



COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY

ASSOCIATION OF CENTRAL OKLAHOMA GOVERNMENTS

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acog

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EXECUTIVE SUMMARY

In 2019, the Association of Central Oklahoma Governments (ACOG) engaged TIP Strategies to update the Capital Area Economic Development District (CAPEDD) of Oklahoma’s existing 2012 Comprehensive Economic Development Strategy (CEDS). CAPEDD is the US Economic Development Administration’s (EDA) designated Economic Development District (EDD), which covers ACOG’s four-county region, including Canadian, Cleveland, Logan, and Oklahoma Counties. The updated plan includes an assessment and analysis to set the broad priorities that will enhance the region’s competitiveness and drive the economy forward.

The region’s economy has long been defined by oil and gas. The vulnerability associated with overdependence on this sector has not been lost on civic leaders. Diversified investment generated through Oklahoma City’s much-lauded Metropolitan Area Projects (MAPS) program resulted in new projects and a renewed sense of optimism. It is now possible—perhaps for the first time in the region’s history—to see the region’s economy as driven by more than the petrochemical industry.

While recovery from the Great Recession (2007–2009) has been noteworthy, resulting in record low unemployment levels, the region continues to lag behind the national economy. Further compounding the challenge of a transitioning economy is the intense national competition for talent. The skill sets required for growing companies increasingly depend on tech-savviness, regardless of whether the company is a traditional manufacturer, in the service sector, or in oil and gas. In short, all industry is now tech dependent. To compete in this new environment, the ACOG region must do more than attract new companies. It must do more than invest in a reliable infrastructure. And it must do more than satisfy the needs of its existing citizens.

Against this background of a fundamental reset of employment and investment, a regional economic development strategy can play a critical role. ***The key objective for the ACOG region is straightforward: to ensure competitiveness at the national level.***

The CEDS Advisory Committee embraced the competitiveness theme and established a bold vision for the region that will ensure its success. That vision centers on ***connectivity***. The idea of connectivity includes the following.

STRATEGIC FRAMEWORK

GOAL 1. INFRASTRUCTURE

Enhance the region’s transportation and telecommunications systems.

GOAL 2. RESILIENCY

Build a resilient economy through business development and attraction, diversification of the economic base, and adopting policies to address economic and weather-related disruptions.

GOAL 3. INNOVATION

Grow the region’s startup, entrepreneurship, and business innovation ecosystem by providing the support and tools needed for businesses to thrive.

SUMMARY OF GOALS AND STRATEGIES

GOAL 1. INFRASTRUCTURE

Enhance the region's transportation and telecommunications systems.

STRATEGIES

- 1.1. **Transit-Oriented Development.** Focus efforts on creating transit-oriented development.
- 1.2. **RTA.** Engage the Regional Transportation Authority of Central Oklahoma on economic development issues by understanding regional employment and connectivity needs.
- 1.3. **Freight Mobility.** Convene leaders involved in freight mobility to discuss transportation issues affecting the region's economy.
- 1.4. **Broadband and 5G.** Establish a task force comprised of public and private sector members to evaluate regional broadband service and prepare for future 5G service.
- 1.5. **OKC Airport.** Support the Will Rogers World Airport terminal expansion project and serve as an advocate for expanded service.

GOAL 2. RESILIENCY

Build a resilient economy through business development and attraction, diversification of the economic base, and adopting policies to address economic and weather-related disruptions.

STRATEGIES

- 2.1. **Target Sectors.** Focus the region's target sector industry clusters to grow a resilient and diverse economy.
- 2.2. **Business Growth and Recruitment.** Support the region's business retention, expansion, and recruitment programs to ensure local businesses have the tools and support they need to thrive.
- 2.3. **Workforce Development.** Support the region's workforce development partners in strengthening the talent pipeline.
- 2.4. **Talent Attraction.** Grow the regional talent pool by recruiting skilled workers and remote workers.
- 2.5. **Placemaking.** Support the unique community assets that enhance regional competitiveness.
- 2.6. **Environmental Resiliency.** Develop a set of regional environmental resiliency standards that can be adopted by jurisdictions throughout the region to create uniformity and consistency.

GOAL 3. INNOVATION

Grow the region's startup, entrepreneurship, and business innovation ecosystem by providing the support and tools needed for businesses to thrive.

STRATEGIES

- 3.1. **Innovation District.** Support implementation of the Innovation District master plan and explore opportunities for bringing elements of the Innovation District to other communities in the region.
- 3.2. **OU Innovation Hub.** Work with leadership at the University of Oklahoma Tom Love Innovation Hub to map the region's innovation ecosystem and entrepreneurship resources.
- 3.3. **Opportunity Zones.** Support regional coordination around marketing and development of the Opportunity Zones in Cleveland, Logan, and Oklahoma Counties.

I. STRATEGIC ACTION PLAN

INTRODUCTION

Over the past 10 years, Central Oklahoma has seen tremendous growth and development in the central downtown and suburban areas. Several regional economic development groups have been instrumental in driving this growth, including the Greater Oklahoma City Chamber, the Alliance for Economic Development of Oklahoma City, Norman Economic Development Coalition, and the Eastern Oklahoma Development District, among others. Oklahoma City has received national attention for its downtown revival and commitment to economic development. The Greater Oklahoma City Chamber has taken on issues much broader than traditional economic development, from tackling criminal justice reform to addressing mental health outcomes in the public school system. The Alliance for Economic Development of Oklahoma City was a national leader in formalizing the region's Opportunity Zones prospectus and the Association of Central Oklahoma Governments (ACOG) recently achieved a major milestone with the establishment of the Regional Transportation Authority of Central Oklahoma in 2019, after operating as a task force since 2005.

Much of the Central Oklahoma region's success has resulted from the attractive balance of job opportunities with overall affordability. This combination offers a competitive advantage that the region can continue to leverage. The Greater Oklahoma City metropolitan statistical area's (MSA) median home value and housing affordability index are well below the national average, while median household income is close to the national average (additional information can be found in the Economic Assessment). The lower cost of living is enhanced by investments that have garnered national attention. In Oklahoma City, many of these investments were made as a result of the Metropolitan Area Projects (MAPS) program, which began in 1993. High-profile MAPS projects, such as the Bricktown Canal, the Oklahoma City Streetcar system, the RIVERSPORT whitewater rafting and kayak facility, and the forthcoming Oklahoma City Convention Center continue to offer residents and visitors top-tier amenities. Notably, these are the kinds of projects typically associated with cities whose cost of living is much higher. However, despite these advantages, from 2013 to 2018, the region saw slower job growth compared to the national average, labor force participation decreased, and the most educated workers continued to seek work outside the state (additional information can be found in the Economic Assessment).

In 2012, ACOG worked with TIP Strategies to develop a regional comprehensive economic development strategy (CEDS). That effort, intended to guide the region through 2018, identified viable strategies but did not garner the broad support necessary to advance them. Although the region saw a number of economic development successes during that time, the ACOG Board of Directors felt that the next regional CEDS plan could accomplish more. In 2019, ACOG hired TIP Strategies to update the existing plan, putting greater emphasis on a full regional analysis that engaged all the economic development entities in the region and set more ambitious goals.

To meet this charge, the CEDS Advisory Committee endorsed an overarching theme for the strategies: **connectivity**. The idea of "regional connectivity" is not exclusive to transportation—though the RTA certainly supports that idea—but also includes other infrastructure. Most critically, it also includes the idea of connected governmental units.

During extensive background research, including qualitative field work and quantitative data analysis, it quickly became clear that the region could accomplish more through greater cohesion and alignment. This is not, however, without challenges. Geographically, the Oklahoma City Metropolitan Area is one of the largest metro regions in the United States. Furthermore, population density varies widely throughout the region, from small towns and unincorporated areas, to growing suburban communities, to downtown Oklahoma City. This plan identifies three key areas in which regional economic development partners can collectively work toward common goals to enhance the region's competitiveness.

The first goal focuses on connecting the region's **transportation and infrastructure** systems, including identifying vulnerabilities in the region and in underserved areas. The second goal focuses on **resiliency** to ensure the region is prepared for economic and environmental disruptions. This goal highlights strategies for business growth, expansion, and attraction, in addition to growth and development of the regional talent pipeline. The third goal focuses on connecting the **innovation ecosystem** and incorporates growth plans for the Innovation District and the Tom Love Innovation Hub at the University of Oklahoma.

ACOG cannot implement this strategy alone. For this plan to be successful, all the regional entities in economic development must work together, take ownership of strategies, and follow through on the actions and steps needed to achieve these goals. In other words, connected and aligned efforts among all the participants is essential. The [implementation matrix](#) outlines the lead and support organizations for each initiative and will serve as a roadmap to track progress. In keeping with the importance of connectivity and alignment, individual strategies do not rest solely on ACOG. That said, ACOG is ideally suited to play the lead coordinating role among the various organizations. This step involves several important actions.

- Identifying all relevant economic development and workforce organizations and initiatives.
- Convening the various participants on a quarterly basis.
- Aligning initiatives with the CEDS plan.
- Agreeing on regional benchmarks and establishing performance metrics.

GOAL 1. INFRASTRUCTURE

Enhance the region’s transportation and telecommunications systems.

ACOG’s region encompasses nearly 3,000 square miles and includes urban, suburban, and rural communities. Workers and goods flow freely throughout the region. Positioning the *entire* region for growth requires a strong commitment to collaborative planning that involves all the political jurisdictions—including the state of Oklahoma. As urban areas continue to be a magnet for talent and business, emphasis needs to be placed on mobility within the region and Oklahoma City.

Transit-oriented development prioritizes the efficient movement of people and goods in a community and should remain a priority for the region. In addition to transportation infrastructure, broadband and high-speed internet are vital elements of the infrastructure, especially in underserved rural communities. It is a requirement for most businesses and remote workers rely on fast, reliable internet to stay connected to their work. Broadband in remote areas enhances opportunities for residents by providing access to distance-learning opportunities and telemedicine resources.¹

While broadband provides critical connections throughout the region, nationally, and internationally, the Will Rogers World Airport (OKC) provides physical connections to national and global markets. Airports are a vital economic engine that support business and tourism and bring in outside investment. The following strategies prepare the region for growth and enhance competitiveness.

STRATEGIES AND ACTIONS

1.1. Transit-Oriented Development. Prioritize transit-oriented development (TOD) and support projects, such as the Innovation District, that include TOD. TOD is a form of community development that includes a mixture of housing, office, retail, and other amenities integrated into a walkable neighborhood concentrated within a quarter mile of quality public transportation.²

- 1.1.1.** Develop an enhanced mapping tool with information on demographics, employment center sites, businesses (by sector), housing density, transportation infrastructure, utility infrastructure, schools, and other public services. This tool will allow for a visualization of potential employment sites, aligned with infrastructure and population centers. The mapping tool can also serve to guide future investment.
 - Establish a task force comprised of public and private sector leaders, as well as members of ACOG’s Transportation Planning Services (TPS) Division, to understand the region’s infrastructure needs as it relates to economic development. The group will work collectively to identify gaps in current mapping and geographic information systems.
 - **Case Study:** In 2019, Greater Portland METRO (the regional transportation and planning organization), in partnership with the Brookings Institution, launched the Economic Value Atlas, an advanced Web-based mapping tool. The purpose of the tool is to better align planning and public investments across multiple city, county, and state lines to strengthen the regional economy. Over fifteen regional partners were involved in the development of the program, ranging from workforce and economic development to education and planning, in addition to interviews with stakeholders across the region. In May 2019, the Brookings

¹ USDA, “USDA Partners with Communities to Bring High-Speed Broadband e-Connectivity Infrastructure to Rural Areas,” November 13, 2018, <https://www.usda.gov/media/press-releases/2018/11/13/usda-partners-communities-bring-high-speed-broadband-e-connectivity>.

² Federal Transit Administration, “Transit-Oriented Development,” April 11, 2019, <https://www.transit.dot.gov/TOD>.

Institution released a case study, “Portland Economic Value Atlas Implementation Plan,” about the program for other regions to emulate the model.³

- 1.2. **RTA.** Engage the Regional Transportation Authority (RTA) on economic development issues by understanding regional employment and connectivity needs.
 - 1.2.1. Support RTA initiatives that relate to economic development, including transit-oriented development (Strategy 1.1).
 - 1.2.2. Support the infrastructure and multimodal transportation priorities identified in the Innovation District master plan, including pedestrian, bicycle, automobile, and mass transit (Strategy 3.1).
- 1.3. **Freight Mobility.** Convene a regular freight mobility working group meeting (bimonthly or quarterly) of public and private sector leaders involved in freight mobility to discuss transportation issues affecting the region’s economy.
 - 1.3.1. This meeting should be designed to encourage networking within the region’s logistics and distribution industry, including representation from the public and private sectors. The focus of the meetings should include evaluation of the region’s needs and opportunities associated with freight transportation.
 - 1.3.2. The meetings should also include presentations from local/state/federal transportation planners and knowledge sharing about major transportation policies and infrastructure projects.
 - 1.3.3. Build on the ACOG 2018 reports about platooning trucks and connected and autonomous vehicles (AV). Support the TPS planning efforts for AVs, including infrastructure for passenger and commercial vehicles.
 - **Case Study:** In 2017, the Seattle Department of Transportation developed a comprehensive playbook outlining the city’s vision for AVs and a plan for integrating AVs into the mobility ecosystem.⁴ Seattle recognized that its rapid population growth, combined with the new mobility landscape of shared services, required the city to think progressively about how to meet the mobility needs of residents and meet the region’s economic development goals. Seattle’s *New Mobility Playbook* outlines five specific goals for adopting emerging technologies in transportation and focuses on creating an equitable, safe, and “people first” program.
- 1.4. **Broadband and 5G.** Establish a task force comprised of public and private sector members to evaluate regional broadband service and prepare for future 5G service. Broadband is critical infrastructure that enhances quality of life and improves business competitiveness.
 - 1.4.1. Identify opportunities to expand broadband service in rural areas, especially in high need areas, such as Langston, where university and community needs are not being adequately met.
 - 1.4.2. Track opportunities for federal and private funding assistance for broadband infrastructure expansion.
 - The National Telecommunications and Information Administration (NTIA) recently launched a searchable database, which includes 50 federal broadband programs spanning a dozen

³ Brookings Institute, “Portland Economic Value Atlas Implementation Plan,” May 2019, https://www.brookings.edu/wp-content/uploads/2019/05/2019.05.21_Brookings-Metro_Portland_Implementation-plan.pdf.

⁴ Seattle Department of Transportation, “New Mobility Playbook,” September 2017, https://www.seattle.gov/Documents/Departments/SDOT/NewMobilityProgram/NewMobility_Playbook_9.2017.pdf.

federal agencies, representing billions of dollars for broadband grants and loans, in addition to other resources for communities.⁵

1.4.3. Explore options to offer free Wi-Fi in the region, especially around innovation areas, including but not limited to, downtown Oklahoma City, the Innovation District, the University of Oklahoma, and Langston University.

- **Case Study:** Kansas City is a leader in telecommunications access. Google Fiber paved the way in 2011 when Kansas City was selected for the pilot project. Then, in 2016, Kansas City was one of the first cities in the US to launch a Smart City plan and by the end of that year, in partnership with Sprint and Cisco, 54 blocks of downtown had free public Wi-Fi along the KC Streetcar line. The Wi-Fi system has bolstered streetcar ridership, prepared the city for the adoption of AVs, and made the area more user friendly for tourists and visitors. The city is now exploring ways to extend the free Wi-Fi service to traditionally underserved neighborhoods on Kansas City's east side.⁶

1.5. OKC Airport. Support the Will Rogers World Airport (OKC) terminal expansion project and serve as an advocate for expanded air service. Consider the pros and cons of offering financial assistance to carriers to support new routes. Identify opportunities for economic development partners to support the RTA initiatives to improve connectivity between the airport and downtown Oklahoma City.

- **Case Study:** In 2017, a coalition of business, community, and government leaders came together to form Louisville Regional Airlift Development, Inc. (LRAD), an organization aimed at bringing new, nonstop air service to the Louisville International Airport (SDF).⁷ Regional leaders recognized that increased nonstop air service was critically important to the growth of businesses, education providers, along with convention and tourism industries. LRAD also manages a minimum revenue guarantee fund, a public-private effort that enables the community to share in the risk of a new route with an airline as the route builds to a sustainable and profitable level. When the LRAD was formed, SDF had 21 nonstop destinations. By mid-2019, it had 33 destinations, with an 11 percent increase in passenger volume.

⁵ NTIA, "NTIA Releases Comprehensive Guide to Federal Broadband Funding," June 3, 2019, <https://www.ntia.doc.gov/press-release/2019/ntia-releases-comprehensive-guide-federal-broadband-funding>.

⁶ Icons of Infrastructure, "Kansas City Blazes a Trail toward Smarter, Better Services," August 15, 2018, <https://iconsofinfrastructure.com/kansas-city-blazes-a-trail-toward-smarter-better-services/>.

⁷ Louisville Regional Airlift Development, Inc., "Louisville's Taking Flight!" 2019, <http://www.lradinc.com>.

GOAL 2. RESILIENCY

Build a resilient economy through business development and attraction, diversification of the economic base, and adopting policies to address economic and weather-related disruptions.

Resiliency consists of more than having a recovery plan in the event of floods or tornadoes. Broadly speaking, resiliency speaks to the ways a community responds to disruptions in the economy, weather-related *and* economic.

Resiliency encompasses three elements: avoiding disruption, withstanding disruption, and recovering from disruption. For the region to avoid disruptions, there are different strategies and policies, depending on the particular threat. In economic terms, strengthening and diversifying the industry base is essential. In addition to an industry focus, talent development and attraction helps ensure that a wide variety of businesses can thrive and grow. An emphasis on quality of place has been the single most effective approach employed by successful communities in attracting younger skilled workers. This holds true for the urban amenities and for smaller rural communities also.

Finally, weather-related resiliency has become increasingly urgent. The recent floods in the region are an example of a pattern being repeated throughout the nation. The ability of companies to anticipate and respond to natural disasters can, and should, be part of their corporate strategy.

STRATEGIES AND ACTIONS

- 2.1. **Target Sectors.** Develop the region’s target sector industry clusters to grow a resilient and diverse economy. The economy has been defined by the oil and gas industry and although there are still opportunities to grow that sector, especially on the tech side, additional emphasis should be placed on strengthening emerging sectors (additional information on target sectors can be found in the [Target Industry Analysis](#)).
- 2.1.1. Utilize a Web-based platform, such as Slack, for industry groups to connect and discuss issues affecting the region. This fosters a collaborative environment, and it engages the business community around economic development issues.
- 2.1.2. Prioritize business recruitment initiatives and projects in target industries and traded sector businesses.
- 2.1.3. Support efforts to build the supply chain around target sectors and encourage businesses to source materials and services locally whenever possible.
- 2.1.4. Focus on developing the emerging sectors, especially weather tech. The ACOG region is uniquely positioned with the National Weather Center and the University of Oklahoma Advanced Radar Research Center to attract companies and develop new technology.
 - **Case Study:** In 2015, the Asheville-Buncombe County Economic Development Coalition (EDC) made a concerted effort to leverage the region’s science and technology assets, especially the National Centers for Environmental Information. This initiative was designed to attract and develop new technology and to deepen the talent. The EDC strategic plan called for strategies to explore climate and environmental data opportunities for new private sector business growth. To accelerate the area’s existing climate and environmental data commercialization opportunities, the EDC, the Asheville Convention & Visitors Bureau, and Buncombe County Tourism Development Authority created and hosted a climate science and tech transfer conference in Asheville. The first event in 2018, “ClimateCon,” included climate and weather scientists from federal agencies, researchers from institutions of higher education, and business professionals involved in climate and weather science. The event

was deemed a success and was rebranded as the Climate City Expo (CCx) in 2019.⁸ The event is a critical part of the region’s broader efforts to become known as “Climate City.” Along with the events, the EDC supports an accelerator and coworking space—The Collider—located in downtown Asheville. The Collider serves as the hub for the region’s growing cluster of climate data entrepreneurs, researchers, and professionals.

- 2.2. Business Growth and Recruitment.** Support the region’s business retention and expansion (BRE) and recruitment programs to ensure local businesses have the tools and support they need to thrive. A strong BRE program is vital to sustaining a strong economy, as research has shown the bulk of job flows are from existing firms’ expansions and contractions.⁹
- 2.2.1.** Convene economic development partners on a quarterly basis to share best practices and understand opportunities and challenges in the regional economic development landscape.
- 2.2.2.** Nurture innovation in existing business by leveraging assets at the University of Oklahoma Tom Love Innovation Hub and in the Innovation District. Encourage partnerships and collaboration between existing businesses; act as a catalyst to foster those connections (Action 3.2.3).
- 2.2.3.** Coordinate business recruitment and marketing efforts at a regional level and ensure broad representation of opportunities in urban and rural areas. Leverage regional assets, such as University of Oklahoma and the Innovation District, to attract businesses and encourage investment.
- 2.2.4.** Develop and maintain a toolkit with resources for businesses to enhance their economic and environmental resiliency. Leverage existing resources, such as the 2014 “Oklahoma Economic Resilience Strategic Report”¹⁰ and the International Economic Development Council “Leadership in Times of Crisis”¹¹ publication, to build the portfolio. These resources can also guide environmental resiliency preparedness (Strategy 2.6).
- **Case Study:** The Sacramento Capital Region Business Resiliency Initiative (BRI) is a project launched by Valley Vision and its partners to increase the resilience of the regional economy by increasing the preparedness of the business community, and particularly small businesses. The BRI website features a business guide with concise, accessible, action-oriented steps to create business resiliency plans. Foundational funding support for the BRI is provided by numerous public and private Sacramento area entities.
- 2.3. Workforce Development.** Support the region’s workforce development partners in strengthening the talent pipeline.
- 2.3.1.** Advocate for the alignment of workforce development tools and programs at state and local levels. Work collaboratively to remove silos within organizations and programs.
- 2.3.2.** Emphasis should be placed on developing skill sets that align and meet the needs of employers in the region’s targeted industries. Workforce, higher education, and economic development partners should coordinate business visits to ensure workforce development programs are meeting the needs of employers.
- 2.3.3.** Support efforts to cross-train and upskill employees in critical skill sets. This supports business resiliency efforts if a key employee leaves or is unable to come to work and also creates a

⁸ The Collider, “Climate City Expo,” 2019, <https://thecollider.org/conferences/climate-city-expo/>.

⁹ Congressional Research Service, “Small Business Administration and Job Creation,” September 11, 2019, <https://fas.org/sqp/crs/misc/R41523.pdf>.

¹⁰ “Oklahoma Economic Resilience Strategic Report,” August 2014, https://www.eda.gov/files/about/disaster-recovery/Oklahoma_Economic_Resilience_Strategy_Report_FINAL_print.pdf.

¹¹ IEDC, “Leadership in Times of Crisis: A Toolkit for Economic Recovery and Resiliency,” March 2015, <https://restoreyoureconomy.org/clientuploads/2015/03/IEDC-Leadership-in-Times-of-Crisis-Toolkit.pdf>.

resilient workforce that can better adapt in changing economic climates and technological advancements. Major employers, such as Amazon, are already taking this on internally to prepare for increasing automation in its major distribution hubs.¹²

2.3.4. Maintain partnerships with the region’s higher education systems and work aggressively to retain graduating talent. Ensure that K–12 programs are aware of local higher ed opportunities.

- Connect businesses and higher education to promote local internships and job opportunities.
- **Case Study:** Northeastern University’s nationally acclaimed cooperative education (“coop”) program began in 1909 and remains the cornerstone of the university’s educational model.¹³ Over 92 percent of full-time undergraduate students participate in at least one coop during their course of study. Although the majority of coops are located in Boston, the university has partnerships with over 2,500 companies in 80 different countries to ensure that students have access to a wide range of opportunities in a variety of fields. In 2016, 54 percent of graduates received a job offer from a previous coop employer and the university estimates that over 60 percent of graduates remain in the Boston area after graduation (compared to approximately 30 percent of MIT and Harvard graduates who remain in the region).

2.4. Talent Attraction. Grow the regional talent pool by recruiting skilled workers and remote workers. Despite a high quality of life and varied employment opportunities, the region loses highly skilled talent to other parts of the US. This is due, at least in part, to the perception that the region does not have high-wage tech opportunities.

2.4.1. Ensure the region has the resources needed to attract and support remote workers. This is supported by Action 3.2.1 (coworking spaces) and Strategy 1.4 (broadband).

2.4.2. Support regional marketing efforts to attract talent. Marketing efforts should be focused and asset driven, highlighting the region’s amenities and quality of place. Leverage specialty programs at the University of Oklahoma, such as the College of Atmospheric & Geographic Sciences and the College of Medicine, to attract and retain talent in target sector fields.

- **Case Study:** Chattanooga has carried out several strategies to live up to its nickname, Gig City. Chattanooga is positioning itself as an alternate destination to Silicon Valley for high-tech companies and talent due to the citywide gigabit-per-second fiber internet network.¹⁴ In addition to high-speed internet, another strategy included GeekMove, a program implemented in 2011 to assist computer developers in relocating to Chattanooga. In 2016, a video campaign was launched, highlighting the city’s affordable cost of living and attractive amenities in a catchy, quirky manner. Costing \$15,000, the videos have received 127,000 views in 1 year. The videos have captured more than just views, they are being used as a case study in an economic development class at Cornell University.

2.5. Placemaking. Support the unique community assets that enhance regional competitiveness. A focus on quality of place ensures the region remains an attractive location for talent and business.

2.5.1. Advocate for projects that contribute to the unique identity of communities in the ACOG region and enhance the quality of life for residents.

¹² *Forbes*, “Despite Criticism, Amazon’s Upskilling 2025 Initiative Gets High Marks for Inclusive Capitalism,” August 6, 2019, <https://www.forbes.com/sites/nigelwilson/2019/08/06/despite-criticism-amazons-upskilling-2025-initiative-gets-high-marks-for-inclusive-capitalism/#189c1ed3652a>.

¹³ Northeastern University, “Cooperative Education,” 2019, <https://careers.northeastern.edu/cooperative-education/>.

¹⁴ *PC Mag*, “Gig City: How Chattanooga Became a Tech Hub,” May 4, 2018, <https://www.pcmag.com/feature/360564/gig-city-how-chattanooga-became-a-tech-hub>.

