduated 4,400 individuals and connected 988 people with new tech-intensive apprenticeship and permanent positions, 54 percent previously unemployed.

For more information

<https://www.launchcode.org/>

only a moral imperative, it is vital for the region's future competitiveness. Overcoming these divides will require a range of strategies, depending on the barriers standing between individuals and the labor market. Effective regional training efforts are aligned with in-demand occupations and industries while also stewarding and guiding individuals with supportive services.⁴⁷ For young diverse populations this may require a combination of interventions, depending on labor market barriers:

- Two-generation programs that link education, job training, and career-building for low-income parents with supports for their children

- Bridge programs that prepare people with low academic skills for further education and training
- Transitional jobs programs that provide short-term subsidized employment
- Cluster-based training initiatives or apprenticeships that identify employers' needs and develop recruiting, assessment, and training strategies in alignment with business and industry development strategies

SPATIAL DEVELOPMENT

How the Sacramento region's residents connect to economic opportunity partly depends on where they live relative to jobs and amenities and their ability to physically navigate the region. Spatial development refers to the set of systems that influence physical and digital access to opportunity—from transportation to broadband to housing and real estate development and land use. In the endeavor to build an enabling infrastructure and built environment to support access to opportunity, our

comparative assessment points to several takeaways for the Sacramento region:

- The Sacramento region's **firms and industries concentrate in a multi-polar set of job hubs**, with employment concentrating in both the central core and surrounding suburban centers. Most workers drive to work, although at lower rates than peer metro areas, as drivers can access vastly more jobs in the region than commuters traveling via other transportation modes based on current land use and development patterns.

ECONOMIC VALUE ATLAS (PORTLAND, ORE.)

Goal

The Economic Value Atlas (EVA) will be a statistical and mapping platform to better align planning and public investments to strengthen the regional economy.

Summary

Portland, Ore. is one of the country's great economic success stories of the past few decades. Some of the country's most globally competitive and innovative companies now call Portland home, helping the region achieve consistently high rates of output, income, and population growth. Critical to this growth has been Portland's unique brand of "place," centered on sustainable transportation investments and land management.

To maintain this trajectory, Portland's regional leadership sought a method to better understand how their economy operates at a more granular level. The EVA will be a publicly-accessible mapping platform that uses extensive metropolitan and local data to situate regional economic objectives against actual economic performance. In the process, the platform will create a common

touchpoint to inform conversations around future built environment policies and investments.

Key organizations

Metro, the designated metropolitan planning organization in the region, officially leads the EVA process. The project would not be possible without consistent engagement and input from other regional actors, including municipal and state government staff, regional economic development organizations, workforce development groups, and other public and private infrastructure entities. This engagement is essential to improve the design of the platform and promote use in later years.

Impact to date

The EVA project launched in the summer of 2017 and is still under active production. When completed, it will be the first of its kind: a regional economic mapping application, allowing flexible multivariate analysis against regional priorities, to inform future built environment decision-making.

For more information

<https://www.oregonmetro.gov/tools-partners/guides-and-tools/economic-value-atlas>

- The region's **housing development** has concentrated in suburban areas, especially to the north and east of the region's core. After a dramatic downturn during the Great Recession, housing prices and rents are increasing at a much faster clip than incomes.
- The region has pockets of **concentrated distress** that hinders access to opportunity. Neighborhoods with high concentrations of poverty and low subscription rates to digital broadband concentrate in both central city and rural communities.

These findings point to some strategic considerations to support the region's spatial development:

- **Factor in job access to economic development activities** such as business attraction and expansion. Our analysis revealed that some job centers are much more accessible to workers than others, with the region's core being most accessible. For site selection decisions, zoning, and real estate development, acknowledging how workers and communities will access the new sources of employment matters, and should be considered alongside factors such as land requirements, electricity, and transportation and logistics. This approach could connect economic development goals and specific site selection activities to the goals of the region's spatial planners.
- **Factor economic objectives into spatial planning.** A confluence of trends—development in the outer parts of the region; rising unaffordability; and several major potential transformative physical developments—provide an opportune moment for spatial planning

leaders to engage in a new round of land use planning from the perspective of the region's economic objectives. Both local planning goals (via the SACOG's Blueprint plan) and statewide requirements (via SB 375) have already provided targets for spatial development. Meeting these requirements will require further alignment between spatial development and economic development. Specifically, such an exercise could inform:

- How land use, zoning, and housing development policies do/do not create neighborhood environments that offer young, mobile **talent** a high quality of life at a reasonable cost;
- How transportation and infrastructure investments could bolster transformative investments that support **innovation and cluster development**, such as innovation districts or shared research spaces;
- How economic growth and opportunity is/is not extending to **historically disadvantaged communities** (often communities of color), including their access to job centers and broadband.

Metropolitan planning organizations are experimenting with new approaches to align planning and investment with regional economic priorities, including some of the considerations mentioned above. Portland's metropolitan planning organization is currently piloting one such approach through its Economic Value Atlas project (see sidebar).

IV. CONCLUSION

This report documents the current state of the Sacramento region's economy from a national standpoint by comparing to other similarly positioned cities and regions in the United States. The comparative lens affirms the distinctiveness of local strengths: an agricultural heritage that has the potential to build on new technological strengths; an excellent research university with distinct research prowess in agriculture and life sciences; and a well-educated labor pool that is growing by the day.

But this perspective also reveals areas in which improvement is urgently required: a lack of tradable industry growth; flagging business dynamism; and racial and ethnic disparities in education and skills, employment, and community-level opportunity.

While many indicators show the region currently is doing fine, the Sacramento region is not keeping pace with peers, let alone progressing toward its aspirations. Underlying recent success is future vulnerability. The dichotomy between the region's performance and its potential demands action.

The scope of this market assessment represents only the start of what will be required for the Sacramento region's stakeholders to advance the economic aspirations of the region. Within the project

timeframe, the findings are more a preliminary diagnosis than the complete exam needed to write a prescription.

Ultimately, these initiatives require applied research and analysis in each issue area gathering local partner insights; broader civic engagement and capacity-building processes to promote local ownership, organization, and commitment to implementation of responses; and final strategy development yielding a plan and operational document.

However, the analysis makes a clear case for the Sacramento region's leaders to take on the difficult work that assures sustained quality growth and prosperity.