- 2.5.2. Engage the arts and design community in projects that elevate the role of arts and culture in downtown Oklahoma City¹⁵ and throughout the region to create an atmosphere of creativity.
- 2.5.3. Support the preservation and revitalization of historic, and historically significant, buildings in the region. Remain sensitive to potential displacement concerns and the effect on the real estate market.
- 2.6. **Environmental Resiliency.** Develop a set of regional environmental resiliency standards that can be adopted by jurisdictions throughout the region. Having a consistent set of standards prepares the region to better withstand an environmental disruption and to streamline recovery efforts.
- 2.6.1. Form a task force comprised of public and private sector partners to inventory and evaluate regional resiliency standards. The task force should focus on the following areas.
- Identify gaps and shortfalls in the region and work collaboratively to address issues.
 - Review and leverage existing resources to prepare, withstand, and recover from a disruption (Action 2.2.4).
 - Explore funding programs from the EDA and the US Department of Agriculture (USDA) to implement findings.
- 2.6.2. Economic development business outreach efforts should include working with employers to create and improve disaster preparedness (Action 2.2.4). Examples of focus areas include the following.
- Encourage the use of social media and company-specific apps to communicate with employees in the event of an emergency.
 - Ensure that law enforcement and emergency responder communications directly with employers are robust and redundant.
 - Review IEDC examples of community-based, disaster-recovery best practices.¹⁶

¹⁵ City of Oklahoma City, “Amp Up OKC: Integrating Artwork and the Ideas of Artists,” 2015, <https://www.okc.gov/home/showdocument?id=2774>.

¹⁶ IEDC, “History of IEDC’s Economic Recovery Initiatives,” 2019, <https://www.iedconline.org/web-pages/resources-publications/history-of-iedc-s-economic-recovery-initiatives/>.

GOAL 3. INNOVATION

Grow the region's startup, entrepreneurship, and business innovation ecosystem by providing the support and tools needed for businesses to thrive.

The ACOG region is naturally innovative—from its history as a pioneer in the oil and gas industry, to its forward-looking solution, to parking congestion in downtown Oklahoma City in 1935. Innovation is not reserved for entrepreneurs and startups; innovation is critical for established businesses to stay competitive. The region needs to nourish the new innovation ecosystem that is emerging around the University of Oklahoma (OU) and the Baker Hughes Energy Innovation Center. One way for this to happen is to improve links between these centers of creativity and other communities throughout the region.

STRATEGIES AND ACTIONS

- 3.1. **Innovation District.** Support implementation of the Innovation District master plan and explore opportunities for bringing elements of the Innovation District to other communities in the region. In 2017, the Brookings Institution, in partnership with seven major Oklahoma City institutions, singled out the importance of an emerging innovation district. “The goal is not simply to build new buildings but to create greater density and collaboration between geographically distant but strategically aligned institutions, like OU Norman, Oklahoma State, Oklahoma City University, the University of Central Oklahoma, and other relevant public, university, and private institutions.”¹⁷ In 2019, the Innovation District took the next step by engaging Perkins&Will design firm to develop a master plan to chart the district's future.
 - Leadership from the CEDS committee should directly support implementation of the Innovation District master plan.
- 3.2. **OU Innovation Hub.** Work with leadership at the University of Oklahoma Tom Love Innovation Hub to map the region's innovation ecosystem and entrepreneurship resources.
 - 3.2.1. Update the inventory of coworking spaces in the region. This inventory will shed light on the innovation nodes throughout the region, which can guide economic development resources and investments.
 - 3.2.2. Support the Innovation Hub efforts to inventory the local, state, and national entrepreneurship programs and resources. Once the inventory is complete, it can provide a roadmap of services and programs for startups and established businesses.
 - 3.2.3. Promote and encourage use of Innovation Hub resources during business outreach (Action 2.2.2). Experienced professionals can provide valuable mentorship and connections to students and entrepreneurs, in an informal setting, to spur innovation and collaboration.
- 3.3. **Opportunity Zones.** Support regional coordination around marketing and development of the Opportunity Zones in Cleveland, Logan, and Oklahoma Counties.
 - 3.3.1. Identify opportunities to align the needs of underserved communities with the development goals of the Opportunity Zones. Support the Innovation District goals to serve the needs of residents living in and near the Innovation District Opportunity Zone.
 - 3.3.2. Explore funding mechanisms to establish seed funds for entrepreneurs in Opportunity Zones.
 - **Best Practice:** In 2018, Goodcity received an award from the US EDA to create the INVEST Chicago Opportunity Fund, an equity-based, sustainable pool of capital, to fund early-stage companies in Chicago's underrepresented and unconnected communities in designated Opportunity Zones. The fund will focus on technology, manufacturing, and other scalable

¹⁷ Brookings Institution, “Positioned for Growth: Advancing the Oklahoma City Innovation District,” April 2017, p 38, https://www.brookings.edu/wp-content/uploads/2017/04/csi_17042017_okc_report.pdf.

startups from the research and capacity development at surrounding universities. The project will include an annual fund and venture conference to bring investors and government officials together to help provide early-stage financing for 25 to 40 of the most promising startups in Opportunity Zones and attract more individuals to the local seed capital ecosystem, with a specific emphasis on cultivating female and minority investors. By increasing access to capital for startups and investing in community infrastructure, such as shared offices, incubators, accelerators, and housing, Goodcity expects its \$50 million fund will result in 250 to 400 new jobs locally and serve as a replicable model for other metropolitan communities utilizing Opportunity Funds to invest in Opportunity Zones.



COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY

TARGET INDUSTRY ANALYSIS

SEPTEMBER 2019

2

II. TARGET INDUSTRY ANALYSIS

INTRODUCTION

Despite Oklahoma’s long legacy in the oil and gas industry, the Association of Central Oklahoma Governments (ACOG) region has an increasingly diverse economic base in a wide variety of industries.

As a state, Oklahoma identifies six target sectors.

- aerospace & defense
- agriculture & bioscience
- energy
- transportation & distribution
- manufacturing
- information & financial services

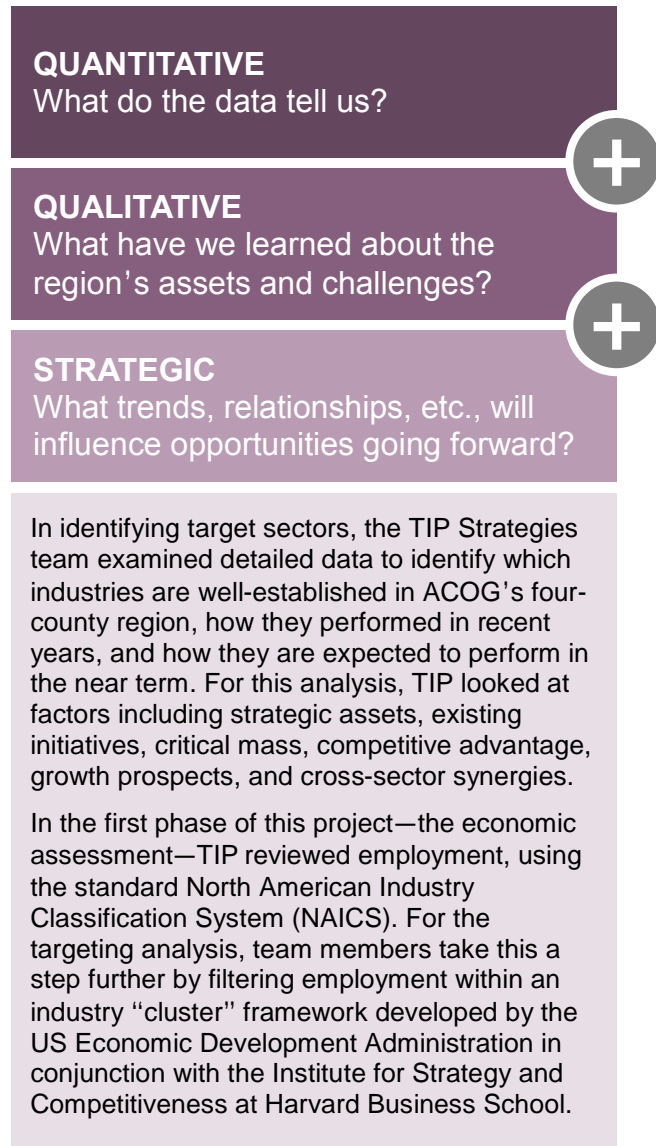
The Greater Oklahoma City Chamber (OKC Chamber) narrows this list to four key areas: aviation & aerospace, bioscience, energy, and logistics.

After examining both qualitative and quantitative findings, seven sectors emerged as strategic industries for the ACOG region. These industries overlap those of the state and the OKC Chamber but are more specifically focused and put a greater emphasis on information technology (IT).

- aerospace
- software & information technology
- shared services & back office
- advanced manufacturing,
- logistics
- life science & biotechnology
- energy

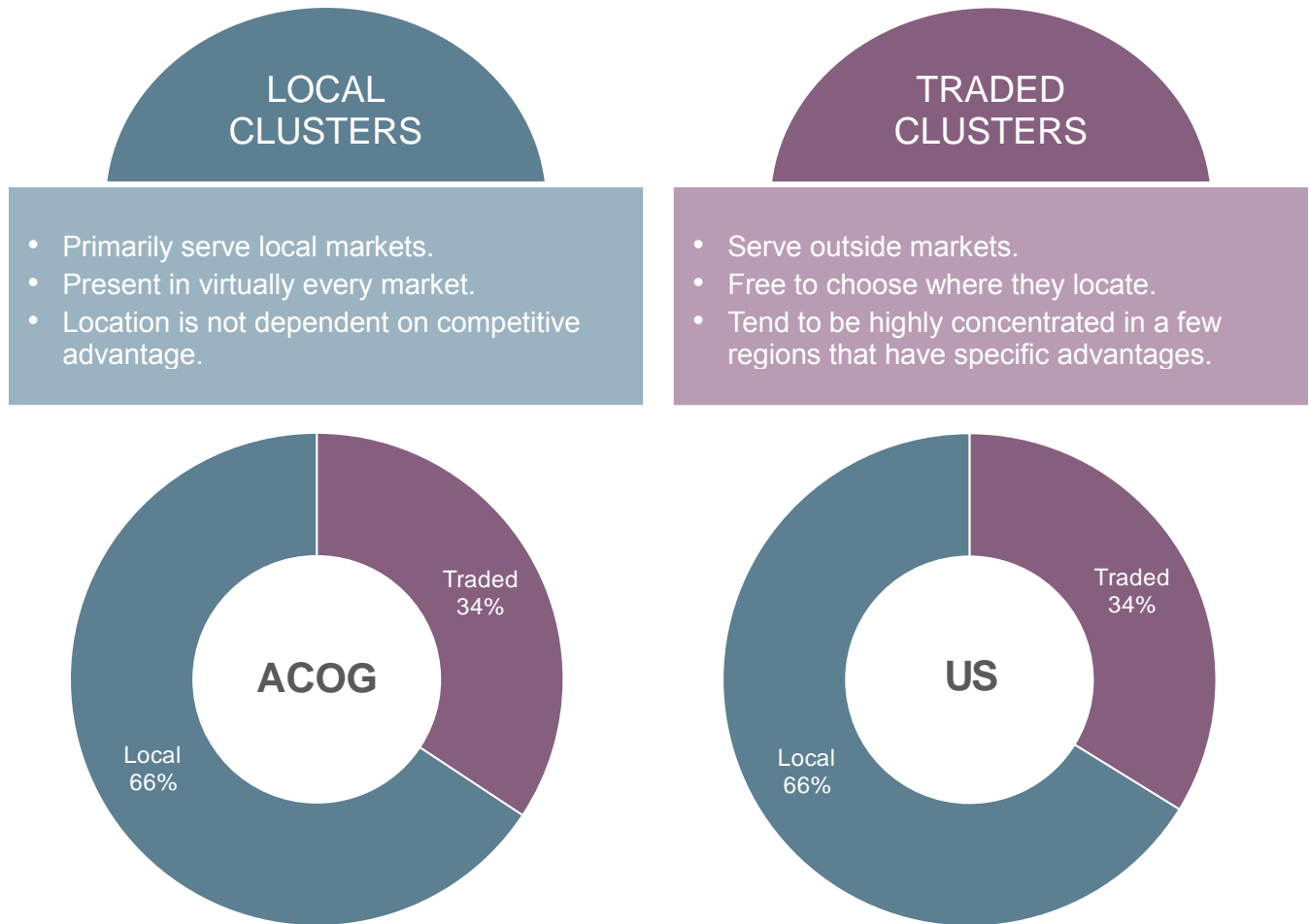
The energy sector has historically been an economic driver for the region, along with the aerospace industry, anchored by Tinker Air Force Base. These industries, combined with advanced manufacturing and logistics, comprise the legacy sectors for the region. Although there have been notable advancements in the life sciences and shared services industries in the past 10 years, these industries are still developing and expected to grow in coming years. Additionally, weather tech remains a unique strategic growth area for the region. A concise profile for each target can be found on the following pages.

FIGURE 1. THE TARGETING APPROACH



ANALYSIS

FIGURE 2. EMPLOYMENT CLUSTERS—LOCAL VS. TRADED
EMPLOYMENT IN 2018 BASED ON CLUSTER TYPE






















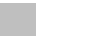










Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.
 Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Economic Modeling Specialists International (Emsi).

WHY IT MATTERS

Increasing the ratio of traded-to-local clusters is a common strategy for enhancing economic prosperity. Traded clusters are emphasized by economic developers because they include industries and firms that typically produce goods and services for customers beyond the local region. These traded activities are thus more likely to produce externally generated revenues which can, in turn, help boost local tax coffers. As an example, a dentist’s office might serve local customers exclusively, while a manufacturing plant, a data center, or a hotel would typically serve paying customers beyond the local area. The ability of traded clusters to serve larger markets also presents greater opportunity for employment growth, whereas a dentist’s office might face more finite geographic limits to expansion.

FIGURE 3. EMPLOYMENT CLUSTERS—WEIGHT (SIZE AND CONCENTRATION)
 TRADED CLUSTERS EMPLOYING THE MOST WORKERS LOCALLY IN 2017

LOCATION QUOTIENTS: **BELOW AVG** →  ← **ABOVE AVG**

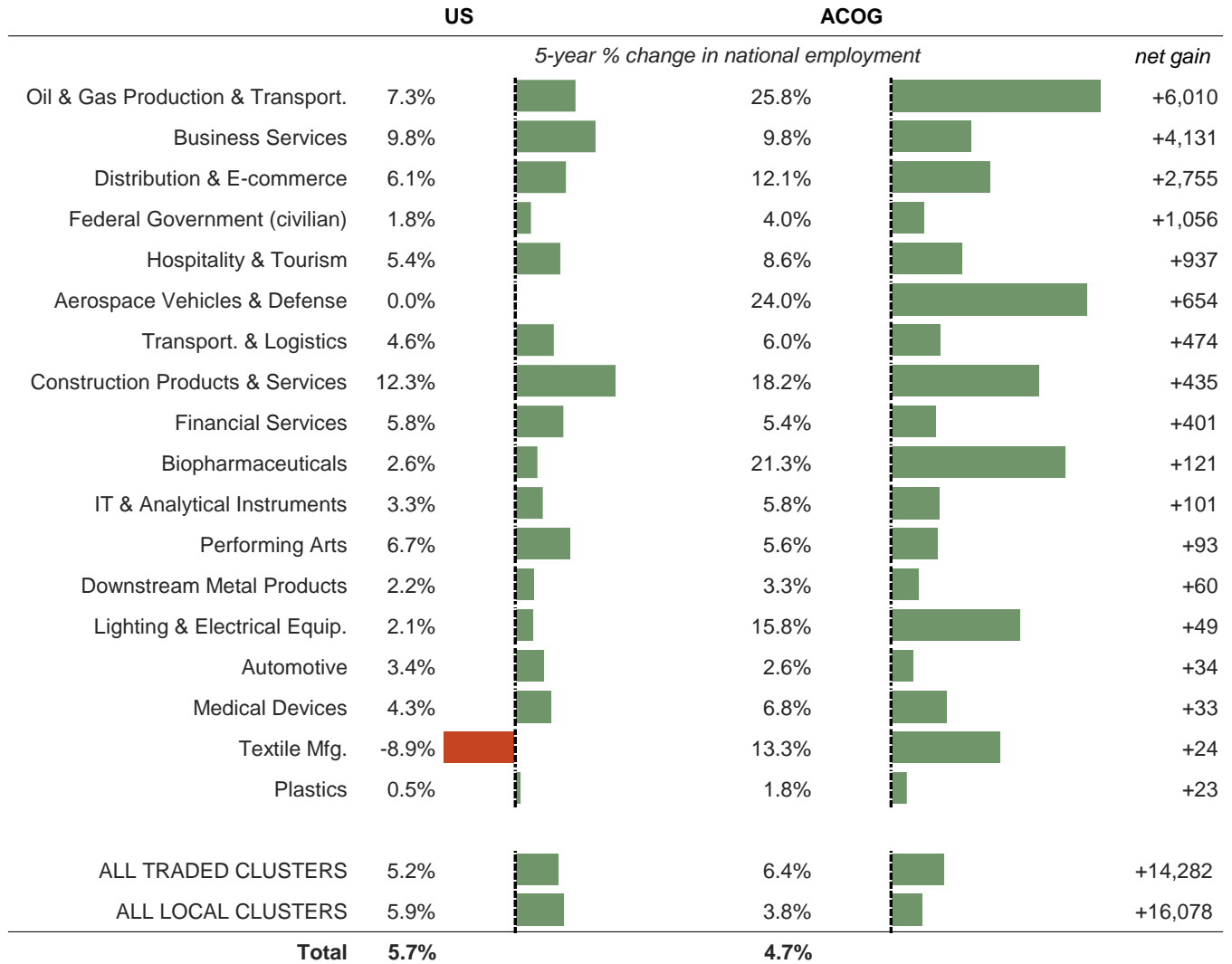
	US		ACOG		
	% of national employment		% of local employment		LQ
Business Services	6.0%		6.5%		1.08
Education & Knowledge Creation	4.1%		4.3%		1.06
Federal Government (civilian)	1.4%		4.1%		2.94
Oil & Gas Production & Transport.	0.4%		3.6%		8.71
Distribution & E-commerce	3.7%		3.5%		0.94
Hospitality & Tourism	2.1%		1.7%		0.80
Federal Government (military)	1.2%		1.5%		1.31
Transport. & Logistics	1.3%		1.2%		0.93
Financial Services	1.3%		1.1%		0.87
Prod. Tech. & Heavy Machinery	0.6%		1.0%		1.79
Insurance Services	0.9%		0.9%		0.99
Marketing, Design, & Publishing	1.1%		0.6%		0.51
Aerospace Vehicles & Defense	0.4%		0.4%		1.10
Food Processing & Mfg.	0.7%		0.4%		0.53
Construction Products & Services	0.6%		0.4%		0.62
OTHER TRADED CLUSTERS	8.0%		3.1%		
ALL LOCAL CLUSTERS	66.2%		65.7%		
Total	100.0%		100.0%		

Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.
 Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

WHY IT MATTERS

While local clusters (such as dentists’ offices) typically account for a similar share of employment across communities of varying size, the share of total employment represented by traded clusters (such as automotive assembly plants) might differ dramatically from one community to the next. Traded clusters that account for a larger-than-average share of total employment can suggest areas of competitive advantage. Figure 3 compares the distribution of employment by cluster in the US (first column) with the local area (second column). The third column uses location quotients (LQs) to convey the intensity of employment locally relative to the US. If a traded cluster represents 1 percent of US employment and 5 percent of local employment, its LQ would be 5.0, meaning that the traded cluster in the local area is five times as large as would be expected, based on national patterns.

FIGURE 4. EMPLOYMENT CLUSTERS—PROJECTED GROWTH
 TRADED CLUSTERS WITH THE HIGHEST PROJECTED LOCAL JOB GAINS, 2017–2022



Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.
 Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

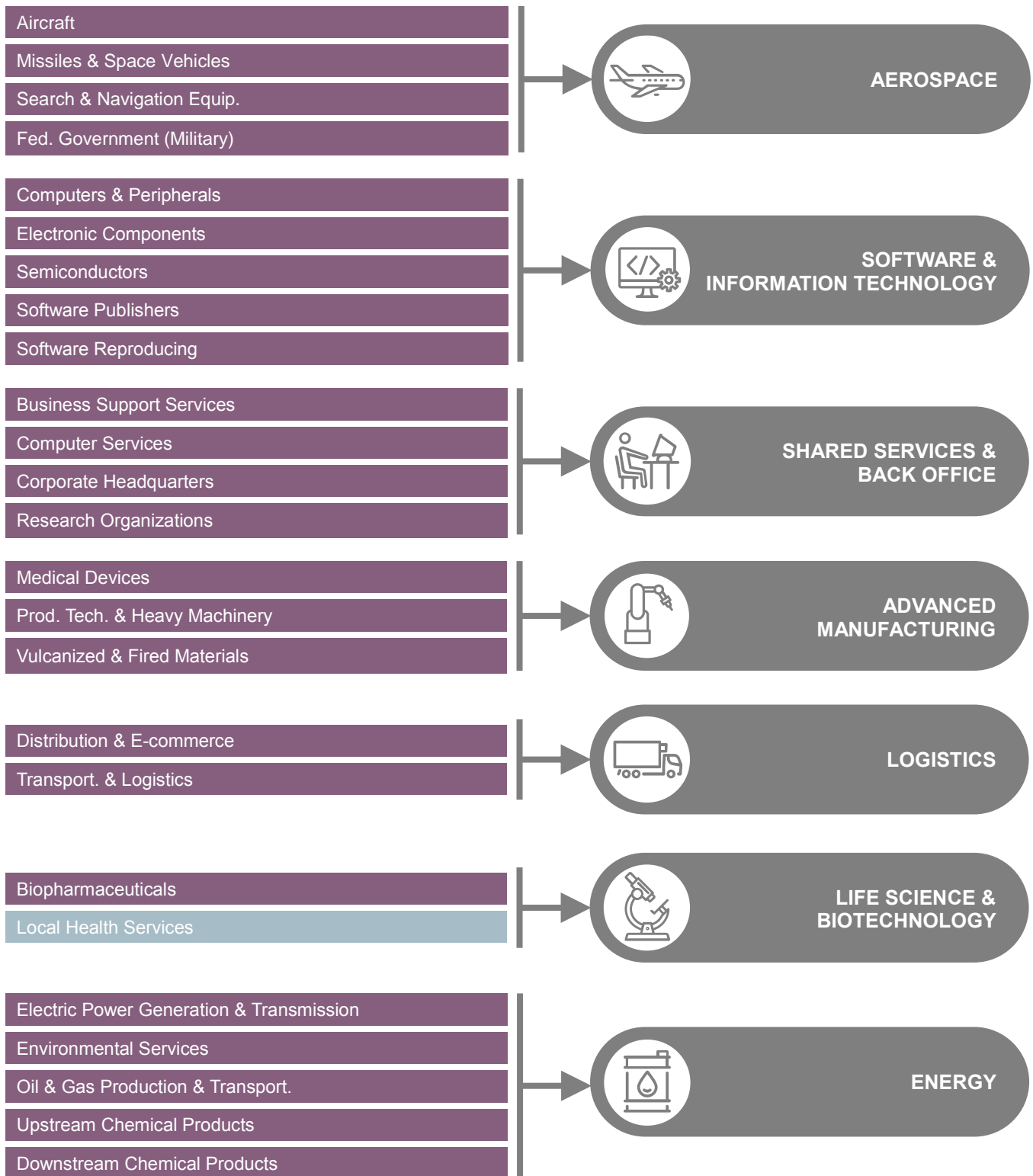
WHY IT MATTERS

Understanding anticipated job growth in traded clusters is an essential element of the targeting process. Figure 4 compares projected net job gains in percentage terms over a 5-year horizon for the US (first column) and the local area (second column). The column on the far right shows projections (in numeric terms) for local net job gains in traded clusters in descending order.

FIGURE 5. TARGETING FRAMEWORK

TRADED and **LOCAL** clusters and subclusters emerge from the analysis...

...to provide a foundation for **TARGET SECTORS**



Sources: US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.

TARGET PROFILES

Based on the analysis of the traded and local clusters, and the region's employment trends, seven target sectors emerged as primary focus areas for the four-county ACOG region. There is also one strategic growth area. In addition to the qualitative data analysis, TIP looked into the support network for each of these clusters, including supply chain, workforce development, and infrastructure. Information about the support network was primarily gleaned from roundtables and conversations with regional leaders, in addition to TIP's industry knowledge.

Along with the seven profiles on the target industries, additional research was completed on the weather-technology sector, which was identified as a strategic growth area for the region. Although this sector is not as developed as the other seven industries, the city of Norman and the University of Oklahoma have long recognized its importance. With the infrastructure in place to nurture a strong weather-tech cluster, efforts should continue to attract new weather-tech related companies and specifically target emerging businesses. The University of Oklahoma's renowned College of Atmospheric & Geographic Sciences, along with the presence of the Advanced Radar Research Center and the National Weather Center, attracts top tier talent in weather science to the region. Furthermore, this industry builds on the region's existing strengths in the aerospace and software & information technology sectors.

Each sector profile includes an overview of the four-county region's workforce and workforce projections, occupations within the industry, and concentration of firms, compared to the national average. These data points are strong indicators of the health of a sector and should be tracked over time to evaluate sector growth. In addition to utilizing the profiles for business development initiatives, the profiles can also be leveraged by workforce development partners to understand occupational needs in each cluster and identify potential weaknesses and opportunities to enhance the region's talent pool.