NOTES

1. Joseph Parilla, "Opportunity for Growth: How reducing barriers to economic inclusion can benefit workers, firms, and local economies" (Washington: Brookings Institution, 2017).
2. Chad Shearer et al., "Metro Monitor 2018" (Washington: Brookings Institution, 2018).
3. Brookings analysis of the University of Washington Center for Women's Welfare County-Based Sufficiency Standard.
4. Jesus Leal Trujillo and Joseph Parilla, "Redefining Global Cities: The Seven Types of Global Metro Economies" (Washington: Brookings Institution, 2016).
5. Masahisa Fujita, Paul R. Krugman, and Anthony Venables, *The Spatial Economy* (Cambridge, Mass.: MIT Press, 1999). The simple model of base-multiplier analysis has not been immune from criticism—most importantly, that by focusing only on the demand side of the regional growth equation, it overlooks important supply-side factors like capital and labor flows, including the self-reinforcing process of agglomeration. See, e.g., Andrew Krikelas, "Review of Economic Base Literature," *Economic Review* (Federal Reserve Bank of Atlanta, 1992).
6. Marc J. Melitz and Daniel Trefler, "Gains From Trade When Firms Matter," *Journal of Economic Perspectives* 26, no. 2 (2012): 91-118; OECD, "Interconnected Economies"; World Trade Organization, "World Trade Report 2013."
7. Jeffrey A. Frankel and David H. Romer, "Does Trade Cause Growth?" *American Economic Review* 89, no. 3 (1999): 379-99.
8. Tradable clusters defined using the U.S. Cluster Mapping tool.
9. Valley Vision, "Next Economy Research Report," (2018).
10. Brookings analysis of fDI Markets data.
11. For a full review of the role of innovation in metropolitan growth, see George Washington Institute of Public Policy and RW Ventures, "Implementing Regionalism."
12. Brad McDermann Greg Clark, and Joseph Parilla, "The 10 Traits of Globally Fluent Metro Areas," (Washington: Brookings Institution, 2013).
13. Robert D. Atkinson and Stephen J. Ezell, *Innovation Economics: The Race for Global Advantage* (New Haven, Conn.: Yale University Press, 2014).
14. Brookings analysis of data from the National Science Foundation's Higher Education Research and Development Survey.
15. UC Davis, "Translational Impact: Licenses executed per \$10 million Research Funding" (2018).
16. Ian Hathaway, "High-growth firms and cities in the U.S.: An analysis of the Inc. 5000" (Washington: Brookings Institution, 2017).
17. Arnobio Morelix and Josh Russell-Fritch, "Growth Entrepreneurship: Metropolitan Area and City Trends" (Kansas City: Kauffman Foundation, 2017).
18. Massimo G. Colombo et al., "Venture Capital and High-Tech Start-Ups," *Venture Capital* 12, no. 4 (2000): 261-66.
19. Samuel Kortum and Josh Lerner, "Assessing the Contribution of Venture Capital to Innovation," *Rand Journal of Economics* 31, no. 4 (2000): 674-92; Dirk Engel and Max Keilbach, "Firm-Level Implications of Early Stage Venture Capital Investment: An Empirical Investigation," *Journal of Empirical Finance* 14, no. 2 (2007): 150-67.
20. Mark Muro et al., "America's Advanced Industries" (Washington: Brookings Institution, 2015).
21. See Robert E. Lucas Jr., "On the Mechanics of Economic Development," *Journal of Monetary Economics* 22, no. 1, (1988): 3-42; Enrico Moretti, "Human Capital Externalities in Cities," in J. Vernon Henderson and Jacques-François Thisse, eds., *Handbook of Regional and Urban Economics*, Vol. 4 (Amsterdam: Elsevier, 2004), 2243-91; Jesse M. Shapiro, "Smart Cities: Quality of Life, Productivity, and the Growth Effects of Human Capital," *Review of Economics and Statistics* 88, no. 2 (2006): 324-35; Ricardo Hausmann et al., "The Atlas of Economic Complexity: Mapping Paths to Prosperity" (Cambridge, Mass.: Harvard Center for International Development, 2013); Rodolfo E. Manuelli and Ananth Seshadri, "Human Capital and the Wealth of Nations," *American Economic Review* 104, no. 9 (2014): 2736-62; Eric A. Hanushek and Ludger Woessmann, "Education and Economic Growth," in Dominic J. Brewer and Patrick J. McEwan, eds., *Economics of Education* (Amsterdam: Elsevier, 2010).
22. Higher concentrations of educated workers not only increase the productivity of the cities directly but also raise the average productivity of the surrounding workforce. Moretti (2004) found that the productivity of non-tertiary educated workforce increased by 5 to 6 percent for every 10 percentage point increase in the share of tertiary-educated population in a city. Ahrend et al. (2014) found that these gains were slightly smaller, at 3 to 4 percent, for a 10 percentage point increase; OECD, "The Metropolitan Century: Understanding Urbanisation and Its Consequences" (2015); Enrico Moretti, "Workers' Education, Spillovers, and Productivity: Evidence From Plant-Level Production Functions," *American Economic Review* 94, no. 3 (2004): 656-90; Rudiger Ahrend et al., "What Makes Cities More Productive? Evidence on the Role of Urban Governance from Five OECD Countries," OECD Regional Development Working Papers (OECD, 2014). Also see the broader human capital literature review in George Washington Institute of Public Policy and RW Ventures, "Implementing Regionalism."
23. Robert E. Lucas, Jr. "On the Mechanics of Economic Development," *Journal of Monetary Economics* 22 (1988): 3-42. Robert J. Barro, "Economic Growth in a Cross-Section of Countries," *Quarterly Journal of Economics* 106 (1991): 407-443. Edward L. Glaeser and Albert Saiz, "The Rise of the Skilled City," Working Paper No. 10191 (Cambridge, MA: National Bureau of Economic Research, 2003). Enrico Moretti, "Human Capital Externalities in Cities," Working Paper 9461 (Cambridge, MA: National Bureau of Economic Research, 2003).
24. Brookings analysis of U.S. Census data. Rebecca Diamond, "U.S. Workers' Diverging Locations: Causes and Inequality Consequences." In Susan M. Wachter and Lei Ding, eds., *Shared Prosperity in America's Communities* (Philadelphia: University of Pennsylvania Press, 2016).
25. Brookings analysis of 2016 American Community Survey data.
26. Mark Muro et al., "Digitalization and the American workforce" (Washington: Brookings Institution, 2017).