AEROSPACE

FIGURE 6. TARGET SNAPSHOT

ACOG 4-COUNTY REGION	TOTAL	TARGET
2018 Payrolled Business Locations	37,838	14
2018 Employment	650,228	12,712
Net Chg., 2008–2018	+49,426	-319
Pct. Chg., 2008–2018	+8.2%	-2.4%

FIGURE 8. EMPLOYMENT OUTLOOK

US OVERALL	TOTAL	TARGET
Net Chg., 2018–2023	+9,227,150	-5,874
Pct. Chg., 2018–2023	+5.7%	-0.3%
ACOG 4-COUNTY REGION	TOTAL	TARGET
Net Chg., 2018–2023	+30,266	+159
Pct. Chg., 2018–2023	+4.7%	+1.3%

FIGURE 9. TARGET COMPONENTS ANNUAL EMPLOYMENT

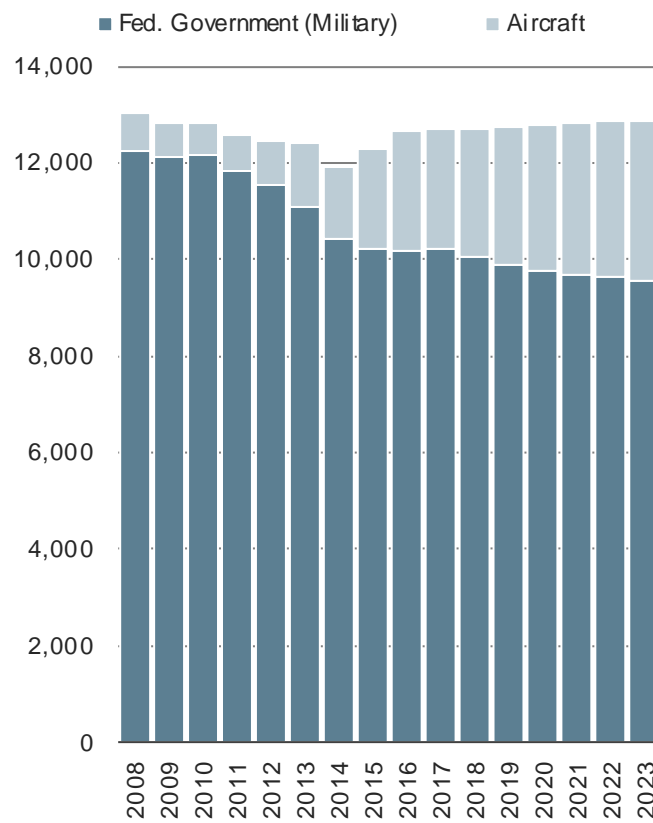


FIGURE 7. TARGET CONCENTRATION TARGET CONCENTRATION

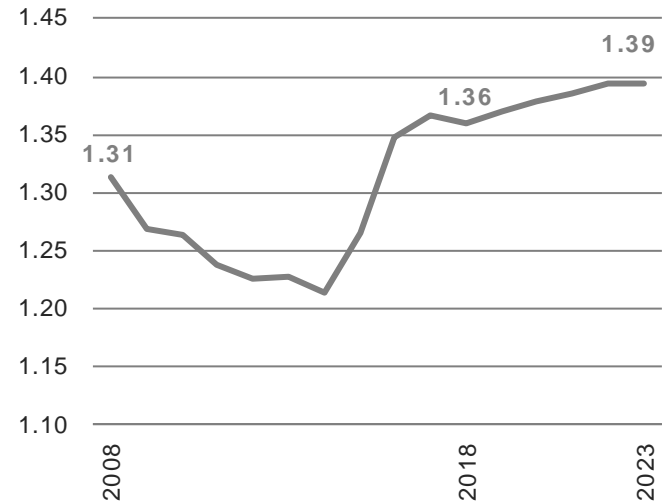
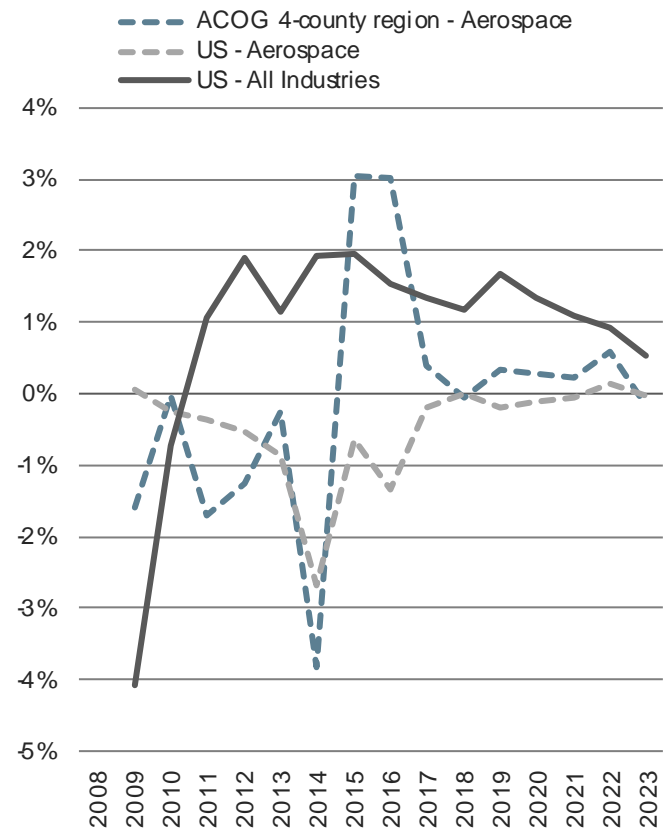


FIGURE 10. TARGET GROWTH ANNUAL PERCENT CHANGE IN EMPLOYMENT



Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.
 Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

FIGURE 11. TARGET STAFFING PROFILE

LQs & RELATIVE EARNINGS: **BELOW AVG** →  ← **ABOVE AVG**

STANDARD OCCUPATIONAL CLASSIFICATION		EMPLOYMENT			EARNINGS	
Code	Description	2018 Jobs	% of Target	LQ (US= 1.00)	Local Hourly Median	Relative to US (US=1.00)
55-9999	Military Occupations	5,191	40.8%	0.96	16.07	0.97
49-3011	Aircraft Mechanics & Service Technicians	792	6.2%	1.88	26.76	0.91
51-2011	Aircraft Systems Assemblers	360	2.8%	2.30	30.14	1.17
17-2011	Aerospace Engineers	271	2.1%	2.19	42.74	0.79
33-3051	Police & Sheriff's Patrol Officers	234	1.8%	0.96	25.69	0.88
13-1081	Logisticians	208	1.6%	1.19	36.43	1.02
53-2011	Airline Pilots, Copilots, & Flight Engineers	188	1.5%	0.96	53.49	0.82
49-2091	Avionics Technicians	181	1.4%	1.59	25.45	0.84
13-1071	Human Resources Specialists	180	1.4%	0.94	24.72	0.84
11-9199	Managers, All Other	159	1.3%	0.91	22.65	0.86
49-9071	Maintenance & Repair Workers, General	130	1.0%	0.92	15.63	0.87
11-3121	Human Resources Managers	117	0.9%	0.96	40.89	0.80
25-3097	Teachers & Instructors, All Other	87	0.7%	0.96	18.70	0.97
15-1133	Software Developers, Systems Software	87	0.7%	1.18	33.71	0.66
47-5031	Explosives, Ordnance Handling, & Blasters	87	0.7%	0.96	16.68	0.70
11-1021	General & Operations Managers	85	0.7%	0.91	40.19	0.84
43-5081	Stock Clerks & Order Fillers	84	0.7%	0.92	11.27	0.96
49-1011	First-Line Supvsr., Mechanics, Install, & Repair	80	0.6%	0.94	32.29	1.04
53-2012	Commercial Pilots	73	0.6%	1.07	44.04	1.18
11-3131	Training & Development Managers	72	0.6%	0.96	40.78	0.78
43-5061	Production, Planning, & Expediting Clerks	72	0.6%	1.14	23.13	1.02
49-3031	Bus/Truck Mechanics & Diesel Engine Specialists	69	0.5%	0.96	19.96	0.91
43-9061	Office Clerks, General	68	0.5%	0.92	13.38	0.88
53-3032	Heavy & Tractor-Trailer Truck Drivers	63	0.5%	0.95	19.38	0.98
49-9099	Install./Maint./Repair Workers, All Other	58	0.5%	0.94	16.78	1.00

Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.

Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

WHY IT MATTERS

Each target industry is underpinned by its workforce, making the occupational composition of each target worthy of further analysis. This exhibit shows each target's largest occupational contributors. The number of local jobs for each occupation is shown along with the occupation's weight (in percentage terms) within the target. The LQ compares the occupation's local weight to its national weight within this target. An LQ that exceeds 1.00 indicates a local occupation employed more heavily by the local target industry than national patterns might imply, while an LQ below 1.00 indicates relatively lighter local reliance on the occupation. Median local hourly earnings accompany the occupations shown in the exhibit. Wage ratios exceeding 1.00 indicate higher pay than the same occupation might expect nationally, while ratios below 1.00 suggest relatively lower compensation than the national level.

SOFTWARE AND INFORMATION TECHNOLOGY

FIGURE 12. TARGET SNAPSHOT

ACOG 4-COUNTY REGION	TOTAL	TARGET
2018 Payrolled Business Locations	37,838	940
2018 Employment	650,228	5,837
Net Chg., 2008–2018	+49,426	+664
Pct. Chg., 2008–2018	+8.2%	+12.8%

FIGURE 14. EMPLOYMENT OUTLOOK

US OVERALL	TOTAL	TARGET
Net Chg., 2018–2023	+9,227,150	+407,674
Pct. Chg., 2018–2023	+5.7%	+13.6%
ACOG 4-COUNTY REGION	TOTAL	TARGET
Net Chg., 2018–2023	+30,266	+209
Pct. Chg., 2018–2023	+4.7%	+3.6%

FIGURE 15. TARGET COMPONENTS ANNUAL EMPLOYMENT

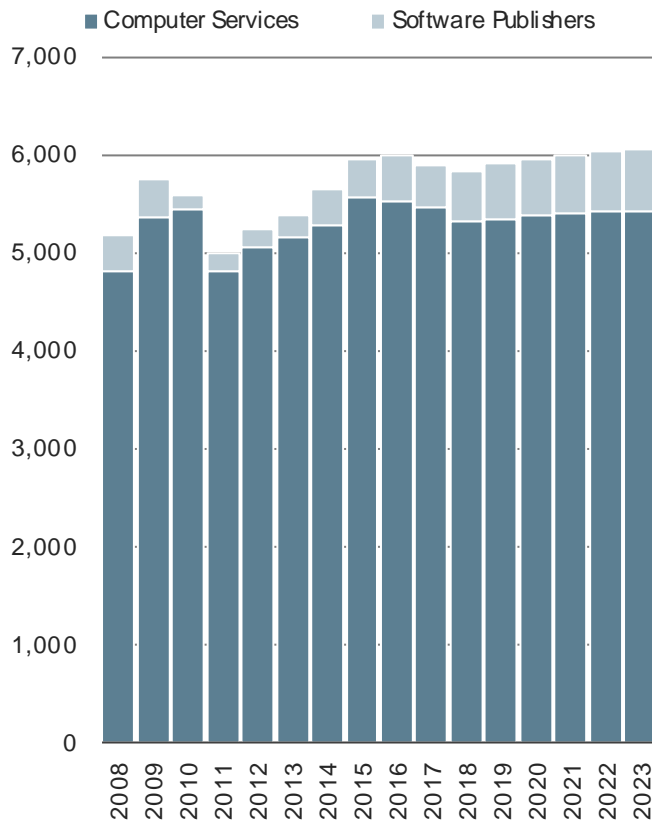


FIGURE 13. TARGET CONCENTRATION TARGET CONCENTRATION

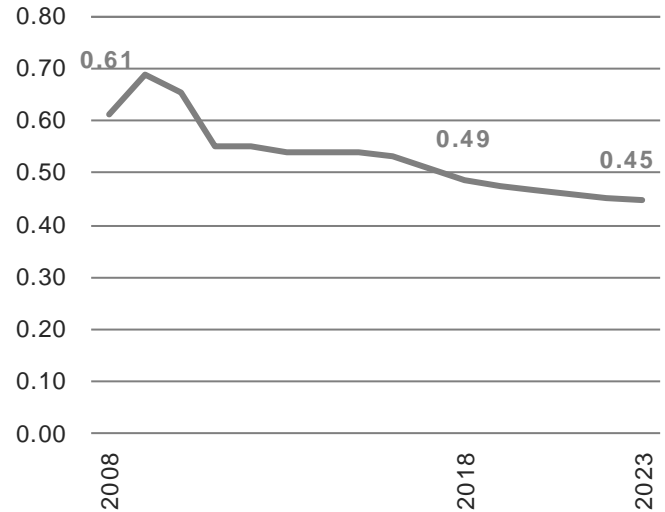
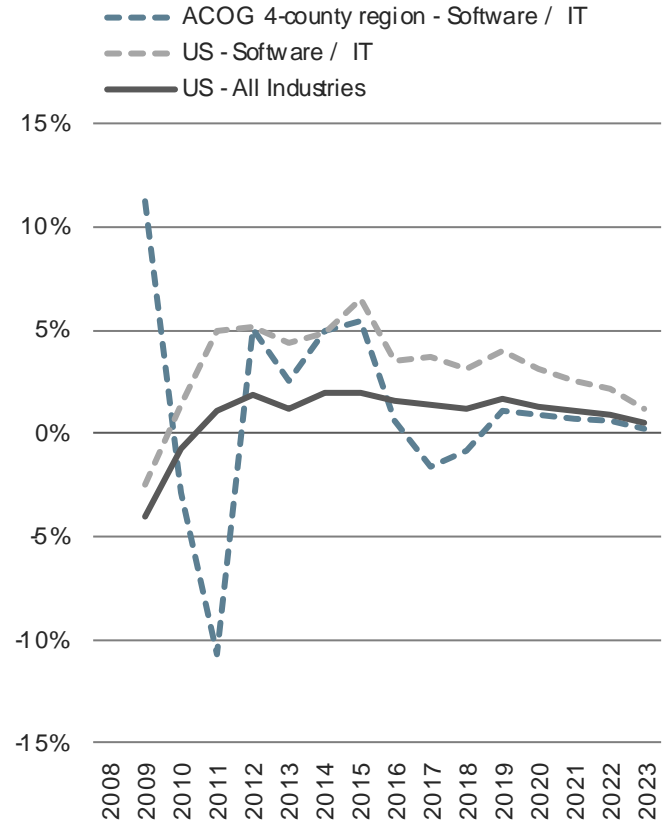


FIGURE 16. TARGET GROWTH ANNUAL PERCENT CHANGE IN EMPLOYMENT



Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.
 Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

FIGURE 17. TARGET STAFFING PROFILE

LQs & RELATIVE EARNINGS: **BELOW AVG** →  ← **ABOVE AVG**

STANDARD OCCUPATIONAL CLASSIFICATION		EMPLOYMENT			EARNINGS	
Code	Description	2018 Jobs	% of Target	LQ (US= 1.00)	Local Hourly Median	Relative to US (US=1.00)
15-1132	Software Developers, Applications	823	12.0%	0.97	41.53	0.86
15-1151	Computer User Support Specialists	483	7.1%	1.29	20.58	0.85
15-1133	Software Developers, Systems Software	473	6.9%	1.30	33.71	0.66
15-1131	Computer Programmers	365	5.3%	1.18	35.80	0.94
15-1121	Computer Systems Analysts	317	4.6%	0.70	32.95	0.79
11-3021	Computer & Info. Systems Managers	248	3.6%	1.21	49.15	0.74
41-4011	Sales Reps., Whls. & Mfg., Tech. & Scientific	248	3.6%	2.37	28.99	0.77
41-3099	Sales Reps., Services, All Other	216	3.2%	1.05	20.17	0.81
15-1142	Network & Computer Systems Admin.	194	2.8%	0.92	31.27	0.81
15-1122	Information Security Analysts	180	2.6%	0.75	34.26	0.75
43-4051	Customer Service Representatives	159	2.3%	1.03	14.94	0.94
15-1134	Web Developers	155	2.3%	1.23	25.25	0.90
11-1021	General & Operations Managers	154	2.2%	1.07	40.19	0.84
15-1199	Computer Occupations, All Other	131	1.9%	0.81	38.25	0.92
13-2099	Financial Specialists, All Other	111	1.6%	0.57	34.33	1.04
15-1152	Computer Network Support Specialists	106	1.5%	1.19	28.60	0.95
13-1161	Market Research Analysts & Mktng. Specialists	84	1.2%	0.76	25.12	0.83
15-1111	Computer & Info. Research Scientists	84	1.2%	1.30	40.97	0.74
13-1111	Management Analysts	81	1.2%	0.60	34.24	0.93
15-1141	Database Administrators	79	1.2%	1.09	30.53	0.73
15-1143	Computer Network Architects	70	1.0%	0.66	41.88	0.84
41-3011	Advertising Sales Agents	64	0.9%	1.67	23.60	0.98
43-9061	Office Clerks, General	62	0.9%	0.80	13.38	0.88
41-3041	Travel Agents	61	0.9%	1.74	16.21	0.93
43-6014	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	60	0.9%	1.16	15.39	0.90

Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.

Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

WEATHER TECHNOLOGY

*Atmospheric science is the study of the physics and chemistry of clouds, gases, and aerosols (airborne particles) that surround the planetary bodies of the solar system. Research in atmospheric science includes such varied areas of interest as climatology, dynamic meteorology, cloud physics, atmospheric chemistry, atmospheric physics, aeronomy, and oceanography. Most atmospheric scientists study the atmosphere of the Earth, while others study the atmospheres of the planets and moons in our solar system.**

WHERE WEATHER TECHNOLOGY BEGINS

The National Oceanic and Atmospheric Administration (NOAA) is an agency within the US Department of Commerce. NOAA's mission is "to understand and predict changes in climate, weather, oceans and coasts; to share that knowledge and information with others; and to conserve and manage coastal and marine ecosystems and resources." Included among the agency's focus areas are weather, climate, satellites, and research. Much of the private sector's work in weather technology and forecasting begins with NOAA. The agency actively partners with the private sector and academia. Through its history, NOAA has guided the development of the scientific and commercial infrastructure of the US.

MAJOR INVESTORS IN WEATHER TECH

FIRM	HEADQUARTERS
Canaan Partners	Menlo Park, California
RRE Ventures	New York, New York
Lux Capital	Menlo Park, California
True Ventures	Palo Alto, California
Promus Ventures	San Francisco, California
Fontinalis Partners	Detroit, Michigan
Square Peg Capital	Melbourne, Australia
4490 Ventures	Madison, Wisconsin
Evergry Ventures	Kansas City, Missouri
SoftBank	Tokyo, Japan
Social Capital	Palo Alto, California
Bessemer Venture Partners	Menlo Park, California

INSTITUTIONS ACTIVE IN WEATHER TECH RESEARCH

- University of Oklahoma, National Weather Center
- Oklahoma State University, Unmanned Systems Research Institute
- University of Oklahoma, Cooperative Institute for Mesoscale Meteorological Studies
- University of Oklahoma, Advanced Radar Research Center
- University of Colorado, Laboratory for Atmospheric and Space Physics
- Texas Tech University, Climate Science Center
- Columbia University, International Research Institute for Climate and Society
- Center for Severe Weather Research (Boulder, Colorado)
- NOAA National Severe Storms Laboratory (Norman, Oklahoma)

15%

of all US job postings in 2018 that mentioned the words "weather science research" were in five cities.

- Boulder, Colorado
- Fayetteville, Arkansas
- Seattle, Washington
- Westminster, Colorado
- San Diego, California

REMOTE SENSING IMAGING SYSTEMS INSTRUMENTATION

Frequently requested "hard skills" needed for weather technology employment.

HIRING LEADERS FOR WEATHER TECH JOBS IN 2018

PRIVATE
SECTOR



CIVILIAN



MILITARY

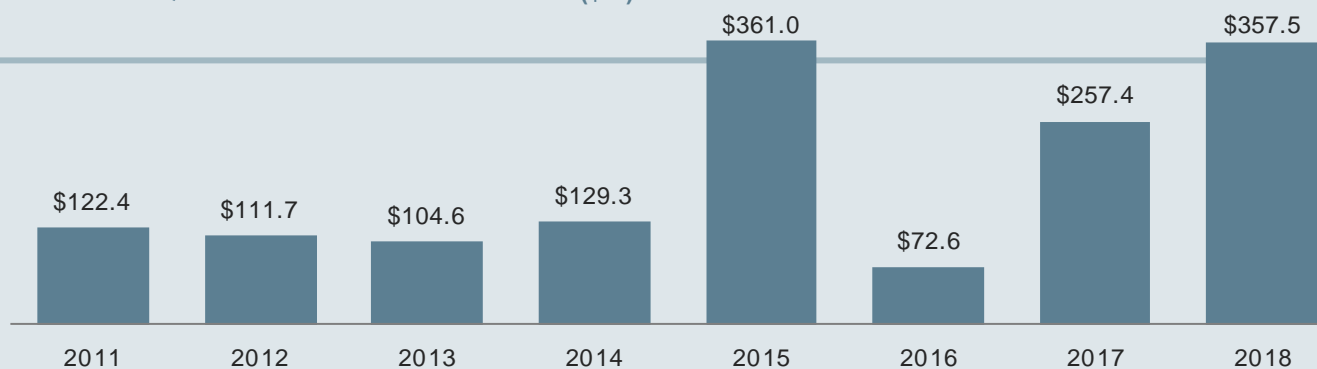


ACADEMIC



* NASA Langley Research Center.

VENTURE EQUITY INTO US WEATHER TECH (\$M)



AMONG THE BEST-FUNDED WEATHER-TECH STARTUPS

STARTUP FIRM	FOUNDED	HEADQUARTERS	CUMULATIVE EQUITY FUNDING (\$M)
Spire Global Inc.	2012	San Francisco, California	\$137.5
Loon	2013	Mountain View, California	\$125.0
Saildrone	2012	Alameda, California	\$88.5
ClimaCell	2015	Boston, Massachusetts	\$75.0
Aeva	2016	Mountain View, California	\$48.5
Descartes Labs	2014	Santa Fe, New Mexico	\$38.3
Jupiter Intelligence	2017	San Mateo, California	\$33.0
BuildingIQ	2009	San Mateo, California	\$23.8
Understory	2012	Madison, Wisconsin	\$22.2

RECENT WEATHER-TECH ACQUISITIONS

ACQUIRING FIRM	ACQUISITION TARGET	ANNOUNCED	PRICE (\$M)
Monsanto	The Climate Corporation	2013	\$930.0
Entertainment Studios	The Weather Channel	2018	\$300.0
General Atlantic	MeteoGroup	2013	\$261.5
AMETEK	Atlas Material Testing Technology LLC	2010	\$159.0
QLogic	PathScale	2006	\$109.0
Garmin	Digital Cyclone	2007	\$45.0
Measurement Specialties	Humirel	2004	\$25.3
UrtheCast	Geosys	2018	\$20.0

NOTABLE RECENT EXPANSIONS OF FIRMS INVOLVED IN WEATHER TECH

FIRM	HEADQUARTERS	EXPANSION	YEAR	JOBS	CAPEX (\$M)
Spire Global Inc.	San Francisco, California	Boulder, Colorado	2018	40	\$5.0
Vaisala	Vantaa, Finland	Louisville, Colorado	2018	58	\$12.7
The Weather Company	Armonk, New York	Atlanta, Georgia	2016	400	\$21.7
Climate Corporation	San Francisco, California	Seattle, Washington	2012	57	\$5.6
AccuWeather	State College, Pennsylvania	New York, New York	2009	15	\$5.7

Sources: NASA Langley Research Center; National Oceanic and Atmospheric Administration (NOAA); Crunchbase; fDi Markets; Gartner TalentNeuron; TIP Strategies.

SHARED SERVICES AND BACK OFFICE

FIGURE 18. TARGET SNAPSHOT

ACOG 4-COUNTY REGION	TOTAL	TARGET
2018 Payrolled Business Locations	37,838	1,110
2018 Employment	650,228	30,553
Net Chg., 2008–2018	+49,426	+4,884
Pct. Chg., 2008–2018	+8.2%	+19.0%

FIGURE 20. EMPLOYMENT OUTLOOK

US OVERALL	TOTAL	TARGET
Net Chg., 2018–2023	+9,227,150	+440,607
Pct. Chg., 2018–2023	+5.7%	+7.7%
ACOG 4-COUNTY REGION	TOTAL	TARGET
Net Chg., 2018–2023	+30,266	+3,131
Pct. Chg., 2018–2023	+4.7%	+10.2%

FIGURE 21. TARGET COMPONENTS ANNUAL EMPLOYMENT

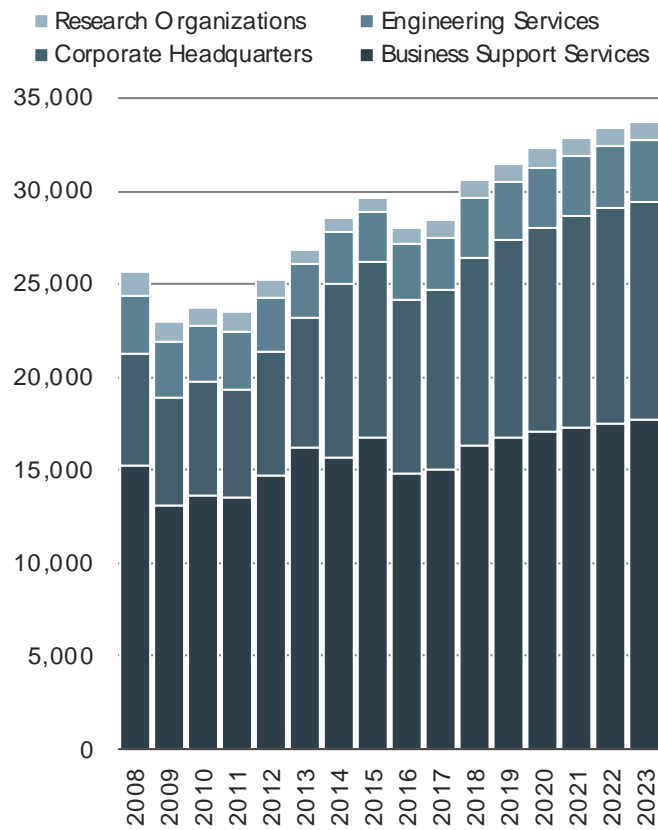


FIGURE 19. TARGET CONCENTRATION TARGET CONCENTRATION

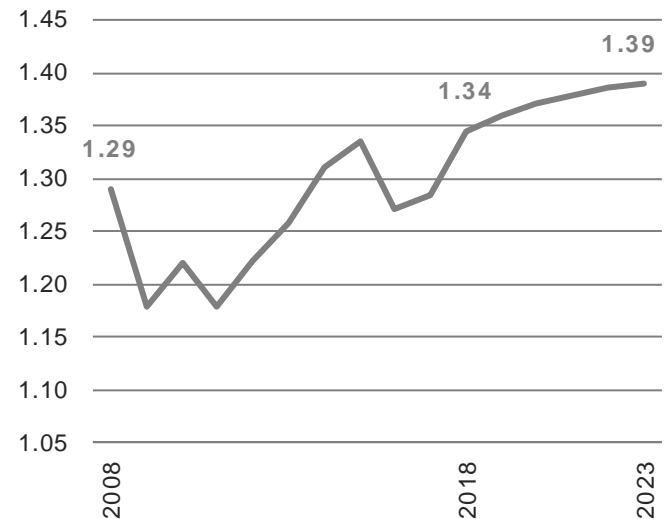
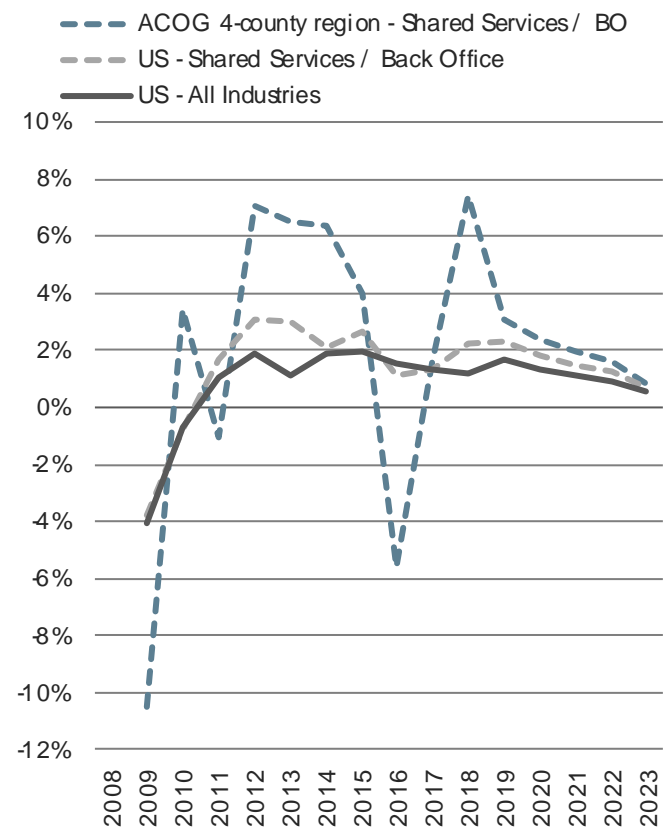