27. There is a broad range of published research detailing the economic benefits of greater physical access for both people and businesses, including higher per capita incomes and employment levels, reduced firm costs, and higher land values. Meanwhile, various published research finds higher broadband availability and subscription levels to boost property values, help attract firms and talent, and even lead to higher incomes and overall gross domestic product. See: Brian Alstadt, Glen Weisbrod, and Derek Cutler, "Relationship of Transportation Access and Connectivity to Local Economic Outcomes," *Transportation Research Record: Journal of the Transportation Research Board*, Vol. 2297 (2012): 154-162; Todd Litman, "Evaluating Transportation Economic Development Impacts," Working Paper (Vancouver, BC: Victoria Transport Policy Institute, 2017); Adie Tomer, Elizabeth Kneebone, and Ranjitha Shivaram, "Signs of Digital Distress: Mapping broadband availability and subscription in American neighborhoods" (Washington: Brookings Institution, 2017).
28. Athur O'Sullivan's landmark book puts local land use decisions in a broader urban economic context. See: Arthur O'Sullivan, *Urban Economics*, 8th ed., 2011
29. Sarzynski and Levy (2010) defined spatial efficiency as the ability to minimize transaction costs and maximize output. Spatial efficiency is of particular importance for cities as the primary appeal of cities is their ability to concentrate ideas, technology, and skills (Glaeser 1998). The concentration of these factors allows for fluid exchange of ideas and goods, thereby creating a vibrant environment for businesses and households. The increase in a city's population, however, places greater emphasis on the coordination of land, housing, and transportation development to ensure sustained accessibility and optimal use of land. It is further found that regions with special mismatch, such as those lacking vibrant, desirable neighborhoods, may be slow to achieve their growth potential. This was supported by OECD's (2015) finding that in the context of large urban agglomerations, poor land-use and transport planning are among the most significant consequences of failure in policy coordination. See Andrea Sarzynski and Alice Levy, "Spatial Efficiency and Regional Prosperity: A Literature Review and Policy Discussion," Working Paper (Washington: George Washington Institute of Public Policy, 2010); Edward Glaeser, "Are Cities Dying?" *Journal of Economic Perspectives* 12, no. 2 (1998): 139-60; OECD, "The Metropolitan Century: Understanding Urbanisation and Its Consequences" (2015).
30. Brookings analysis of Zillow data.
31. Elizabeth Kneebone and Natalie Holmes, "The growing distance between people and jobs in metropolitan America" (Washington: Brookings Institution, 2015).
32. Brookings analysis of American Community Survey data.
33. Raj Chetty, Nathaniel Hendren, Patrick Kline, and Emmanuel Saez. "Where is the land of opportunity? The geography of intergenerational mobility in the United States." *The Quarterly Journal of Economics* 129, no. 4 (2014): 1553-1623. Patrick Sharkey and Jacob W. Faber, "Where, When, Why, and For Whom Do Residential Contexts Matter? Moving Away from the Dichotomous Understanding of Neighborhood Effects," *Annual Review of Sociology* 40, no. 1 (2014): 559-79. Ingrid Ellen and Margery Austin Turner, "Does Neighborhood Matter? Assessing Recent Evidence Does Neighborhood Matter? Assessing Recent Evidence," *Housing Policy Debate* 8 (January 1, 1997).
34. Robin Broadway and Anwar Shah, *Fiscal Federalism: Principles and Practice of Multilevel Governance* (Cambridge: Cambridge University Press, 2009).
35. George Washington Institute of Public Policy and RW Ventures, "Implementing Regionalism."
36. OECD, "The Metropolitan Century: Understanding Urbanisation and its Consequences" (2015).
37. Jed Kolko, David Neumark, and Marisol Cuellar Mejia. Business climate rankings and the California economy. Public Policy Instit. of CA, 2011.
38. "These Are the Most Innovative States in America," accessed March 23, 2018, <https://www.usnews.com/news/best-states/rankings/economy/business-environment>.
39. Ibid.
40. Michael Storper et al., *The Rise and Fall of Urban Economies: Lessons from San Francisco and Los Angeles*, (Stanford, Stanford University Press, 2015).
41. Richard Bellamy and Antonio Palumbo, *From Government to Governance* (Routledge, 2010).
42. "Job Creation Growth & Opportunity Impact Assessment," The Fund for our Economic Future, December 18, 2017.
43. "Columbus 2020," Columbus 2020, accessed March 23, 2018, www.columbusregion.com/columbus-2020/progress/.
44. "Measuring Progress," KC Rising, accessed March 23, 2018, www.kcrisingmetrics.org/.
45. "Capital Region Technology Forum," Valley Vision (blog), accessed March 23, 2018.
46. For more insights on digital skills, see Mark Muro et al., "Digitalization and the American workforce" (Washington: Brookings Institution, 2017).
47. Martha Ross and Natalie Holmes, "Meet the out-of-work: Local profiles of jobless adults and strategies to connect them to employment" (Washington: Brookings Institution, 2017).