FIGURE 22. TARGET GROWTH ANNUAL PERCENT CHANGE IN EMPLOYMENT



Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.
 Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

FIGURE 23. TARGET STAFFING PROFILE

LQs & RELATIVE EARNINGS: **BELOW AVG** →  ← **ABOVE AVG**

STANDARD OCCUPATIONAL CLASSIFICATION		EMPLOYMENT			EARNINGS	
Code	Description	2018 Jobs	% of Target	LQ (US= 1.00)	Local Hourly Median	Relative to US (US=1.00)
43-4051	Customer Service Representatives	2,205	6.0%	1.51	14.94	0.94
13-2011	Accountants & Auditors	1,370	3.7%	1.52	30.27	0.93
43-3031	Bookkeeping, Accounting, & Auditing Clerks	1,003	2.7%	1.65	17.90	0.95
11-1021	General & Operations Managers	860	2.3%	1.12	40.19	0.84
43-3011	Bill & Account Collectors	855	2.3%	2.24	16.18	0.95
43-1011	First-Line Supvsr., Office & Admin. Support	804	2.2%	1.72	24.82	0.94
43-6014	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	802	2.2%	1.42	15.39	0.90
53-7062	Laborers/Freight, Stock, & Material Movers, Hand	739	2.0%	2.46	13.47	1.03
43-9061	Office Clerks, General	688	1.9%	1.12	13.38	0.88
13-1071	Human Resources Specialists	525	1.4%	1.33	24.72	0.84
41-3099	Sales Reps., Services, All Other	519	1.4%	1.43	20.17	0.81
11-3031	Financial Managers	496	1.4%	1.16	45.17	0.77
43-6011	Exec. Secretaries/Admin. Assistants	449	1.2%	1.50	21.18	0.77
17-2051	Civil Engineers	428	1.2%	0.43	39.30	0.98
41-9041	Telemarketers	416	1.1%	1.29	9.91	0.84
17-2031	Biomedical Engineers	409	1.1%	0.48	69.91	1.65
17-1022	Surveyors	392	1.1%	0.46	21.65	0.75
15-1151	Computer User Support Specialists	387	1.1%	1.34	20.58	0.85
13-1161	Market Research Analysts & Mktng. Specialists	343	0.9%	0.74	25.12	0.83
15-1132	Software Developers, Applications	327	0.9%	0.85	41.53	0.86
43-5081	Stock Clerks & Order Fillers	315	0.9%	1.14	11.27	0.96
17-2141	Mechanical Engineers	313	0.9%	0.53	39.14	0.95
37-2011	Janitors & Cleaners, Exc. Maids & Housekeepers	302	0.8%	1.46	10.97	0.90
15-1133	Software Developers, Systems Software	295	0.8%	1.05	33.71	0.66
11-1011	Chief Executives	294	0.8%	2.16	63.43	0.88

Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.

Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

ADVANCED MANUFACTURING

FIGURE 24. TARGET SNAPSHOT

ACOG 4-COUNTY REGION	TOTAL	TARGET
2018 Payrolled Business Locations	37,838	212
2018 Employment	650,228	10,660
Net Chg., 2008–2018	+49,426	-1,530
Pct. Chg., 2008–2018	+8.2%	-12.6%

FIGURE 26. EMPLOYMENT OUTLOOK

US OVERALL	TOTAL	TARGET
Net Chg., 2018–2023	+9,227,150	+19,163
Pct. Chg., 2018–2023	+5.7%	+0.6%
ACOG 4-COUNTY REGION	TOTAL	TARGET
Net Chg., 2018–2023	+30,266	-218
Pct. Chg., 2018–2023	+4.7%	-2.0%

FIGURE 27. TARGET COMPONENTS ANNUAL EMPLOYMENT

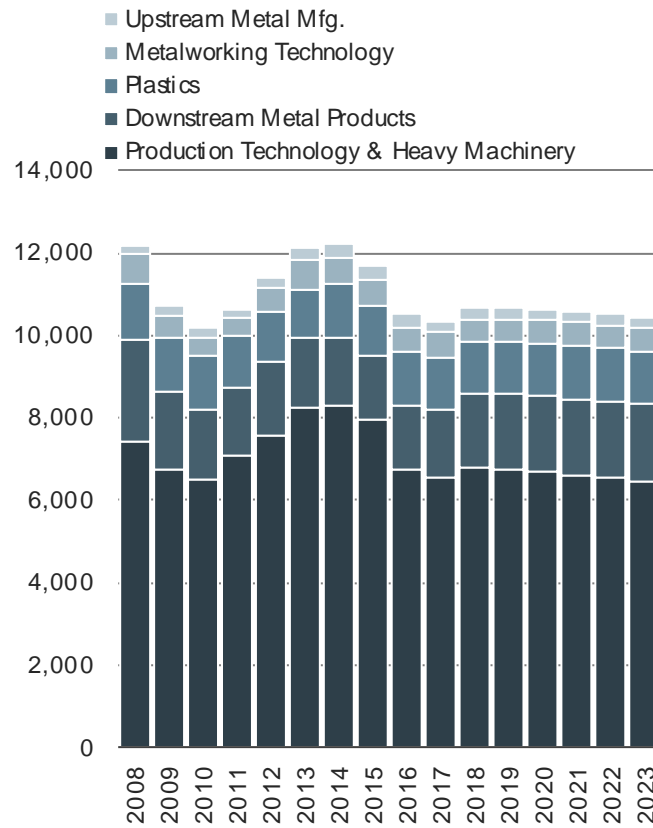


FIGURE 25. TARGET CONCENTRATION TARGET CONCENTRATION

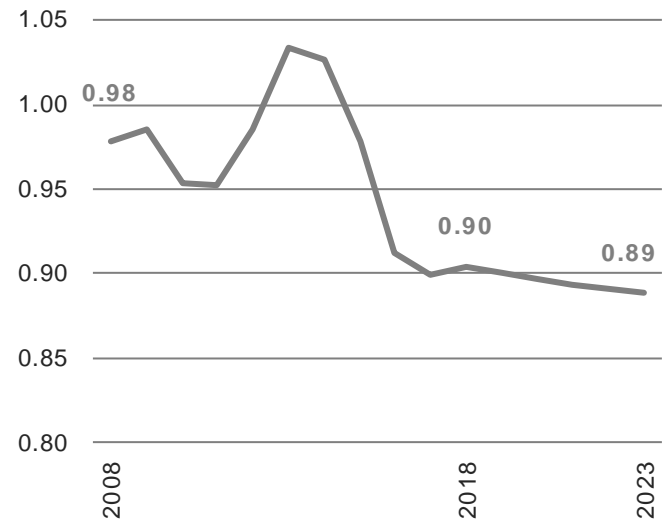
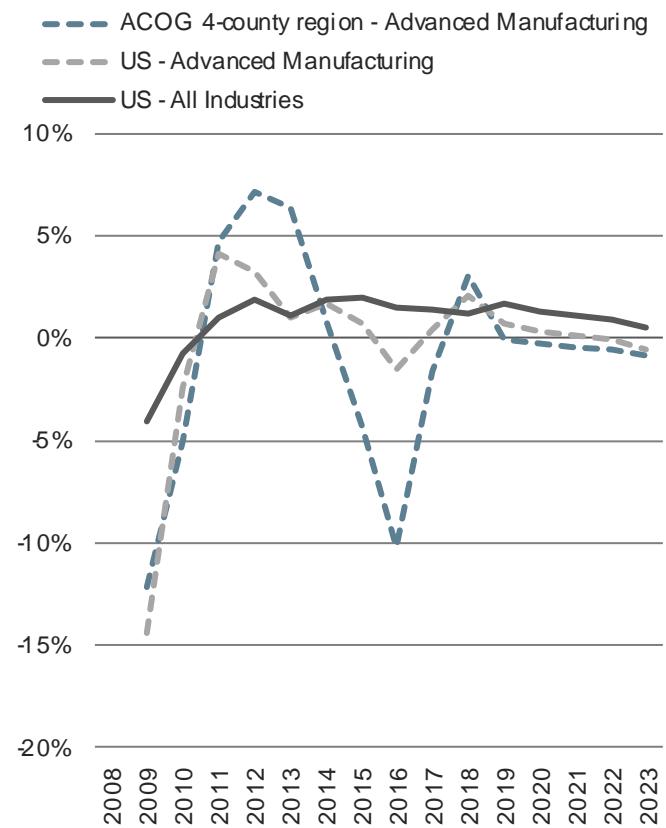


FIGURE 28. TARGET GROWTH ANNUAL PERCENT CHANGE IN EMPLOYMENT



Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.
 Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

FIGURE 29. TARGET STAFFING PROFILE

LQs & RELATIVE EARNINGS: **BELOW AVG** →  ← **ABOVE AVG**

STANDARD OCCUPATIONAL CLASSIFICATION		EMPLOYMENT			EARNINGS	
Code	Description	2018 Jobs	% of Target	LQ (US= 1.00)	Local Hourly Median	Relative to US (US=1.00)
51-4121	Welders, Cutters, Solderers, & Brazers	887	8.3%	1.91	18.30	0.96
51-2098	Assemblers & Fabricators, All Other	829	7.8%	0.96	14.24	0.96
47-2211	Sheet Metal Workers	484	4.6%	7.28	26.98	1.20
51-4041	Machinists	421	4.0%	0.89	24.25	1.19
51-1011	First-Line Supvrs., Production & Operating Workers	412	3.9%	0.95	24.04	0.86
51-4081	Multiple Machine Tool Workers, Metal/Plastic	364	3.4%	1.99	14.94	0.89
51-4011	CNC Machine Operators, Metal/Plastic	278	2.6%	1.13	14.98	0.79
53-7062	Laborers/Freight, Stock, & Material Movers, Hand	265	2.5%	1.04	13.47	1.03
51-4072	Molding, Coremaking, & Casting, Metal/Plastic	260	2.4%	0.80	13.55	0.91
51-4031	Cutting, Punching, & Press Machine, Metal/Plastic	250	2.3%	0.79	15.79	0.99
11-1021	General & Operations Managers	213	2.0%	1.09	40.19	0.84
43-5061	Production, Planning, & Expediting Clerks	211	2.0%	2.05	23.13	1.02
17-2141	Mechanical Engineers	191	1.8%	0.98	39.14	0.95
51-2028	Electrical & Electronic Equip. Assemblers	190	1.8%	2.26	15.57	1.00
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	184	1.7%	0.60	20.02	1.10
43-5071	Shipping, Receiving, & Traffic Clerks	181	1.7%	0.89	15.02	0.98
41-4012	Sales Reps., Whls. & Mfg., Exc. Tech. & Scientific	157	1.5%	0.66	24.04	0.89
11-3051	Industrial Production Managers	150	1.4%	1.12	41.89	0.88
51-2041	Structural Metal Fabricators & Fitters	144	1.4%	1.24	17.31	0.94
49-9041	Industrial Machinery Mechanics	143	1.3%	0.80	24.81	1.01
51-9121	Coating, Painting, & Spraying Machine Workers	142	1.3%	0.97	14.53	0.90
43-4051	Customer Service Representatives	138	1.3%	1.19	14.94	0.94
49-9071	Maintenance & Repair Workers, General	129	1.2%	0.74	15.63	0.87
17-3026	Industrial Engineering Technicians	127	1.2%	2.37	33.36	1.28
17-2112	Industrial Engineers	117	1.1%	0.70	43.57	1.06

Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.

Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

LOGISTICS

FIGURE 30. TARGET SNAPSHOT

ACOG 4-COUNTY REGION	TOTAL	TARGET
2018 Payrolled Business Locations	37,838	2,726
2018 Employment	650,228	30,655
Net Chg., 2008–2018	+49,426	+6,052
Pct. Chg., 2008–2018	+8.2%	+24.6%

FIGURE 32. EMPLOYMENT OUTLOOK

US OVERALL	TOTAL	TARGET
Net Chg., 2018–2023	+9,227,150	+466,784
Pct. Chg., 2018–2023	+5.7%	+5.7%
ACOG 4-COUNTY REGION	TOTAL	TARGET
Net Chg., 2018–2023	+30,266	+3,229
Pct. Chg., 2018–2023	+4.7%	+10.5%

FIGURE 33. TARGET COMPONENTS ANNUAL EMPLOYMENT

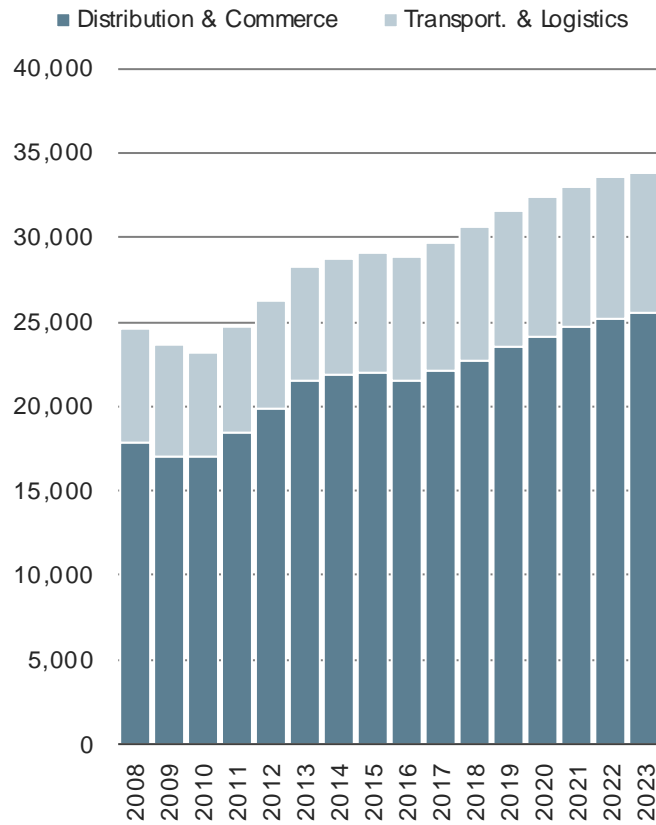


FIGURE 31. TARGET CONCENTRATION TARGET CONCENTRATION

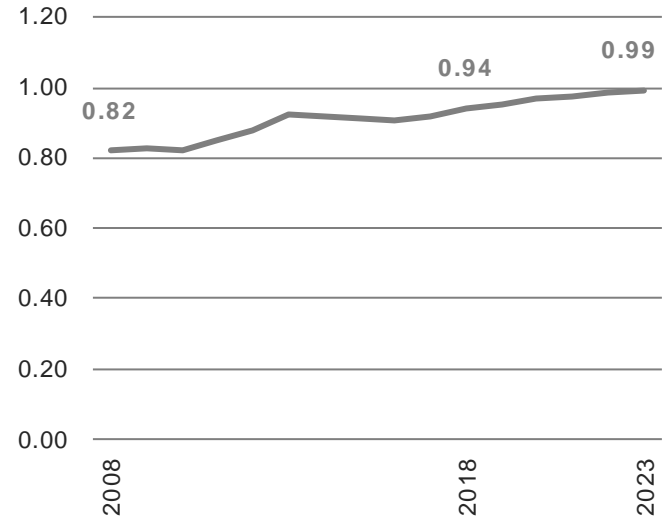
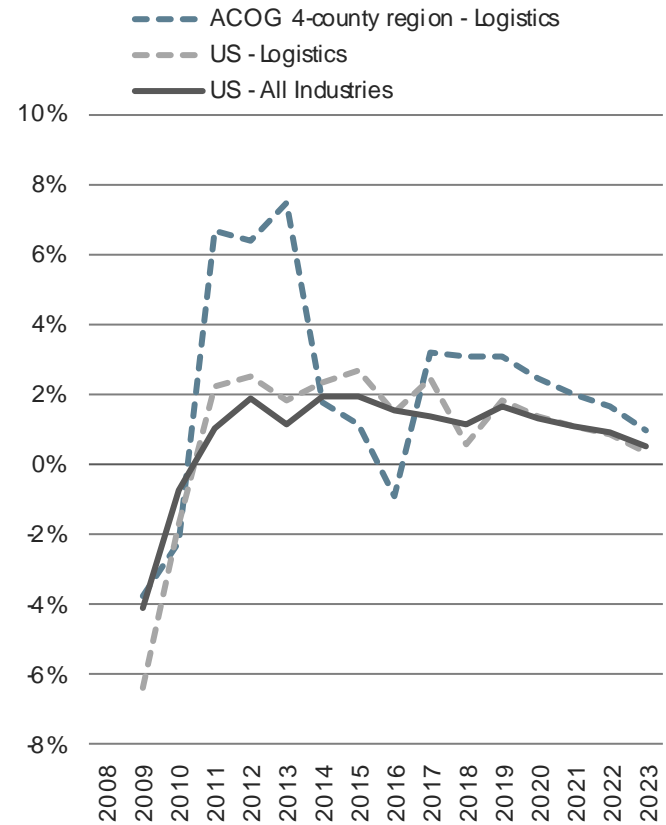


FIGURE 34. TARGET GROWTH ANNUAL PERCENT CHANGE IN EMPLOYMENT



Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.
 Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

FIGURE 35. TARGET STAFFING PROFILE

LQs & RELATIVE EARNINGS: **BELOW AVG** →  ← **ABOVE AVG**

STANDARD OCCUPATIONAL CLASSIFICATION		EMPLOYMENT			EARNINGS	
Code	Description	2018 Jobs	% of Target	LQ (US= 1.00)	Local Hourly Median	Relative to US (US=1.00)
53-3032	Heavy & Tractor-Trailer Truck Drivers	3,698	12.1%	1.38	19.38	0.98
53-7062	Laborers/Freight, Stock, & Material Movers, Hand	2,975	9.7%	1.08	13.47	1.03
41-4012	Sales Reps., Whls. & Mfg., Exc. Tech. & Scientific	1,899	6.2%	0.74	24.04	0.89
41-4011	Sales Reps., Whls. & Mfg., Tech. & Scientific	1,623	5.3%	2.46	28.99	0.77
43-4051	Customer Service Representatives	1,073	3.5%	0.91	14.94	0.94
49-3011	Aircraft Mechanics & Service Technicians	981	3.2%	3.41	26.76	0.91
43-5081	Stock Clerks & Order Fillers	894	2.9%	0.94	11.27	0.96
11-1021	General & Operations Managers	856	2.8%	1.14	40.19	0.84
53-7051	Industrial Truck & Tractor Operators	727	2.4%	0.81	17.45	1.08
43-5071	Shipping, Receiving, & Traffic Clerks	689	2.2%	0.86	15.02	0.98
43-9061	Office Clerks, General	646	2.1%	0.91	13.38	0.88
53-3033	Light Truck or Delivery Services Drivers	612	2.0%	1.02	15.76	1.05
43-3031	Bookkeeping, Accounting, & Auditing Clerks	532	1.7%	1.16	17.90	0.95
43-1011	First-Line Supvsr., Office & Admin. Support	515	1.7%	1.17	24.82	0.94
43-6014	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	494	1.6%	1.21	15.39	0.90
41-1012	First-Line Supvsr., Non-Retail Sales Workers	484	1.6%	1.55	24.17	0.90
53-1048	First-Line Supvsr., Transp. & Material-Moving Ops.	452	1.5%	0.94	23.77	0.92
53-7064	Packers & Packagers, Hand	366	1.2%	0.62	10.58	0.94
43-5061	Production, Planning, & Expediting Clerks	293	1.0%	1.72	23.13	1.02
41-3099	Sales Reps., Services, All Other	267	0.9%	0.96	20.17	0.81
49-9071	Maintenance & Repair Workers, General	253	0.8%	1.04	15.63	0.87
11-2022	Sales Managers	251	0.8%	1.00	41.40	0.73
49-9041	Industrial Machinery Mechanics	251	0.8%	1.58	24.81	1.01
49-3042	Mobile Heavy Equip. Mechanics, Except Engines	246	0.8%	1.39	20.87	0.87
13-1028	Buyers and Purchasing Agents	239	0.8%	1.04	28.57	0.98

Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.

Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

LIFE SCIENCE AND BIOTECHNOLOGY

FIGURE 36. TARGET SNAPSHOT

ACOG 4-COUNTY REGION	TOTAL	TARGET
2018 Payrolled Business Locations	37,838	29
2018 Employment	650,228	1,061
Net Chg., 2008–2018	+49,426	+461
Pct. Chg., 2008–2018	+8.2%	+76.8%

FIGURE 38. EMPLOYMENT OUTLOOK

US OVERALL	TOTAL	TARGET
Net Chg., 2018–2023	+9,227,150	+20,073
Pct. Chg., 2018–2023	+5.7%	+3.4%
ACOG 4-COUNTY REGION	TOTAL	TARGET
Net Chg., 2018–2023	+30,266	+155
Pct. Chg., 2018–2023	+4.7%	+14.6%

FIGURE 39. TARGET COMPONENTS ANNUAL EMPLOYMENT

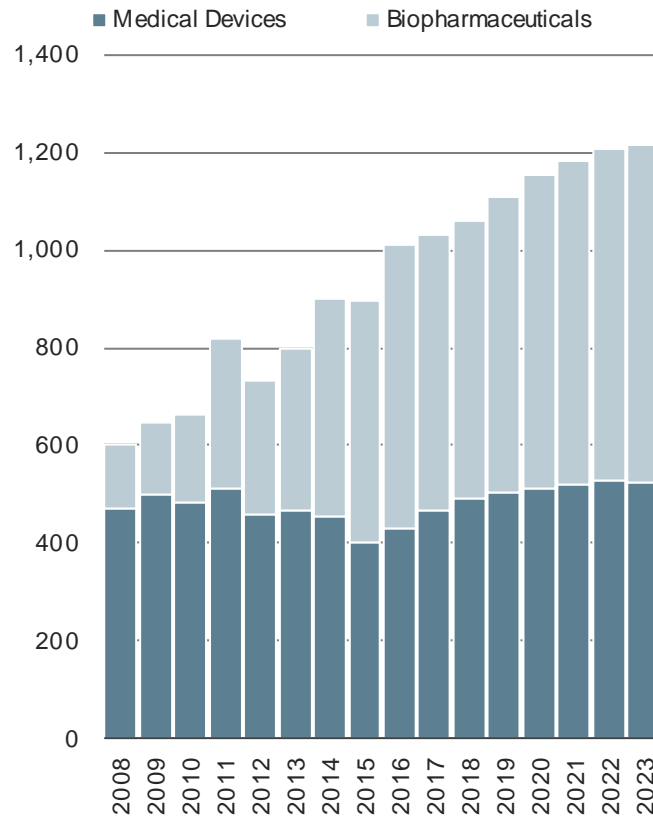


FIGURE 37. TARGET CONCENTRATION TARGET CONCENTRATION

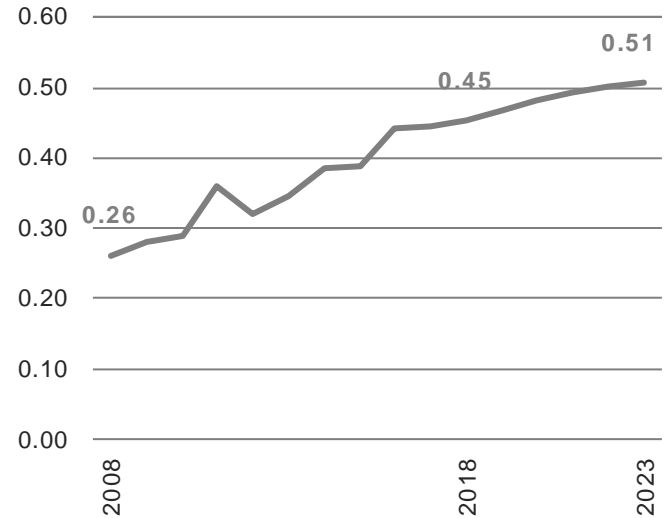
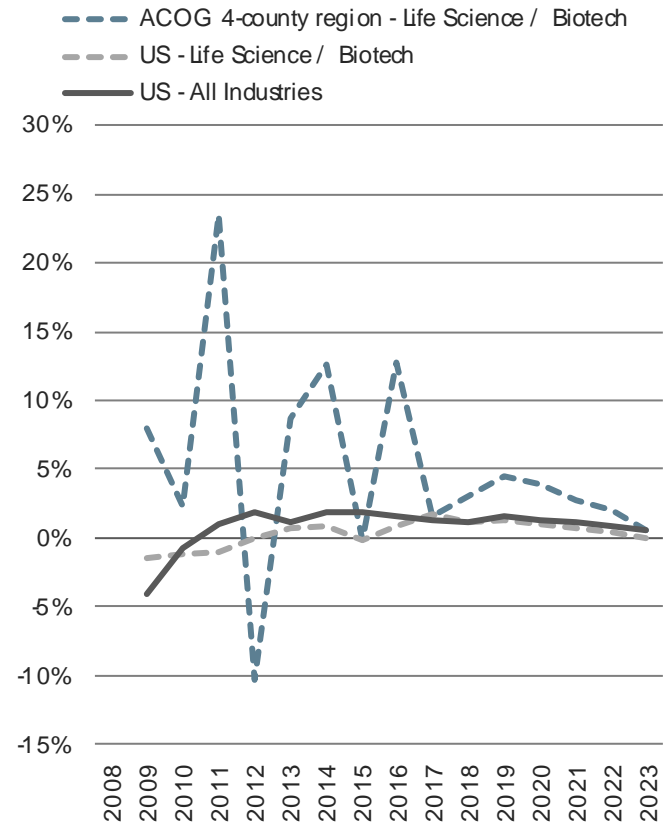


FIGURE 40. TARGET GROWTH ANNUAL PERCENT CHANGE IN EMPLOYMENT



Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.
 Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

FIGURE 41. TARGET STAFFING PROFILE

LQs & RELATIVE EARNINGS: **BELOW AVG** →  ← **ABOVE AVG**

STANDARD OCCUPATIONAL CLASSIFICATION		EMPLOYMENT			EARNINGS	
Code	Description	2018 Jobs	% of Target	LQ (US= 1.00)	Local Hourly Median	Relative to US (US=1.00)
41-4011	Sales Reps., Whls. & Mfg., Tech. & Scientific	62	5.9%	2.82	28.99	0.77
51-9081	Dental Laboratory Technicians	54	5.0%	1.18	18.76	0.97
51-2098	Assemblers & Fabricators, All Other	51	4.8%	0.81	14.24	0.96
51-9111	Packaging & Filling Machine Workers	43	4.0%	0.84	12.31	0.87
51-1011	First-Line Supvrs., Production & Operating Workers	40	3.8%	1.19	24.04	0.86
51-9011	Chemical Equipment Workers	40	3.8%	2.07	15.96	0.69
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	37	3.5%	0.83	20.02	1.10
51-2028	Electrical & Electronic Equip. Assemblers	22	2.1%	1.57	15.57	1.00
51-9023	Mixing & Blending Machine Workers	22	2.0%	0.83	16.06	0.91
19-2031	Chemists	20	1.9%	0.64	33.64	0.94
11-1021	General & Operations Managers	20	1.9%	1.11	40.19	0.84
11-3051	Industrial Production Managers	19	1.7%	1.26	41.89	0.88
43-4051	Customer Service Representatives	18	1.7%	1.04	14.94	0.94
43-5061	Production, Planning, & Expediting Clerks	18	1.7%	1.70	23.13	1.02
53-7062	Laborers/Freight, Stock, & Material Movers, Hand	18	1.7%	1.06	13.47	1.03
17-2112	Industrial Engineers	17	1.6%	0.64	43.57	1.06
19-4031	Chemical Technicians	17	1.6%	1.40	20.40	0.90
51-4081	Multiple Machine Tool Workers, Metal/Plastic	17	1.6%	2.13	14.94	0.89
17-3026	Industrial Engineering Technicians	15	1.4%	1.65	33.36	1.28
11-9199	Managers, All Other	14	1.3%	1.12	22.65	0.86
43-5071	Shipping, Receiving, & Traffic Clerks	14	1.3%	0.91	15.02	0.98
49-9071	Maintenance & Repair Workers, General	13	1.3%	1.05	15.63	0.87
49-9041	Industrial Machinery Mechanics	12	1.2%	1.02	24.81	1.01
51-4041	Machinists	12	1.1%	0.95	24.25	1.19
43-6014	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	12	1.1%	1.24	15.39	0.90

Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.

Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

ENERGY

FIGURE 42. TARGET SNAPSHOT

ACOG 4-COUNTY REGION	TOTAL	TARGET
2018 Payrolled Business Locations	37,838	1,479
2018 Employment	650,228	24,464
Net Chg., 2008–2018	+49,426	+4,276
Pct. Chg., 2008–2018	+8.2%	+21.2%

FIGURE 44. EMPLOYMENT OUTLOOK

US OVERALL	TOTAL	TARGET
Net Chg., 2018–2023	+9,227,150	+61,286
Pct. Chg., 2018–2023	+5.7%	+4.7%
ACOG 4-COUNTY REGION	TOTAL	TARGET
Net Chg., 2018–2023	+30,266	+5,791
Pct. Chg., 2018–2023	+4.7%	+23.7%

FIGURE 45. TARGET COMPONENTS ANNUAL EMPLOYMENT

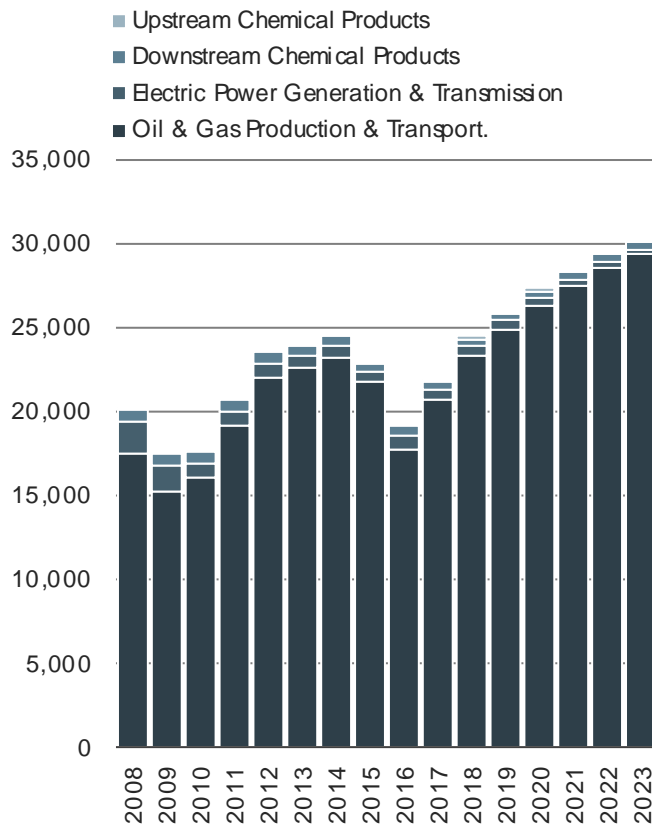


FIGURE 43. TARGET CONCENTRATION TARGET CONCENTRATION

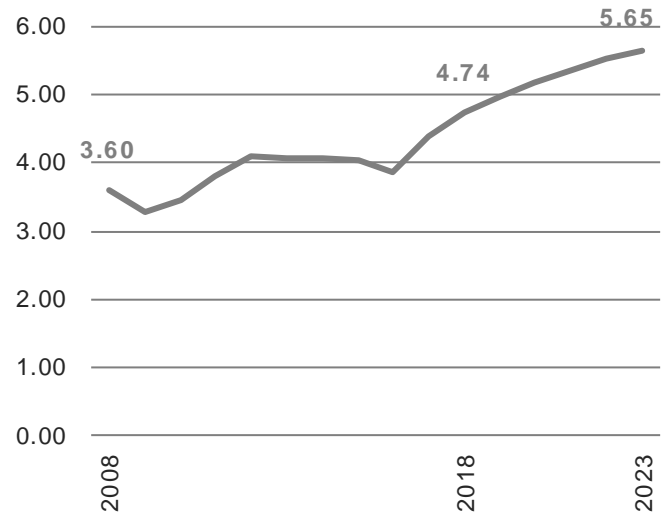
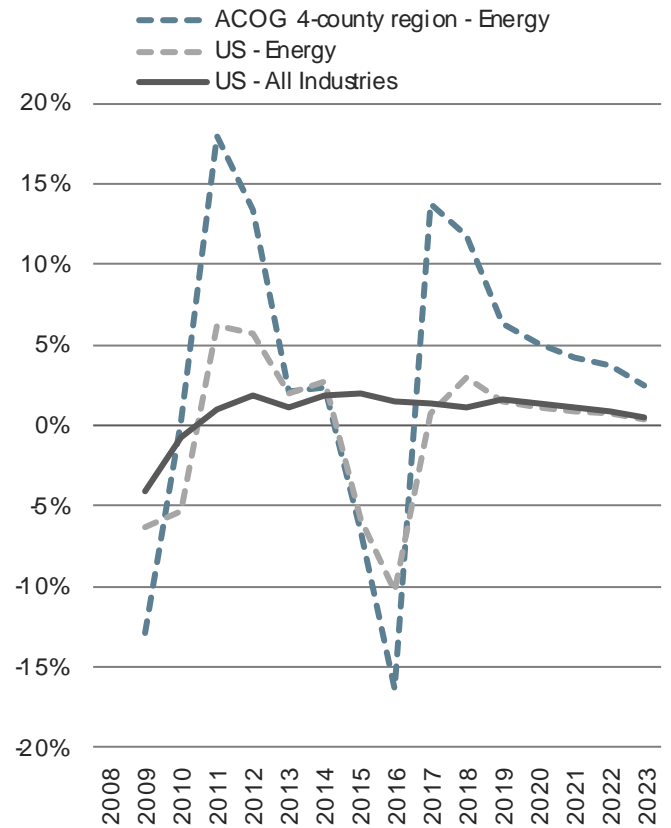


FIGURE 46. TARGET GROWTH ANNUAL PERCENT CHANGE IN EMPLOYMENT



Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.
 Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.

FIGURE 47. TARGET STAFFING PROFILE

LQs & RELATIVE EARNINGS: **BELOW AVG** →  ← **ABOVE AVG**

STANDARD OCCUPATIONAL CLASSIFICATION		EMPLOYMENT			EARNINGS	
Code	Description	2018 Jobs	% of Target	LQ (US= 1.00)	Local Hourly Median	Relative to US (US=1.00)
47-5071	Roustabouts, Oil & Gas	1,521	6.2%	1.83	19.36	1.09
47-1011	First-Line Supvsr., Constr. Trades & Extraction	1,131	4.6%	2.43	28.16	0.98
53-3032	Heavy & Tractor-Trailer Truck Drivers	926	3.8%	1.48	19.38	0.98
17-2171	Petroleum Engineers	820	3.4%	2.09	52.75	0.83
11-1021	General & Operations Managers	810	3.3%	1.42	40.19	0.84
47-5012	Rotary Drill Operators, Oil & Gas	784	3.2%	2.54	30.80	1.19
47-5013	Service Unit Operators, Oil, Gas, & Mining	675	2.8%	0.92	19.04	0.82
19-4041	Geological & Petroleum Technicians	530	2.2%	3.84	19.29	0.74
47-5011	Derrick Operators, Oil & Gas	515	2.1%	2.63	23.89	1.08
49-9041	Industrial Machinery Mechanics	510	2.1%	0.82	24.81	1.01
13-2011	Accountants & Auditors	475	1.9%	1.29	30.27	0.93
43-6014	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	458	1.9%	1.48	15.39	0.90
43-9061	Office Clerks, General	431	1.8%	1.12	13.38	0.88
43-3031	Bookkeeping, Accounting, & Auditing Clerks	402	1.6%	1.65	17.90	0.95
51-4121	Welders, Cutters, Solderers, & Brazers	387	1.6%	1.79	18.30	0.96
41-9022	Real Estate Sales Agents	366	1.5%	6.22	18.36	0.93
19-2042	Geoscientists, Except Hydrologists & Geographers	356	1.5%	2.74	53.28	1.20
53-7062	Laborers/Freight, Stock, & Material Movers, Hand	312	1.3%	0.83	13.47	1.03
51-1011	First-Line Supvsr., Production & Operating Workers	289	1.2%	0.43	24.04	0.86
47-2073	Operating Eng. & Other Constr. Equip. Operators	266	1.1%	1.51	18.72	0.84
53-7072	Pump Operators, Except Wellhead Pumpers	265	1.1%	1.59	22.42	1.05
43-5061	Production, Planning, & Expediting Clerks	248	1.0%	1.40	23.13	1.02
47-5081	Helpers--Extraction Workers	246	1.0%	1.22	17.51	1.02
11-9141	Property, Real Estate, & Community Assoc. Mgrs.	245	1.0%	4.01	24.88	1.07
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	233	1.0%	0.65	20.02	1.10

Sources: US Bureau of Labor Statistics; Emsi 2019.2—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Economic Development Administration; Institute for Strategy and Competitiveness at Harvard Business School; TIP Strategies.

Note: The cluster methodology developed at Harvard Business School has been adjusted by TIP Strategies to align with the six-digit NAICS classifications used by Emsi.



COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY
ECONOMIC ASSESSMENT
SEPTEMBER 2019

3



II. ECONOMIC ASSESSMENT

INTRODUCTION

The four-county Association of Central Oklahoma Governments (ACOG), manages the US Economic Development Administration's (EDA) designated Economic Development District (EDD), referred to as the Capital Area Economic Development District (CAPEDD) of Oklahoma. The CAPEDD region includes Canadian, Cleveland, Logan, and Oklahoma Counties, which fall under ACOG's purview. In order to remain a designated EDD, the region is required to update its Comprehensive Economic Development Strategy (CEDs) every 5 years. ACOG serves the core of the CAPEDD region, the Oklahoma City metro area, and is charged with providing a comprehensive approach to economic growth. Essential to this approach is an economic assessment that provides depth and context—through local data, benchmarking against other regions of the country, and in-depth conversations with community leaders. Furthermore, the assessment can be used for baseline metrics to evaluate changes over time.

The Oklahoma City metro area is in the midst of a major economic restructuring. After years of oil and gas being the primary resource, the region is beginning to see the benefits of diversification, especially through an expanding tech sector. This restructuring, however, is still fragile. Despite record low unemployment rates, higher-paying jobs are lagging and development outside the main population centers is uneven. One of the benefits of the economic assessment and benchmarking exercise is to highlight the intense competition for technology companies and talent being waged nationally. Industry diversification is achieved through the recruitment of new companies and also from a well-trained local workforce. Furthermore, the commitment to quality of place, including the infrastructure and amenities that provide that quality, are essential for attracting business and talent. This is where a comprehensive regional strategy can play a critical role in guiding future economic, development-focused actions and investments.

The key objective for the ACOG region is straightforward: to ensure competitiveness at the national level.

FRAMEWORK

To provide a common framework for recommendations, TIP Strategies conducted a demographic and economic assessment of the ACOG region. The findings presented in this section are based on the following elements.

- A review of relevant studies, plans, and other material provided by ACOG and its regional partners.
- A review of economic and demographic data from primary and secondary sources, including the US Census Bureau, the US Bureau of Labor Statistics, and Economic Modeling Specialists International (Emsi).
- Findings from site visits, interviews, and focus groups with community representatives and stakeholders.
- TIP's 24 years of experience working with communities across the country and compiling best practices.

PURPOSE AND SCOPE

To understand the region's relative economic position and highlight its competitive advantages and disadvantages, TIP conducted a demographic and economic assessment of ACOG's Capital Area Economic Development District (CAPEDD) of Oklahoma, which includes Canadian, Cleveland, Logan, and Oklahoma Counties. As part of the assessment, TIP prepared an analysis of the region's strengths, weaknesses, opportunities, and threats. Results of this exercise, commonly referred to as a SWOT analysis, are presented on page 54.

TIP also prepared statistical comparisons to several peer metropolitan statistical areas: Columbus, Ohio; Kansas City, Missouri; Louisville, Kentucky; Nashville, Tennessee; and Dallas-Fort Worth, Texas. This regional benchmarking helps provide a framework for comparing the Oklahoma City (OKC) region to other communities. These comparisons draw on economic or geographic similarities and also on regions whose successes (and failures) might prove instructive to ACOG.

KEY FINDINGS

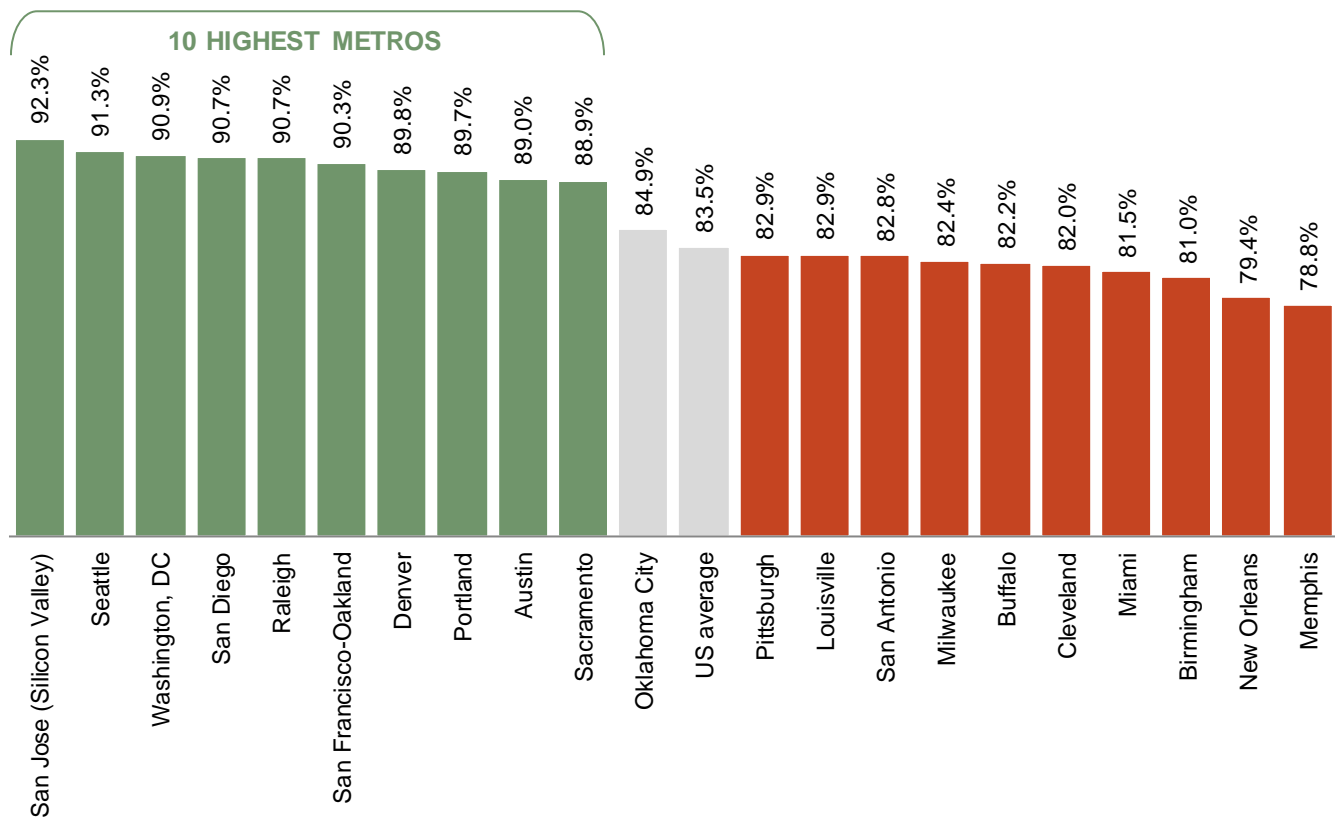
KEY FINDING 1: UNEVEN DEVELOPMENT PATTERNS

GROWTH AND INVESTMENT HAVE NOT BEEN EVENLY DISTRIBUTED ACROSS THE ACOG REGION.

The ACOG region continues to experience rapid change: the population is growing and investment in the region is on the rise. This growth, however, has been unevenly distributed. While the strain on urban infrastructure is already being felt, rural communities are feeling left behind. Examples of development disparities include limited public transit options outside of Oklahoma City, Edmond, and Norman, in addition to inadequate telecommunications and broadband availability. While broadband availability is lower in the rural areas of the region, it is noteworthy that broadband is less accessible in the Oklahoma City Metropolitan Statistical Area (MSA) overall when compared to peer communities. More generally speaking, a lack of employment opportunity outside Oklahoma City is a widely shared perception.

Although the region’s newly formed Regional Transportation Authority (RTA) of Central Oklahoma will work collaboratively to address some of these pressing issues, the current lack of cohesive telecommunications, transportation, and employment center development inhibits opportunities for growth.

FIGURE 48. SHARE OF HOUSEHOLDS WITH BROADBAND ACCESS
THE 10 HIGHEST AND LOWEST RANKING MSAS OUT OF THE 50 LARGEST US METROPOLITAN AREAS



Source: US Census Bureau, American Community Survey, 2017.
Note: The top 50 metropolitan areas were determined based on the total number of households.

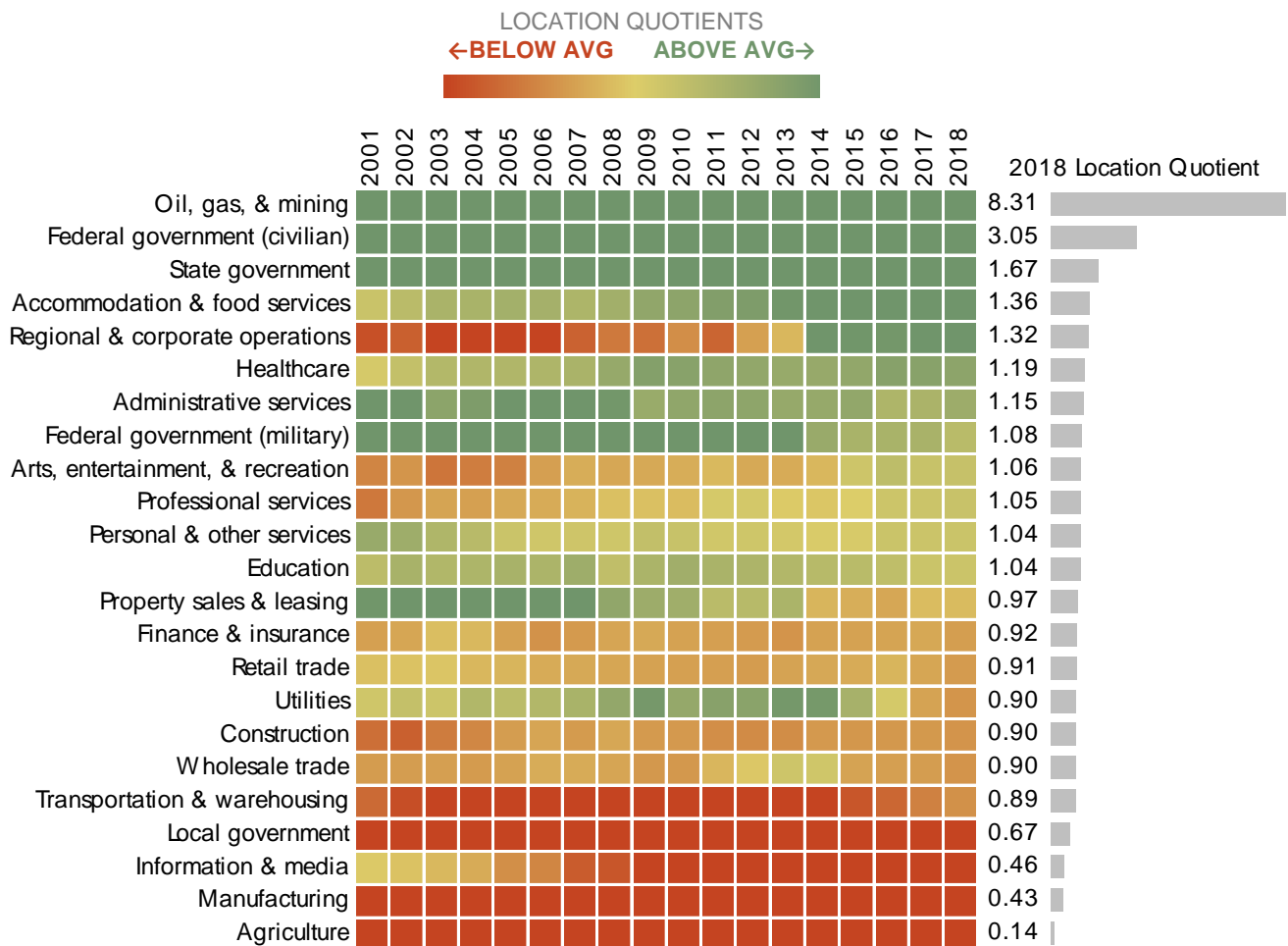
KEY FINDING 2: VULNERABILITY TO ECONOMIC DISRUPTION

THE REGION'S HISTORIC DEPENDENCE ON OIL AND GAS AND CLIMATE-RELATED VULNERABILITIES HAVE BEEN AN IMPEDIMENT TO ECONOMIC GROWTH.

Historically, the ACOG region has been largely dependent on the oil and gas industry for economic growth. That dependence has made the region susceptible to the “boom and bust” cycles that come with a lack of industry diversification. In addition, the region is prone to extreme wind and rainstorms, which are disruptive to business and impede economic growth. Therefore, both strong economic and environmental resiliency plans are critical to the success of the community.

Strategies to diversify the economic base, grow the pool of skilled talent, and equip businesses with the tools to prepare, withstand, and recover from disruption are necessary to move the region forward.

FIGURE 49. ACOG REGION HISTORICAL SECTOR CONCENTRATION AS SHOWN BY LOCATION QUOTIENTS (LQS*)



*For a detailed explanation of LQs, please see page 70.

Source: Emsi 2019.2— QCEW Employees, Non-QCEW Employees, and Self-Employed.

Note: Public sector employment in education (e.g., public schools, colleges, and universities), healthcare, and the US Postal Service are included with applicable private sector industry totals rather than government.

KEY FINDING 3: LAGGING GROWTH IN INNOVATION

WHILE MANY EXCITING INNOVATIONS ARE EMERGING, THE REGION HAS LAGGED BEHIND PEER MARKETS ON INNOVATION-RELATED INDICATORS.

From the Innovation District and Baker Hughes Energy Innovation Center to the University of Oklahoma Tom Love Innovation Hub and the Advanced Radar Research Center, there is enthusiasm about the emerging innovation ecosystem in the ACOG region. However, the region still lags behind peer markets in innovation indicators, such as the number of patents awarded annually. A comparison of the Oklahoma City metropolitan area to the benchmarks selected for this work (Figure 50) reveals that the region’s patent activity fell well below this peer group in 2015, the most recent year for which data are available.

While critical innovation strategies involving university tech transfer and risk capital availability go beyond the scope of this report, they are important findings that need to be noted.

FIGURE 50. NUMBER OF UTILITY PATENT GRANTS, ALL CLASSES, 2015
COMPARISON TO COMPETITIVENESS BENCHMARK METRO AREAS

	OKLAHOMA CITY, OK	NASHVILLE, TN	LOUISVILLE, KY-IN	COLUMBUS, OH	KANSAS CITY, MO-KS	DALLAS-FORT WORTH, TX
	155	220	300	445	816	3,026

Source: US Patent and Trademark Office.

NEXT STEPS

The assessment and benchmarking tasks provide a common foundation for the planning process and help shape the recommendations outlined in the strategic plan. The key findings directly informed the three goals of the Comprehensive Economic Development Strategy (CEDS). Although the findings show weaknesses in the region, they are a necessary call to action if the ACOG region is to be competitive. The CEDS will outline the strategies and actions that need to be taken by ACOG and its regional partners to overcome the challenges identified. This is an exciting time for the region and ACOG is well positioned to coordinate the CEDS implementation efforts.