ACKNOWLEDGMENTS

The Brookings Institution is a nonprofit organization devoted to independent research and policy solutions. Its mission is to conduct high-quality, independent research, and, based on that research, to provide innovative, practical recommendations for policymakers and the public. The conclusions and recommendations of any Brookings publication are solely those of its author(s), and do not reflect the views of the institution, its management, or its other scholars.

The Metropolitan Policy Program at Brookings would like to thank the leadership of the organizational coalition that supported this work: Sacramento Area Council of Governments, Greater Sacramento Economic Council, Valley Vision, and Sacramento Metropolitan Chamber of Commerce. The program is also grateful to the Metropolitan Council, a network of business, civic, and philanthropic leaders who act as financial and intellectual partners. Brookings recognizes that the value it provides is in its absolute commitment to quality, independence, and impact. Activities supported by its donors reflect this commitment.

For their comments and guidance on drafts of this assessment, the authors thank a set of reviewers that include, but are not limited to, Garrett Ballard-Rosa, Alan Berube, James Corless, Alaina Harkness, Trish Kelly, Jonathan London, Bill Mueller, Ryan Sharpe, and Bob Weissbourd. Thanks are also given to David Jackson for editing and Luisa Zottis and Elliott Beard for layout and design.

ABOUT THE METROPOLITAN POLICY PROGRAM AT BROOKINGS

The Metropolitan Policy Program at Brookings delivers research and solutions to help metropolitan leaders build an advanced economy that works for all. To learn more, visit www.brookings.edu/metro.

FOR MORE INFORMATION

Joseph Parilla

Fellow

Metropolitan Policy Program at Brookings

jparilla@brookings.edu

Marek Gootman

Fellow and Director of Strategic Partnerships and Global Initiatives

Metropolitan Policy Program at Brookings

mgootman@brookings.edu

METROPOLITAN POLICY PROGRAM AT BROOKINGS

1775 Massachusetts Avenue, NW Washington, D.C. 20036-2188

Telephone: 202.797.6000

Fax: 202.797.6004

Website: www.brookings.edu





B | Metropolitan Policy Program at BROOKINGS

1775 Massachusetts Avenue, NW
Washington, D.C. 20036-2188
telephone 202.797.6139
fax 202.797.2965
www.brookings.edu/metro