COMPETITIVENESS BENCHMARKS

As part of the assessment process, a statistical benchmarking exercise was completed to see how the Oklahoma City metropolitan area compares with other communities. The benchmark regions include a combination of competitor markets and similarly sized metros. Input for the benchmark regions was collected during a CEDS Advisory Committee meeting, where members were asked a series of questions to determine what regions Oklahoma City competes with or aspires to be. In addition to the statistical comparison, a list of hallmark projects recently completed in each of these regions that have parallels to Oklahoma City projects are listed.

This feedback, combined with TIP’s expertise in working with communities throughout the US, led to the selection of five benchmark regions.

- Columbus, Ohio
- Dallas-Fort Worth, Texas
- Kansas City, Missouri
- Louisville, Kentucky
- Nashville, Tennessee

A handful of themes emerged from this exercise, all of which helped inform the key findings. First, nearly every benchmark region was attracting people from other states and major metro areas. By contrast, the Oklahoma City MSA’s top three sources for net domestic in-migration were from other parts of Oklahoma (Tulsa, Enid, and Lawton). In addition, the region’s percentage of college-educated workers is also smaller than many of its peer communities.

When looking at the telecom infrastructure, the percentage of households with access to broadband falls behind peer communities. This might not be surprising, given the geographic size of the ACOG region and its many rural communities, but it works to inhibit job growth outside the urban centers. It also limits the possibilities for remote workers who might be seeking a different lifestyle than in more urbanized areas. Finally, the Oklahoma City MSA significantly lags behind other regions in the number of patents awarded annually. With the presence of a major university, this is a major concern, as patents serve as a useful proxy for an innovation-driven economy.

The following pages provide an overview of the statistical comparisons and key projects in each region.

FIGURE 51. SELECTED CHARACTERISTICS

METROPOLITAN STATISTICAL AREA	METRO AREA POPULATION 2018	CENTRAL CITY POPULATION AS SHARE OF MSA	% OF POPULATION AGE 25+ WITH BACHELORS OR HIGHER	UTILITY PATENT GRANTS, ALL CLASSES 2015
Oklahoma City, OK	1,396,445	46.5%	31.0%	155
Columbus, OH	2,106,541	42.4%	35.9%	445
Dallas-Fort Worth, TX	7,539,711	17.8%	34.6%	3,026
Kansas City, MO	2,143,651	22.9%	36.5%	816
Louisville, KY-IN	1,297,301	47.8%	28.8%	300
Nashville, TN	1,930,961	34.6%	36.0%	220

Sources: (Population) US Census Bureau. (Educational attainment) US Census Bureau, American Community Survey, 5-year averages for the period 2013–2017. (Patents) US Patent and Trademark Office.

Note: The Oklahoma City metropolitan statistical area (MSA) was used for this analysis, rather than the ACOG region, to facilitate comparisons with other MSAs.

COLUMBUS, OHIO



MAJOR INITIATIVES

OSU WEST CAMPUS

Ohio State University is developing a master plan for its 300-acre West Campus area, which will include an Energy Advancement and Innovation Center.

SMART CITY

In 2018, the city launched the Smart Columbus Operating System, building further on DriveOhio, a public-private partnership focused on smart mobility projects.

AFFORDABLE HOUSING

The city approved new tax incentives for affordable housing in 2018, and in 2019 voters passed a \$1 billion bond package that included strategies for affordable housing needs.

Sources: (This page) TIP Strategies research. (Following page) US Census Bureau; American Community Survey 2017 (1-year); American Community Survey 2012–2016 (5-year) migration analysis; US Bureau of Economic Analysis; US Current Population Survey (CPS) via Georgia State University and Trinity University analysis; Google Maps; Association of American Railroads; US Federal Aviation Administration; US Bureau of Transportation Statistics, US Patent and Trademark Office.

		OKLAHOMA CITY OKLAHOMA	COLUMBUS OHIO
DEMOGRAPHICS			
Metro area classification		MSA	MSA
Metro area name		Oklahoma City, OK	Columbus, OH
Metro area population	2018	1,396,445	2,106,541
Metro area population	2010	1,257,797	1,906,361
Metro area population, net change	2010-2018	+138,648	+200,180
Metro area population, cumulative percent change	2010-2018	11.0%	10.5%
Central city population	2018	649,021	892,533
Central city population	2010	582,285	790,935
Central city population, net change	2010-2018	+66,736	+101,598
Central city population, cumulative percent change	2010-2018	11.5%	12.8%
Central city share of metro area	2018	46.5%	42.4%
Top 3 MSA sources for net domestic in-migration: #1	2012-2016	Tulsa, OK	Cleveland, OH
	#2	Enid, OK	New York, NY-NJ-PA
	#3	Lawton, OK	Akron, OH
WORKFORCE			
Working age population (age 16+)	2017	1,077,280	1,640,473
Estimated labor force participation rate	2017	65.2%	67.3%
Establishment employment	2017	870,743	1,370,011
Establishment employment	2007	764,900	1,205,643
Establishment employment, net change	2007-2017	+105,843	+164,368
Establishment employment, percent change	2007-2017	13.8%	13.6%
Union coverage rate, private sector only (%)	2018	2.9%	5.8%
Union coverage rate, all jobs (%)	2018	7.7%	13.1%
Percent of pop. 25+ that lacks high school equivalency	2017	10.6%	8.7%
Percent of pop. 25+ with HS diploma or GED, but < 4-year degree	2017	58.4%	55.4%
Percent of pop. 25+ with a 4-year degree or more	2017	31.0%	35.9%
CONNECTIVITY			
Interstate access in the metro area	2019	I-35, I-40, I-44	I-70, I-71
Class 1 railroads in the metro area	2019	UP, BNSF	NS, CSX
Primary metropolitan area airport	2019	Will Rogers World	John Glenn Columbus Int'l.
FAA airport code	2019	OKC	CMH
Number of runways	2019	4	2
Maximum runway length (feet)	2019	9,802	10,113
Top 5 scheduled passenger destinations & market shares: #1	2017	Dallas/Ft Worth (DFW) 15.2%	Atlanta (ATL) 12.4%
	#2	Denver (DEN) 12.5%	Chicago O'Hare (ORD) 8.3%
	#3	Atlanta (ATL) 10.4%	Chicago Midway (MDW) 6.1%
	#4	Houston (IAH) 8.0%	Orlando (MCO) 5.3%
	#5	Dallas Love Field (DAL) 6.9%	Denver (DEN) 4.8%
Top 3 scheduled passenger carriers & market shares: #1	2017	Southwest Airlines 36.6%	Southwest Airlines 38.5%
	#2	American Airlines 12.0%	Republic Airways 15.1%
	#3	SkyWest Airlines 10.6%	Delta Air Lines 11.9%
Percent of households with cellular data plan	2017	76.6%	77.1%
Percent of households with broadband (cable, fiber, or DSL)	2017	64.9%	74.6%
Percent of households with satellite internet service	2017	7.3%	5.5%
INNOVATION			
Utility patent grants, all classes	2015	155	445

DALLAS-FORT WORTH, TEXAS



MAJOR INITIATIVES

AIRPORT

DFW Airport plans to spend more than \$3 billion to build a sixth terminal, something deemed necessary as the airport nears 100 million annual passengers in the decade ahead.

PUBLIC TRANSIT

The Dallas area has the largest light rail system in the US. Major commuter rail projects either recently completed or underway to improve access to DFW Airport include Fort Worth's TEXRail Line and DART's Silver Line (Cotton Belt) to Plano and the north Dallas suburbs.

MEDICAL DISTRICTS

In 2015, Dallas replaced Parkland, its primary public hospital, and consolidated a medical district north of downtown that includes UT Southwestern Medical School; in Fort Worth, the new TCU and UNTHSC School of Medicine anchors the medical innovation district just south of downtown Fort Worth.

Sources: (This page) TIP Strategies research. (Following page) US Census Bureau; American Community Survey 2017 (1-year); American Community Survey 2012–2016 (5-year) migration analysis; US Bureau of Economic Analysis; US Current Population Survey (CPS) via Georgia State University and Trinity University analysis; Google Maps; Association of American Railroads; US Federal Aviation Administration; US Bureau of Transportation Statistics, US Patent and Trademark Office.

		OKLAHOMA CITY OKLAHOMA	DALLAS-FORT WORTH TEXAS
DEMOGRAPHICS			
Metro area classification		MSA	MSA
Metro area name		Oklahoma City, OK	Dallas-Fort Worth-Arlington, TX
Metro area population	2018	1,396,445	7,539,711
Metro area population	2010	1,257,797	6,452,028
Metro area population, net change	2010-2018	+138,648	+1,087,683
Metro area population, cumulative percent change	2010-2018	11.0%	16.9%
Central city population	2018	649,021	1,345,047
Central city population	2010	582,285	1,200,372
Central city population, net change	2010-2018	+66,736	+144,675
Central city population, cumulative percent change	2010-2018	11.5%	12.1%
Central city share of metro area	2018	46.5%	17.8%
Top 3 MSA sources for net domestic in-migration: #1	2012-2016	Tulsa, OK	Los Angeles, CA
	#2	Enid, OK	New York, NY-NJ-PA
	#3	Lawton, OK	Chicago, IL-IN-WI
WORKFORCE			
Working age population (age 16+)	2017	1,077,280	5,684,361
Estimated labor force participation rate	2017	65.2%	68.4%
Establishment employment	2017	870,743	4,947,059
Establishment employment	2007	764,900	3,942,822
Establishment employment, net change	2007-2017	+105,843	+1,004,237
Establishment employment, percent change	2007-2017	13.8%	25.5%
Union coverage rate, private sector only (%)	2018	2.9%	4.3%
Union coverage rate, all jobs (%)	2018	7.7%	5.8%
Percent of pop. 25+ that lacks high school equivalency	2017	10.6%	14.6%
Percent of pop. 25+ with HS diploma or GED, but < 4-year degree	2017	58.4%	50.8%
Percent of pop. 25+ with a 4-year degree or more	2017	31.0%	34.6%
CONNECTIVITY			
Interstate access in the metro area	2019	I-35, I-40, I-44	I-20, I-30, I-35, I-45
Class 1 railroads in the metro area	2019	UP, BNSF	UP, BNSF, KCS
Primary metropolitan area airport	2019	Will Rogers World	Dallas-Fort Worth International
FAA airport code	2019	OKC	DFW
Number of runways	2019	4	7
Maximum runway length (feet)	2019	9,802	13,401
Top 5 scheduled passenger destinations & market shares: #1	2017	Dallas/Ft Worth (DFW) 15.2%	Los Angeles (LAX) 3.4%
	#2 2017	Denver (DEN) 12.5%	Chicago O'Hare (ORD) 3.3%
	#3 2017	Atlanta (ATL) 10.4%	Atlanta (ATL) 2.8%
	#4 2017	Houston (IAH) 8.0%	Denver (DEN) 2.7%
	#5 2017	Dallas Love Field (DAL) 6.9%	New York LaGuardia (LGA) 2.3%
Top 3 scheduled passenger carriers & market shares: #1	2017	Southwest Airlines 36.6%	American Airlines 70.3%
	#2 2017	American Airlines 12.0%	Envoy Air (American Eagle) 7.9%
	#3 2017	SkyWest Airlines 10.6%	Mesa Airlines 7.2%
Percent of households with cellular data plan	2017	76.6%	79.7%
Percent of households with broadband (cable, fiber, or DSL)	2017	64.9%	71.0%
Percent of households with satellite internet service	2017	7.3%	8.6%
INNOVATION			
Utility patent grants, all classes	2015	155	3,026

KANSAS CITY, MISSOURI



MAJOR INITIATIVES

AIRPORT

A \$1.5 billion modernization, including a new terminal, is underway for Kansas City's MCI airport.

SMART CITY

In 2015, Kansas City, Missouri, became one of the first US cities to hire a chief innovation officer; public-private partnerships with Cisco, Sprint, and others are now underway to build an extensive public Wi-Fi system.

STREETCAR

In 2016, Kansas City, Missouri, debuted a 2.2-mile streetcar line with ridership in the first year exceeding expectations.

Sources: (This page) TIP Strategies research. (Following page) US Census Bureau; American Community Survey 2017 (1-year); American Community Survey 2012–2016 (5-year) migration analysis; US Bureau of Economic Analysis; US Current Population Survey (CPS) via Georgia State University and Trinity University analysis; Google Maps; Association of American Railroads; US Federal Aviation Administration; US Bureau of Transportation Statistics, US Patent and Trademark Office.

		OKLAHOMA CITY OKLAHOMA	KANSAS CITY MISSOURI
DEMOGRAPHICS			
Metro area classification		MSA	MSA
Metro area name		Oklahoma City, OK	Kansas City, MO-KS
Metro area population	2018	1,396,445	2,143,651
Metro area population	2010	1,257,797	2,013,373
Metro area population, net change	2010-2018	+138,648	+130,278
Metro area population, cumulative percent change	2010-2018	11.0%	6.5%
Central city population	2018	649,021	491,918
Central city population	2010	582,285	460,737
Central city population, net change	2010-2018	+66,736	+31,181
Central city population, cumulative percent change	2010-2018	11.5%	6.8%
Central city share of metro area	2018	46.5%	22.9%
Top 3 MSA sources for net domestic in-migration: #1	2012-2016	Tulsa, OK	Omaha, NE-IA
	#2	Enid, OK	Topeka, KS
	#3	Lawton, OK	New York, NY-NJ-PA
WORKFORCE			
Working age population (age 16+)	2017	1,077,280	1,663,828
Estimated labor force participation rate	2017	65.2%	68.2%
Establishment employment	2017	870,743	1,385,161
Establishment employment	2007	764,900	1,286,659
Establishment employment, net change	2007-2017	+105,843	+98,502
Establishment employment, percent change	2007-2017	13.8%	7.7%
Union coverage rate, private sector only (%)	2018	2.9%	6.3%
Union coverage rate, all jobs (%)	2018	7.7%	10.2%
Percent of pop. 25+ that lacks high school equivalency	2017	10.6%	8.5%
Percent of pop. 25+ with HS diploma or GED, but < 4-year degree	2017	58.4%	55.0%
Percent of pop. 25+ with a 4-year degree or more	2017	31.0%	36.5%
CONNECTIVITY			
Interstate access in the metro area	2019	I-35, I-40, I-44	I-29, I-35, I-49, I-70
Class 1 railroads in the metro area	2019	UP, BNSF	UP, BNSF, KSC, NS, CP
Primary metropolitan area airport	2019	Will Rogers World	Kansas City International
FAA airport code	2019	OKC	MCI
Number of runways	2019	4	3
Maximum runway length (feet)	2019	9,802	10,801
Top 5 scheduled passenger destinations & market shares: #1	2017	Dallas/Ft Worth (DFW) 15.2%	Atlanta (ATL) 9.0%
	#2	Denver (DEN) 12.5%	Denver (DEN) 8.0%
	#3	Atlanta (ATL) 10.4%	Chicago Midway (MDW) 5.5%
	#4	Houston (IAH) 8.0%	Chicago O'Hare (ORD) 5.4%
	#5	Dallas Love Field (DAL) 6.9%	Dallas/Ft Worth (DFW) 4.7%
Top 3 scheduled passenger carriers & market shares: #1	2017	Southwest Airlines 36.6%	Southwest Airlines 51.5%
	#2	American Airlines 12.0%	Delta Air Lines 13.2%
	#3	SkyWest Airlines 10.6%	American Airlines 10.2%
Percent of households with cellular data plan	2017	76.6%	77.5%
Percent of households with broadband (cable, fiber, or DSL)	2017	64.9%	71.6%
Percent of households with satellite internet service	2017	7.3%	5.8%
INNOVATION			
Utility patent grants, all classes	2015	155	816

LOUISVILLE, KENTUCKY



MAJOR INITIATIVES

CONVENTION CENTER

Louisville's Kentucky International Convention Center reopened in 2018 after a \$200 million upgrade and modernization.

BRIDGES

Between 2011 and 2016, the states of Kentucky and Indiana spent \$2.3 billion to improve traffic on a network of Ohio River bridges in downtown Louisville that was then known as Spaghetti Junction; the investment has since improved traffic flows and made the riverfront more accessible for hiking, biking, and tourism.

DISTRIBUTION

Within a day's trucking distance of a large share of the US population, Louisville is attractive for logistics operations; UPS operates more than one million square feet and recently announced plans to triple its local footprint.

Sources: (This page) TIP Strategies research. (Following page) US Census Bureau; American Community Survey 2017 (1-year); American Community Survey 2012–2016 (5-year) migration analysis; US Bureau of Economic Analysis; US Current Population Survey (CPS) via Georgia State University and Trinity University analysis; Google Maps; Association of American Railroads; US Federal Aviation Administration; US Bureau of Transportation Statistics, US Patent and Trademark Office.

		OKLAHOMA CITY OKLAHOMA	LOUISVILLE KENTUCKY
DEMOGRAPHICS			
Metro area classification		MSA	MSA
Metro area name		Oklahoma City, OK	Louisville/Jefferson County, KY-IN
Metro area population	2018	1,396,445	1,297,301
Metro area population	2010	1,257,797	1,237,635
Metro area population, net change	2010-2018	+138,648	+59,666
Metro area population, cumulative percent change	2010-2018	11.0%	4.8%
Central city population	2018	649,021	620,118
Central city population	2010	582,285	596,155
Central city population, net change	2010-2018	+66,736	+23,963
Central city population, cumulative percent change	2010-2018	11.5%	4.0%
Central city share of metro area	2018	46.5%	47.8%
Top 3 MSA sources for net domestic in-migration: #1	2012-2016	Tulsa, OK	New York, NY-NJ-PA
	#2	Enid, OK	Miami, FL
	#3	Lawton, OK	Detroit, MI
WORKFORCE			
Working age population (age 16+)	2017	1,077,280	1,031,236
Estimated labor force participation rate	2017	65.2%	65.3%
Establishment employment	2017	870,743	827,588
Establishment employment	2007	764,900	756,832
Establishment employment, net change	2007-2017	+105,843	+70,756
Establishment employment, percent change	2007-2017	13.8%	9.3%
Union coverage rate, private sector only (%)	2018	2.9%	9.2%
Union coverage rate, all jobs (%)	2018	7.7%	11.7%
Percent of pop. 25+ that lacks high school equivalency	2017	10.6%	10.0%
Percent of pop. 25+ with HS diploma or GED, but < 4-year degree	2017	58.4%	61.2%
Percent of pop. 25+ with a 4-year degree or more	2017	31.0%	28.8%
CONNECTIVITY			
Interstate access in the metro area	2019	I-35, I-40, I-44	I-64, I-65, I-71
Class 1 railroads in the metro area	2019	UP, BNSF	NS, CSX
Primary metropolitan area airport	2019	Will Rogers World	Louisville International
FAA airport code	2019	OKC	SDF
Number of runways	2019	4	3
Maximum runway length (feet)	2019	9,802	11,290
Top 5 scheduled passenger destinations & market shares: #1	2017	Dallas/Ft Worth (DFW) 15.2%	Atlanta (ATL) 18.4%
	#2 2017	Denver (DEN) 12.5%	Charlotte (CLT) 8.7%
	#3 2017	Atlanta (ATL) 10.4%	Chicago O'Hare (ORD) 8.6%
	#4 2017	Houston (IAH) 8.0%	Chicago Midway (MDW) 8.3%
	#5 2017	Dallas Love Field (DAL) 6.9%	Washington-Baltimore (BWI) 7.2%
Top 3 scheduled passenger carriers & market shares: #1	2017	Southwest Airlines 36.6%	Southwest Airlines 29.5%
	#2 2017	American Airlines 12.0%	Delta Air Lines 18.2%
	#3 2017	SkyWest Airlines 10.6%	Republic Airways 10.6%
Percent of households with cellular data plan	2017	76.6%	75.0%
Percent of households with broadband (cable, fiber, or DSL)	2017	64.9%	67.3%
Percent of households with satellite internet service	2017	7.3%	7.3%
INNOVATION			
Utility patent grants, all classes	2015	155	300

NASHVILLE, TENNESSEE



MAJOR INITIATIVES

DOWNTOWN

A number of major developments—including a new 5,000-employee Amazon Operations Center of Excellence, a large mixed-use project called Fifth + Broadway (under construction), and the planned redevelopment of the 14-acre Nashville Yards site at the edge of downtown—are adding to a wave of construction that is rapidly transforming the downtown area.

AIRPORT

Construction is set to begin in 2019 on the \$1.2 billion BNA Vision plan, which includes airport modernization and a new facility to accommodate international passengers.

PUBLIC TRANSIT

In 2018, a \$5.4 billion plan to bring light rail to Nashville failed to receive voter approval, following a well-organized and well-funded opposition campaign.

Sources: (This page) TIP Strategies research. (Following page) US Census Bureau; American Community Survey 2017 (1-year); American Community Survey 2012–2016 (5-year) migration analysis; US Bureau of Economic Analysis; US Current Population Survey (CPS) via Georgia State University and Trinity University analysis; Google Maps; Association of American Railroads; US Federal Aviation Administration; US Bureau of Transportation Statistics, US Patent and Trademark Office.





		OKLAHOMA CITY OKLAHOMA	NASHVILLE TENNESSEE
DEMOGRAPHICS			
Metro area classification		MSA	MSA
Metro area name		Oklahoma City, OK	Nashville-Davidson-Murfreesboro-Franklin, TN
Metro area population	2018	1,396,445	1,930,961
Metro area population	2010	1,257,797	1,675,475
Metro area population, net change	2010-2018	+138,648	+255,486
Metro area population, cumulative percent change	2010-2018	11.0%	15.2%
Central city population	2018	649,021	669,053
Central city population	2010	582,285	604,587
Central city population, net change	2010-2018	+66,736	+64,466
Central city population, cumulative percent change	2010-2018	11.5%	10.7%
Central city share of metro area	2018	46.5%	34.6%
Top 3 MSA sources for net domestic in-migration: #1	2012-2016	Tulsa, OK	Chicago, IL
	#2	Enid, OK	New York, NY-NJ-PA
	#3	Lawton, OK	Miami, FL
WORKFORCE			
Working age population (age 16+)	2017	1,077,280	1,512,675
Estimated labor force participation rate	2017	65.2%	68.9%
Establishment employment	2017	870,743	1,315,055
Establishment employment	2007	764,900	1,079,668
Establishment employment, net change	2007-2017	+105,843	+235,387
Establishment employment, percent change	2007-2017	13.8%	21.8%
Union coverage rate, private sector only (%)	2018	2.9%	4.6%
Union coverage rate, all jobs (%)	2018	7.7%	7.3%
Percent of pop. 25+ that lacks high school equivalency	2017	10.6%	9.5%
Percent of pop. 25+ with HS diploma or GED, but < 4-year degree	2017	58.4%	54.5%
Percent of pop. 25+ with a 4-year degree or more	2017	31.0%	36.0%
CONNECTIVITY			
Interstate access in the metro area	2019	I-35, I-40, I-44	I-24, I-40, I-65
Class 1 railroads in the metro area	2019	UP, BNSF	CSX
Primary metropolitan area airport	2019	Will Rogers World	Nashville International
FAA airport code	2019	OKC	BNA
Number of runways	2019	4	4
Maximum runway length (feet)	2019	9,802	10,288
Top 5 scheduled passenger destinations & market shares: #1	2017	Dallas/Ft Worth (DFW) 15.2%	Atlanta (ATL) 6.2%
	#2	Denver (DEN) 12.5%	Dallas/Ft Worth (DFW) 4.8%
	#3	Atlanta (ATL) 10.4%	Denver (DEN) 4.7%
	#4	Houston (IAH) 8.0%	New York LaGuardia (LGA) 4.3%
	#5	Dallas Love Field (DAL) 6.9%	Charlotte (CLT) 4.2%
Top 3 scheduled passenger carriers & market shares: #1	2017	Southwest Airlines 36.6%	Southwest Airlines 56.1%
	#2	American Airlines 12.0%	Delta Air Lines 10.4%
	#3	SkyWest Airlines 10.6%	American Airlines 8.8%
Percent of households with cellular data plan	2017	76.6%	78.4%
Percent of households with broadband (cable, fiber, or DSL)	2017	64.9%	69.8%
Percent of households with satellite internet service	2017	7.3%	7.3%
INNOVATION			
Utility patent grants, all classes	2015	155	220

APPENDIX 1. ASSESSMENT DATA

1. SWOT ANALYSIS

TIP’s data findings and general observations were supplemented by a more extensive analysis of the ACOG region’s strengths, weaknesses, opportunities, and threats, more commonly known as a SWOT analysis. The elements of the SWOT analysis can be defined as follows.

- **STRENGTHS.** Advantages that can be built on to grow and strengthen the regional economy.
- **WEAKNESSES.** Liabilities and obstacles to economic development that could limit the region’s growth potential.
- **OPPORTUNITIES.** Assets and positive trends that hold significant potential for increased regional prosperity and the attraction of new businesses, investments, and people.
- **THREATS.** Unfavorable external factors and trends that could negatively affect the regional economy.

 STRENGTHS	 WEAKNESSES
<ul style="list-style-type: none"> • Major employers and diverse industries • University of Oklahoma and the higher education system • National Weather Center • Tinker Air Force Base • Citizen supported initiatives (e.g., MAPS) • Innovation District • State capital • Comparatively low cost of living, especially housing 	<ul style="list-style-type: none"> • Broadband access—especially in rural areas • Equity and inclusion • Talent attraction • Regional collaboration and cohesiveness • Regional mass transit solutions • Perception—both internal and external • Infrastructure—especially in rural areas • Employment center site readiness • Measures of innovation (patents awarded)
 OPPORTUNITIES	 THREATS
<ul style="list-style-type: none"> • MAPS 4 • Strengthen target sector clusters and supply chains • Developing innovation ecosystem • Opportunity Zones • Will Rogers World Airport terminal expansion • Outside investment (e.g., VC, PE, SBIR/STTR, etc.) 	<ul style="list-style-type: none"> • Talent retention • Declining populations in rural areas • Lack of funding for comprehensive planning in rural areas • Environmental impacts (e.g., tornadoes, flash flooding, etc.) • Dependence on sales tax • Geographic spread of the Oklahoma City metro area • Gentrification in historic Oklahoma City neighborhoods • Cybersecurity vulnerability, especially in small cities

2. INSTITUTIONS AND EMPLOYERS

MAJOR EMPLOYERS	SECTOR	NUMBER OF EMPLOYEES
State of Oklahoma	Government	47,300
Tinker Air Force Base	Military	24,000
University of Oklahoma - Norman	Higher Education	12,700
FAA Mike Monroney Aeronautical Center	Aerospace	7,000
INTEGRIS Health	Health Care	6,000
Hobby Lobby Stores Inc	Wholesale & Retail	5,100
University of Oklahoma Health Sciences Center	Higher Education	5,000
City of Oklahoma City	Government	4,700
Mercy Hospital	Health Care	4,500
OGE Energy Corp	Utility	3,400
OU Medical Center	Health Care	3,300
SSM Health Care of Oklahoma, Inc.	Health Care	3,000
University of Central Oklahoma	Higher Education	3,000
The Boeing Company	Aerospace	3,000
Norman Regional Hospital	Health Care	2,950
AT&T	Telecommunications	2,700
Devon Energy Corp	Oil & Gas	2,500
Sonic Corp	Wholesale & Retail	2,460
Oklahoma City Community College	Higher Education	2,100
Midfirst Bank	Finance	2,000
Paycom	Technology	2,500
Dell	Sales & Business Services	1,950
Chesapeake Energy Corp	Oil & Gas	1,800
UPS	Transportation	1,800
Love's Travel Stops & Country Stores	Retail	1,800
BancFirst	Finance	1,700
Hertz Corporation	Rental Services	1,700
Enable Midstream	Oil & Gas	1,600
American Fidelity	Finance/Insurance	1,400
Cox Communications	Telecommunications	1,400
Farmers Insurance Group	Customer Service	1,300
Great Plains Coca-Cola Bottling Company	Beverage Distribution	1,300
Johnson Controls	Manufacturing	1,200
Bank of Oklahoma	Finance	1,100
Continental Resources	Oil & Gas	1,080
Dolese Bros. Co.	Manufacturing	1,000
INTEGRIS-Deaconess Hospital	Health Care	1,000
Rose State College	Higher Education	1,000

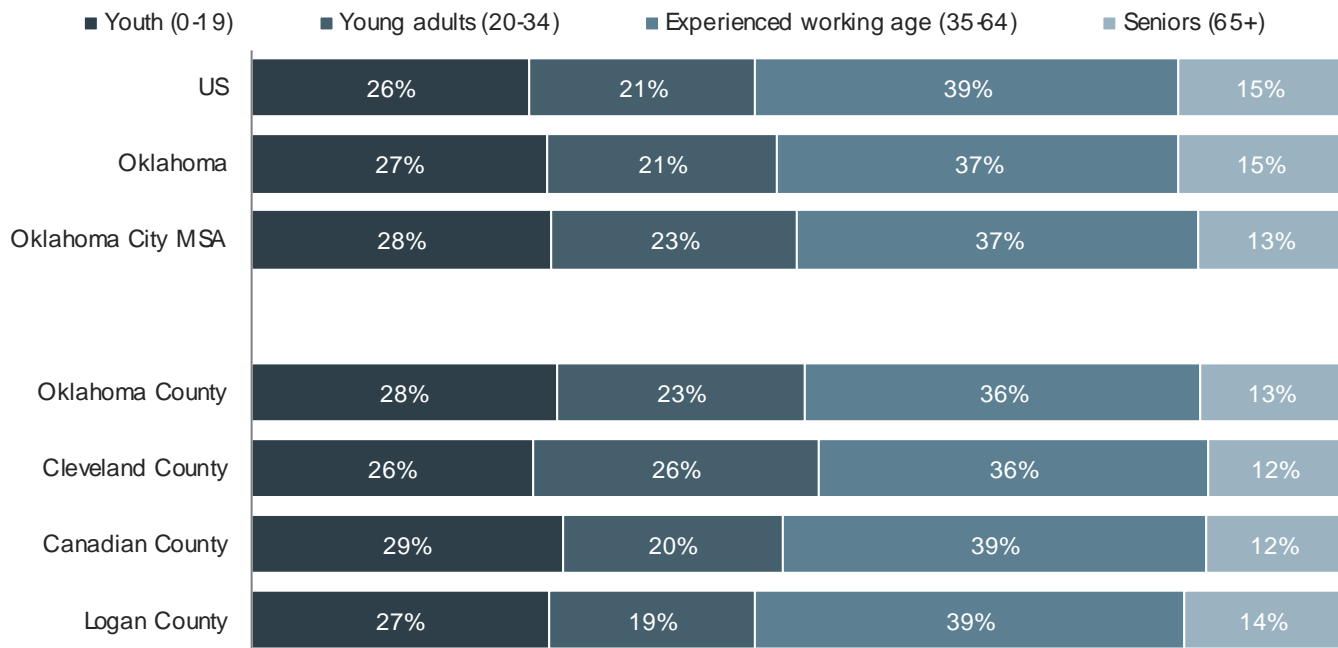
Source: Economic Development Division of the Greater Oklahoma City Chamber (last updated March 2019).

3. DEMOGRAPHICS

FIGURE 52. ACOG REGION POPULATION HISTORY

YEAR	OKLAHOMA	ACOG REGION	OKLAHOMA COUNTY	CLEVELAND COUNTY	CANADIAN COUNTY	LOGAN COUNTY	ACOG AS A SHARE OF THE STATE
1900	790,391	84,847	25,915	16,388	15,981	26,563	10.7%
1910	1,657,155	159,316	85,232	18,843	23,501	31,740	9.6%
1920	2,028,283	185,534	116,307	19,389	22,288	27,550	9.1%
1930	2,396,040	302,562	221,738	24,948	28,115	27,761	12.6%
1940	2,336,434	324,461	244,159	27,728	27,329	25,245	13.9%
1950	2,233,351	414,609	325,352	41,443	25,644	22,170	18.6%
1960	2,328,284	530,495	439,506	47,600	24,727	18,662	22.8%
1970	2,559,229	660,534	526,805	81,839	32,245	19,645	25.8%
1980	3,025,290	785,439	568,933	133,173	56,452	26,881	26.0%
1990	3,145,585	877,284	599,611	174,253	74,409	29,011	27.9%
2000	3,450,654	990,085	660,448	208,016	87,697	33,924	28.7%
2010	3,751,351	1,131,777	718,633	255,755	115,541	41,848	30.2%
2017	3,930,864	1,254,309	787,958	279,641	139,926	46,784	31.9%

FIGURE 53. AGE STRUCTURE

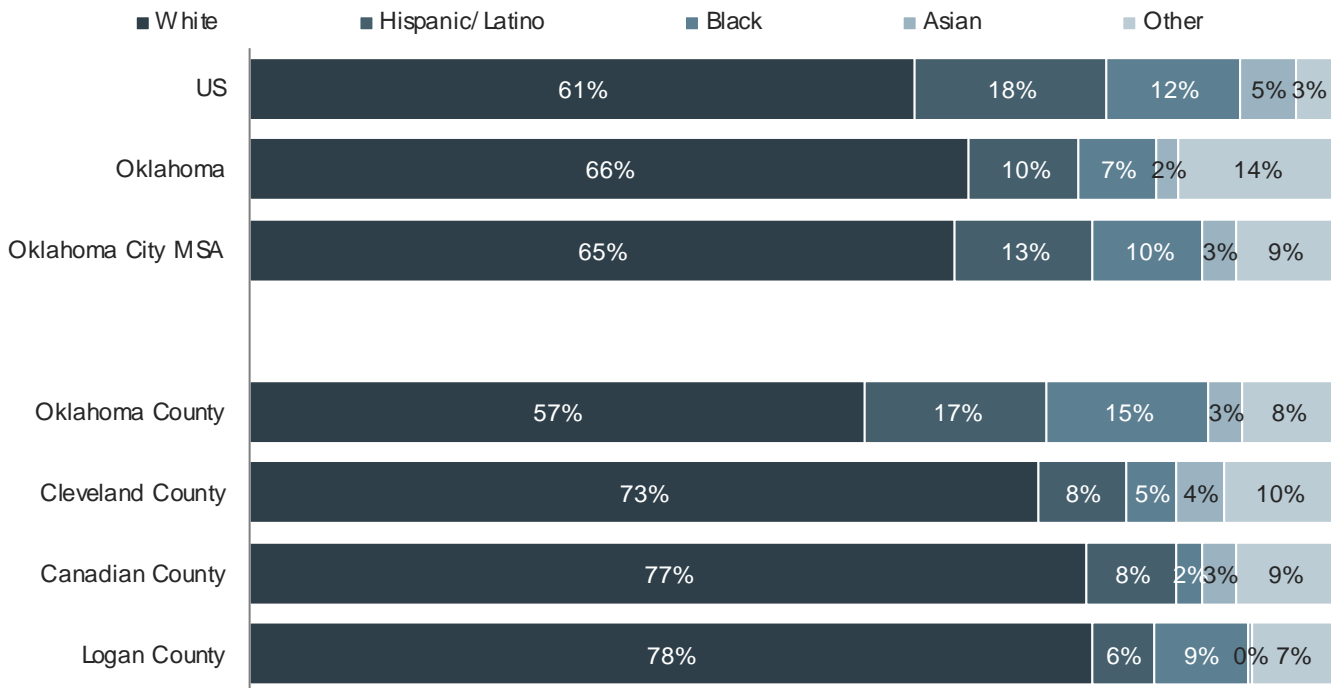


Sources: (Figure 52) US Census Bureau; (Figure 53) US Census Bureau, American Community Survey, 5-year averages for the period 2013–2017.

FIGURE 54. MEDIAN AGE

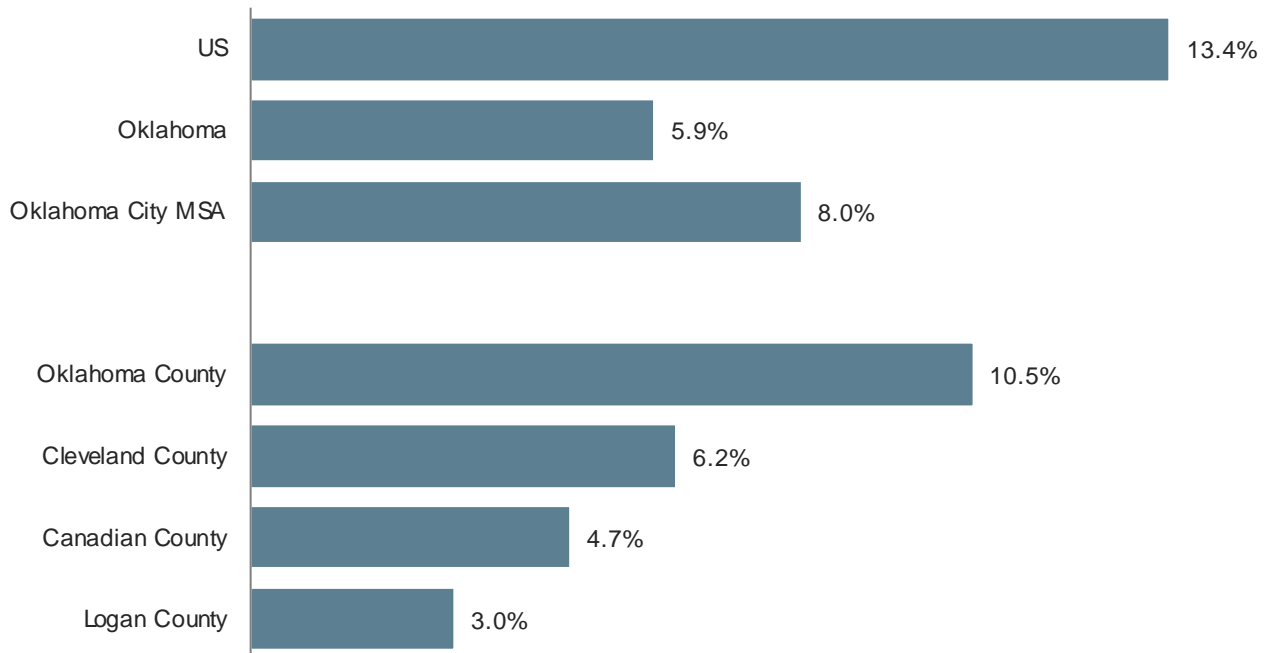


FIGURE 55. POPULATION DIVERSITY



Source: (all figures) US Census Bureau, American Community Survey, 5-year averages for the period 2013–2017.
 Notes: Hispanics might be of any race. All other racial categories represent non-Hispanics.

FIGURE 56. FOREIGN BORN, PERCENT OF POPULATION



Source: US Census Bureau, American Community Survey, 5-year averages for the period 2013–2017.

4. INCOME AND HOUSING

FIGURE 57. MEDIAN HOUSEHOLD INCOME

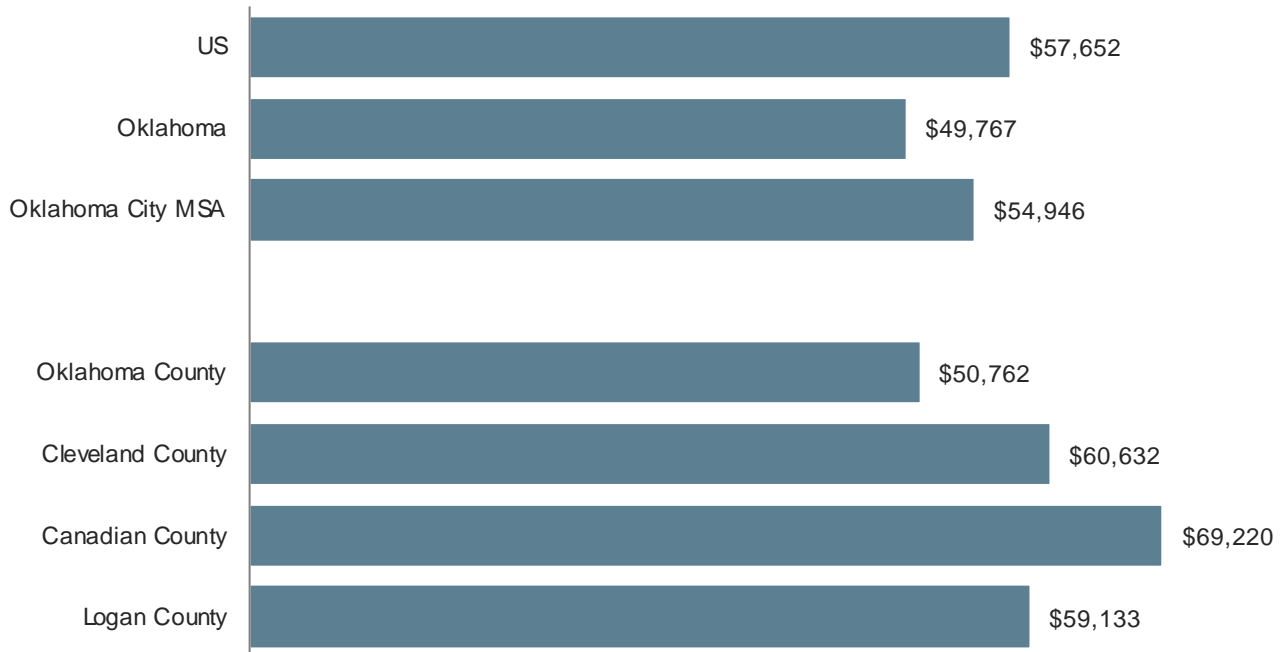
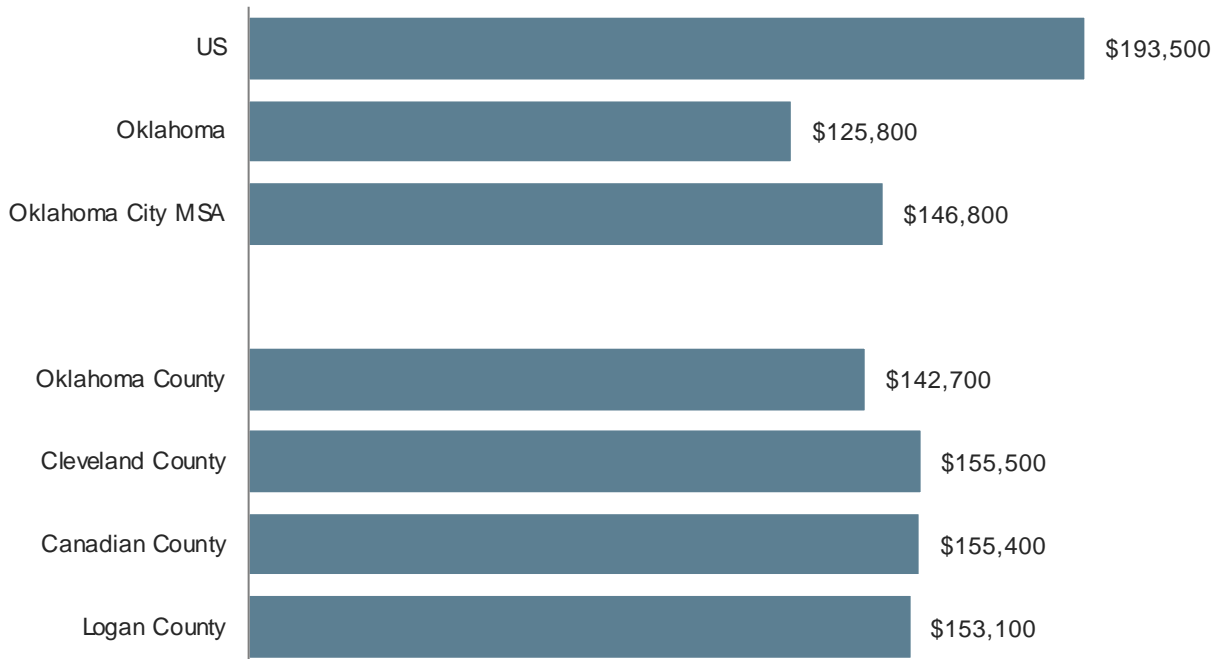


FIGURE 58. MEDIAN HOME VALUE
OWNER-OCCUPIED UNITS



Source: (all figures) US Census Bureau, American Community Survey, 5-year averages for the period 2013–2017.

FIGURE 59. HOUSING AFFORDABILITY INDEX*
RATIO OF MEDIAN HOME VALUE TO MEDIAN HH INCOME

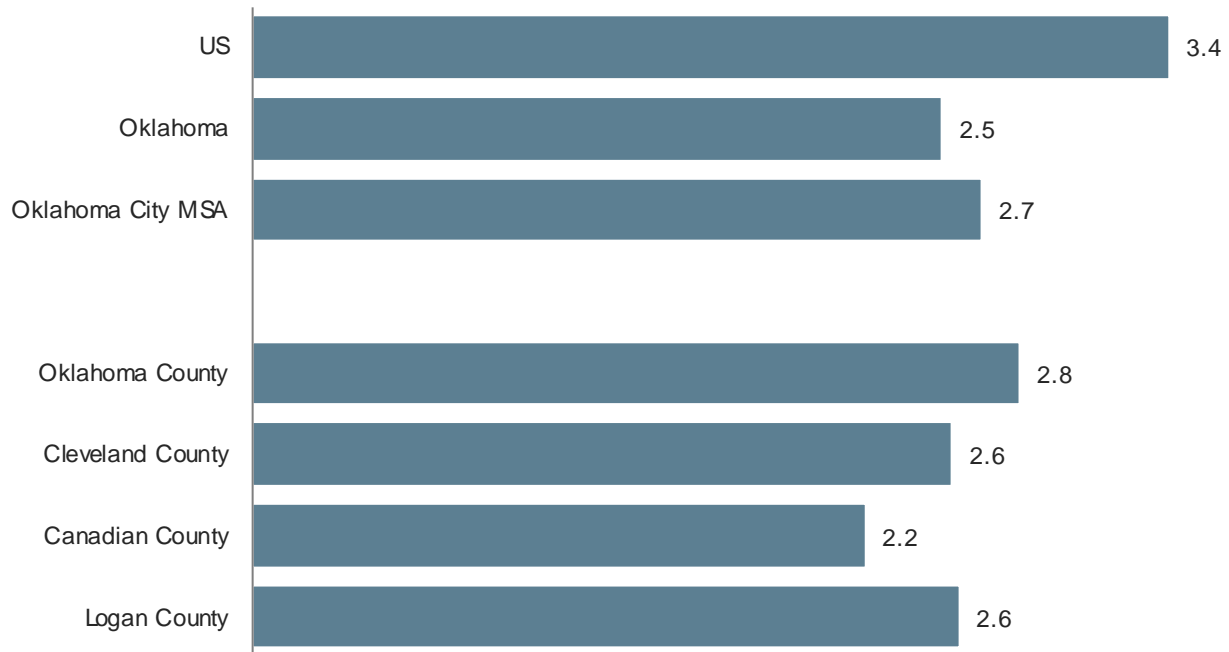
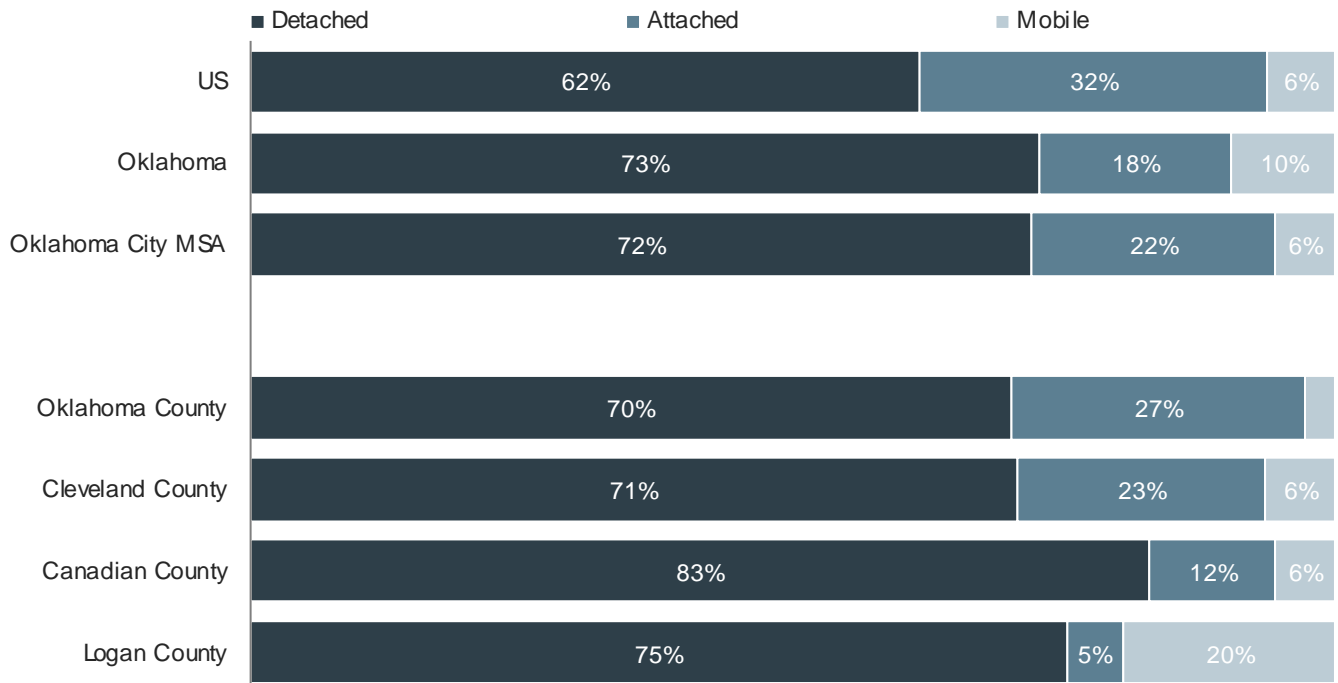
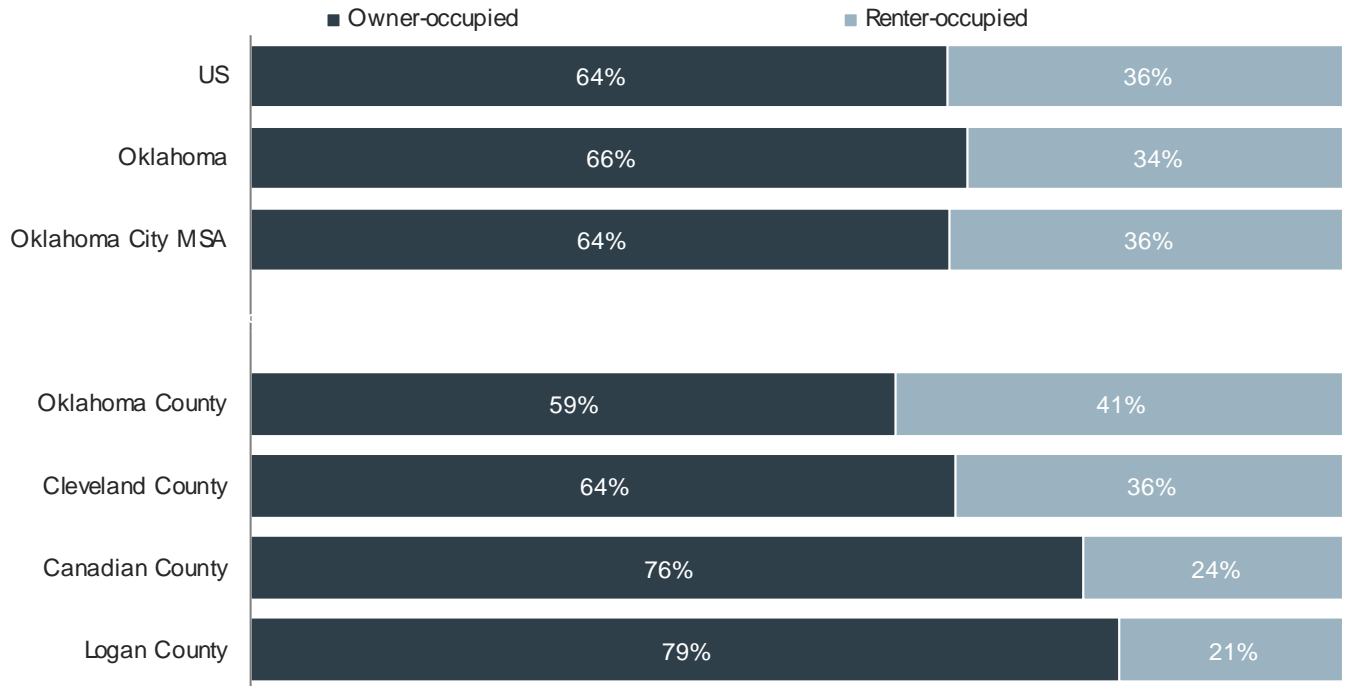


FIGURE 60. COMPOSITION OF HOUSING STOCK



*Housing Affordability Index can be interpreted as the number of years of household income needed to buy a median-priced home. Numbers below 5 percent are not shown for readability.
Source: (all figures) US Census Bureau, American Community Survey, 5-year averages for the period 2013–2017.

FIGURE 61. OCCUPANCY TYPE
SHARE OF OCCUPIED HOUSING STOCK BY OWNERSHIP/RENTAL STATUS



Source: US Census Bureau, American Community Survey, 5-year averages for the period 2013–2017.

5. MOBILITY AND CONNECTIVITY

FIGURE 62. MOBILITY OF THE POPULATION
PERCENT OF POPULATION AGE 1 YEAR OR OLDER CHANGING RESIDENCE IN THE PAST YEAR

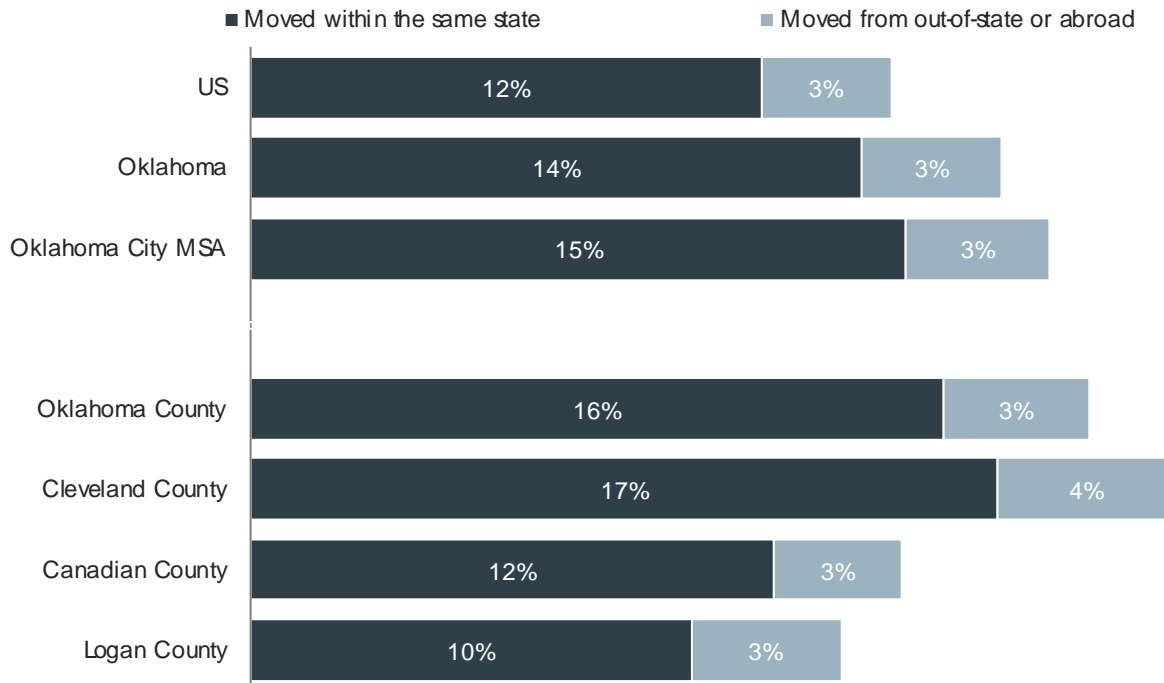


FIGURE 63. AVERAGE TRAVEL TIME TO WORK
IN MINUTES

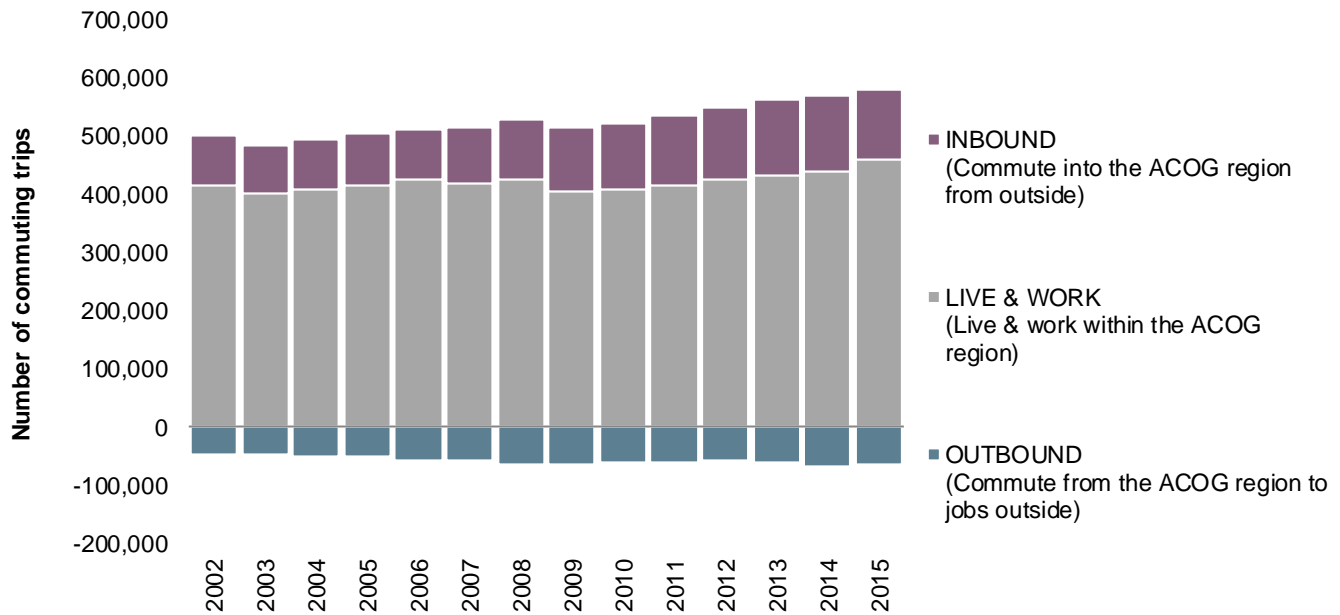


Source: (all figures) US Census Bureau, American Community Survey, 5-year averages for the period 2013–2017.

FIGURE 64. COMMUTING PATTERNS IN THE ACOG REGION, 2015
FLOW OF WORKERS TO/FROM THE AREA



FIGURE 65. HISTORICAL COMMUTING PATTERNS IN THE ACOG REGION, 2002–2015



Source: (all figures) US Census Bureau, Local Employment Dynamics.
 Note: (Figure 64) Overlay arrows are for illustrative purposes and do not indicate directionality of worker flow between home and employment locations.

FIGURE 66. SELECTED COMMUTER CHARACTERISTICS FOR THE ACOG REGION, 2015
SOCIO-DEMOGRAPHICS OF WORKERS (PERCENT OF TOTAL) BY TYPE OF COMMUTING FLOW (INTERNAL, OUTBOUND, INBOUND)

	COMMUTERS BY AGE			COMMUTERS BY EARNINGS			COMMUTERS BY INDUSTRY		
	<30	30-54	55+	<\$15,000	\$15,000-40,000	>\$40,000	Goods producing	Trade, Transport, & Utilities	Other Services
Inbound commuters	27%	52%	21%	26%	36%	38%	15%	24%	60%
Commuters who live & work within the ACOG region	25%	53%	22%	24%	38%	38%	14%	18%	67%
Outbound commuters	28%	52%	20%	27%	35%	37%	19%	26%	55%

FIGURE 67. NET COMMUTING FLOWS BY NAICS INDUSTRY SECTOR

Net flows = inbound - outbound flows

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Government	+9,477	+5,391	+6,087	+5,885	+7,833	+8,831	+8,261	+8,553	+8,568	+8,389	+7,625
Retail trade	+3,058	+1,741	+3,514	+2,525	+4,592	+4,735	+6,345	+7,339	+7,502	+6,864	+6,761
Healthcare	+3,833	+3,404	+5,285	+5,884	+5,971	+6,209	+6,891	+7,319	+7,220	+7,016	+6,750
Accommodation & food services	+2,705	+2,020	+3,055	+2,931	+3,921	+4,126	+4,362	+5,646	+5,741	+5,502	+4,684
Administrative services	+3,994	+2,724	+3,760	+4,041	+4,634	+4,601	+5,482	+5,388	+5,325	+5,359	+4,511
Wholesale trade	+1,601	+1,609	+1,983	+2,032	+2,994	+3,336	+3,768	+4,397	+4,580	+4,311	+3,927
Education	+708	+188	+588	+1,088	+3,326	+3,440	+3,544	+4,305	+5,084	+4,653	+3,636
Professional services	+2,056	+1,921	+2,803	+2,733	+2,873	+2,790	+3,600	+3,787	+3,679	+3,447	+3,273
Construction	+1,045	+881	+1,594	+821	+1,873	+2,023	+2,674	+3,097	+3,025	+2,822	+2,559
Manufacturing	+1,013	+1,130	+1,750	+1,288	+1,686	+1,558	+1,769	+2,880	+3,539	+2,415	+2,393
Finance & insurance	+1,074	+679	+1,208	+972	+1,002	+1,343	+1,373	+1,862	+1,934	+1,899	+1,695
Oil, gas, & mining	+637	+1,382	+2,056	+2,079	+1,114	+1,850	+2,688	+3,347	+2,891	+1,733	+1,622
Personal & other services	+890	+707	+1,164	+1,067	+1,372	+1,374	+1,279	+1,463	+1,308	+1,325	+1,174
Regional & corporate operations	+449	+413	+549	+797	+853	+983	+1,002	+1,265	+1,487	+1,851	+1,128
Transportation & warehousing	+668	+262	+452	-116	+785	+593	+928	+944	+959	+356	+1,035
Arts, entertainment, & recreation	+741	+763	+840	+637	+720	+863	+1,157	+1,261	+1,246	+1,169	+972
Property sales & leasing	+690	+526	+872	+842	+1,006	+1,159	+1,268	+1,359	+1,450	+1,203	+958
Information & media	+691	+401	+851	+795	+440	+975	+1,091	+988	+732	+584	+611
Utilities	+112	+64	+153	+172	+560	+330	+438	+630	+766	+669	+504
Agriculture	-275	-229	-254	-314	-291	-299	-271	-309	-303	-312	-332

Source: (all figures) US Census Bureau, Local Employment Dynamics.
Note: NAICS is the North American Industry Classification System.

FIGURE 68. OKC MARKET SHARE BY DESTINATION, 1990 VS. 2017
 PERCENT OF TOTAL OKC OUTBOUND PASSENGERS BY METROPOLITAN DESTINATION

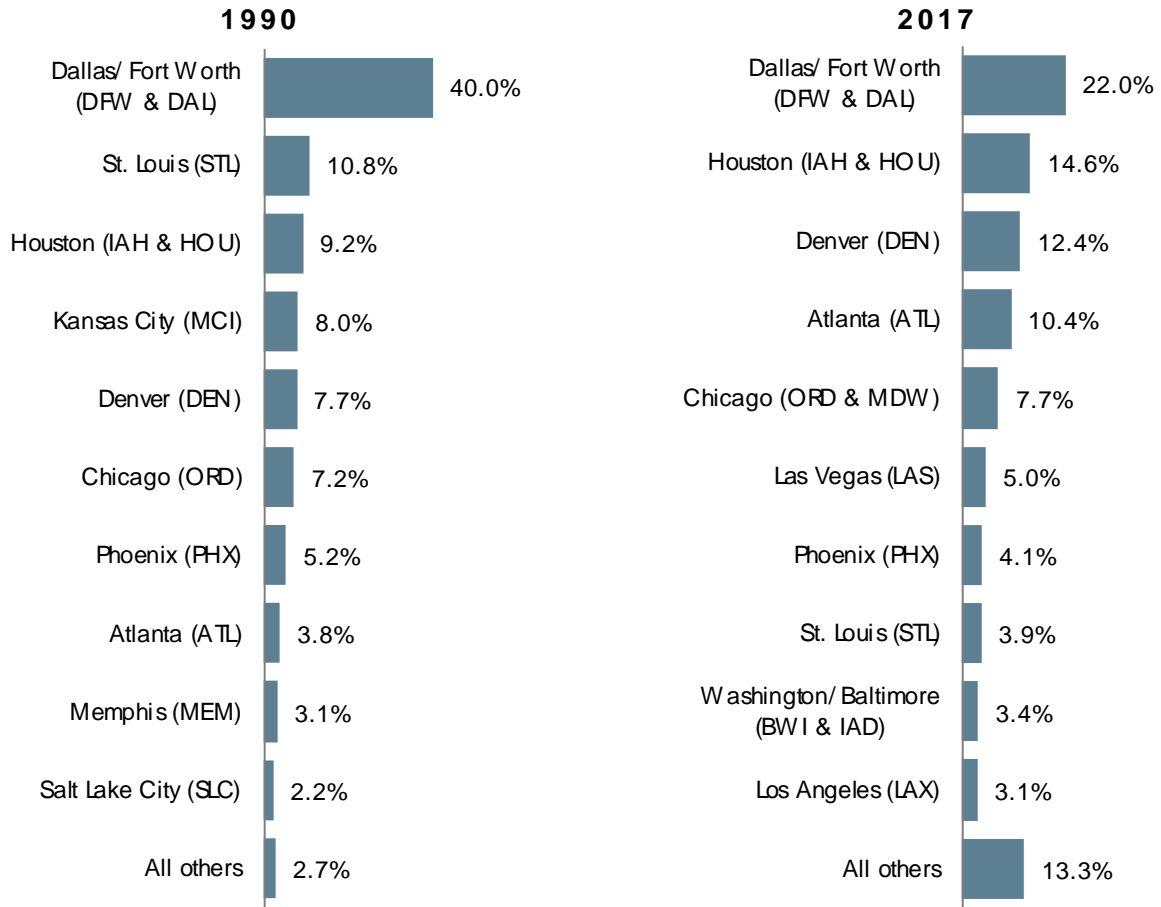
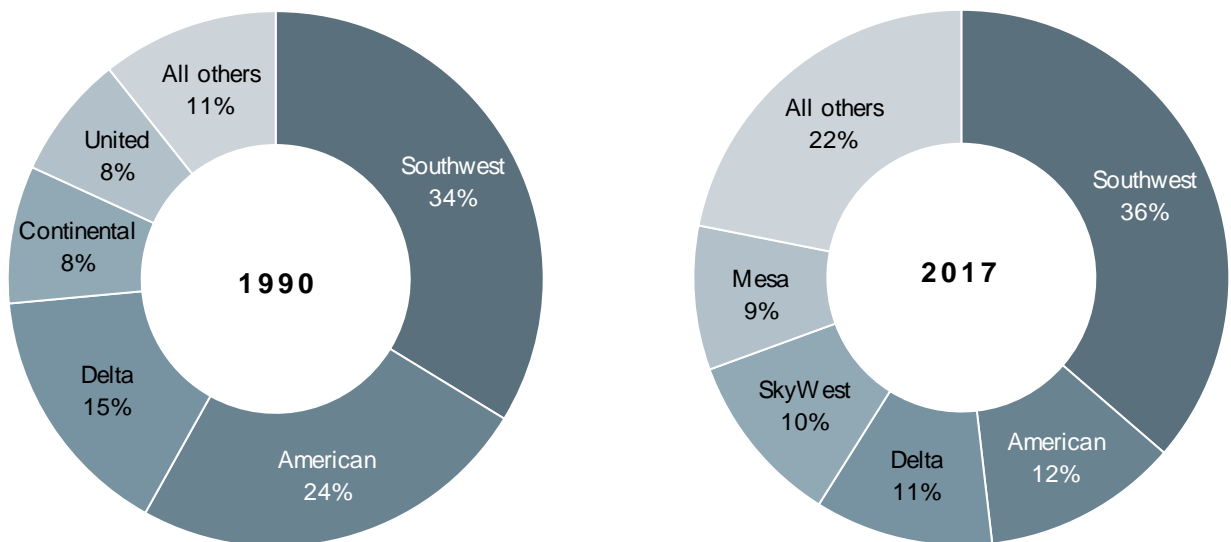
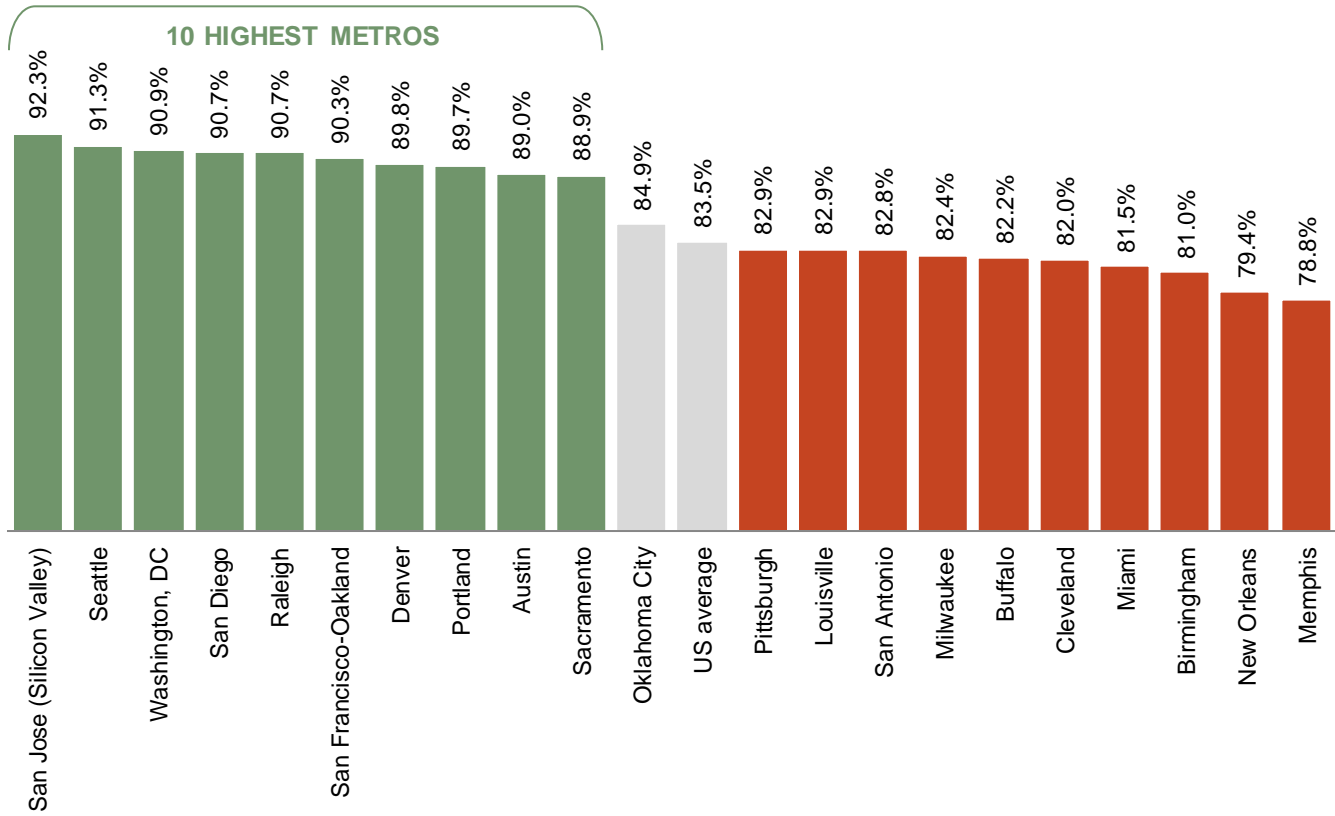


FIGURE 69. OKC MARKET SHARE BY DESTINATION, 1990 VS. 2017
 PERCENT OF TOTAL OKC OUTBOUND PASSENGERS BY CARRIER



Source: (all figures) US Bureau of Transportation Statistics.
 Notes: (all figures) Based on T-100 Segment reports for all carriers.

FIGURE 70. SHARE OF HOUSEHOLDS WITH BROADBAND ACCESS
 THE 10 HIGHEST AND LOWEST RANKING MSAS OUT OF THE 50 LARGEST US METROPOLITAN AREAS



Source: US Census Bureau, American Community Survey, 2017.
 Note: The top 50 metropolitan areas were determined based on the total number of households.

6. INDUSTRIES

FIGURE 71. ACOG REGION EMPLOYMENT

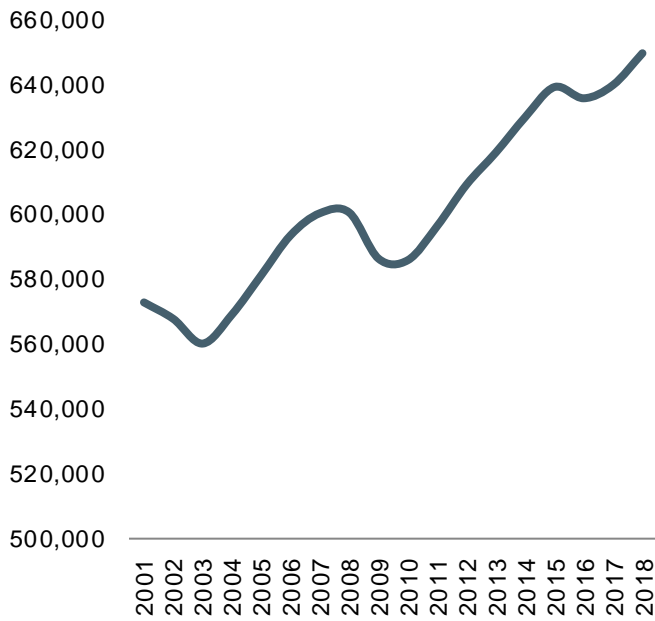
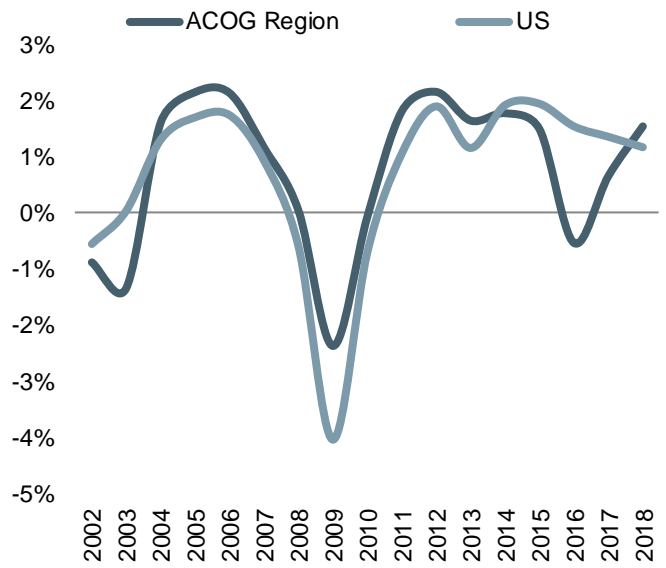
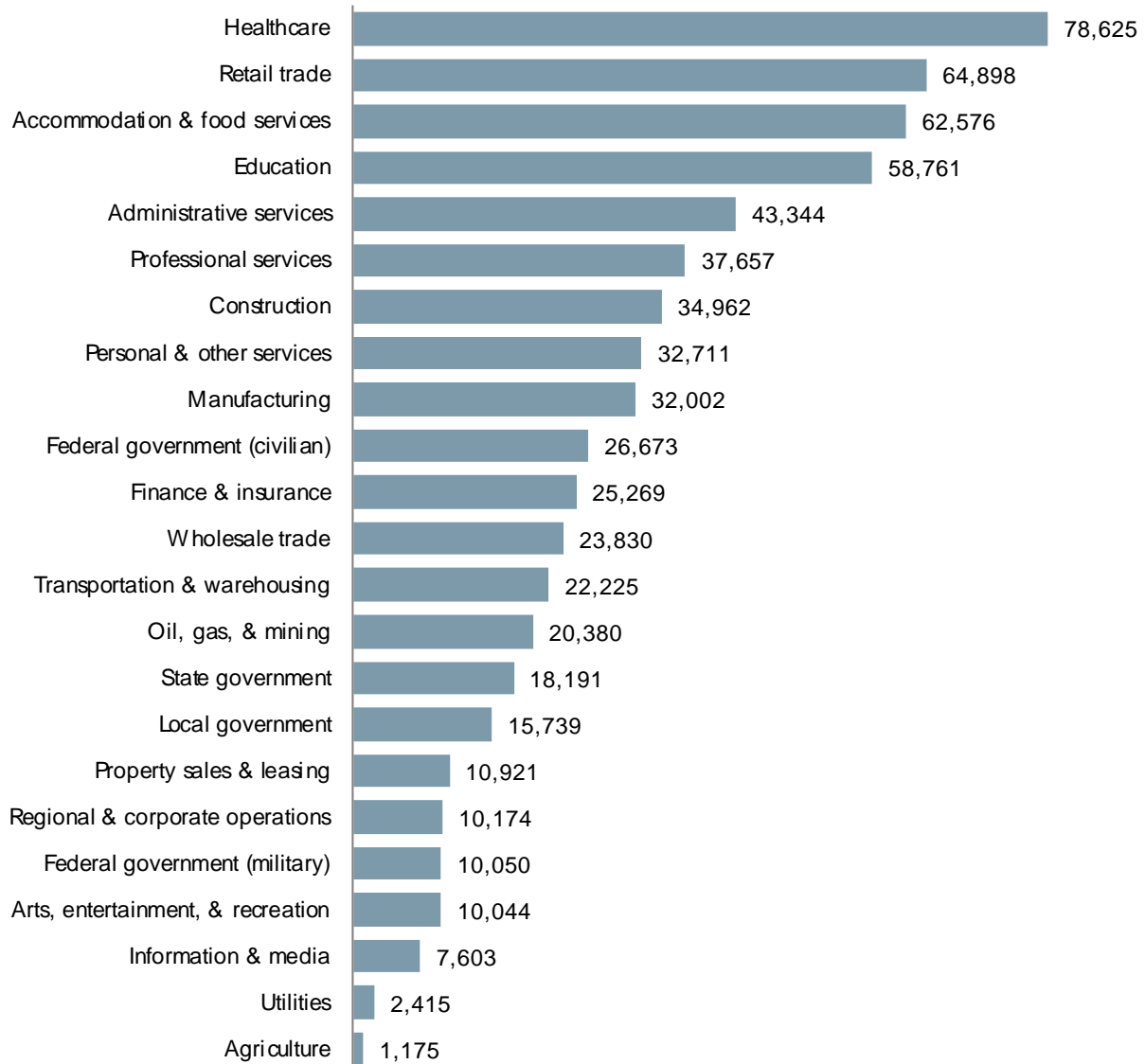


FIGURE 72. COMPARATIVE ANNUAL JOB GROWTH (%)



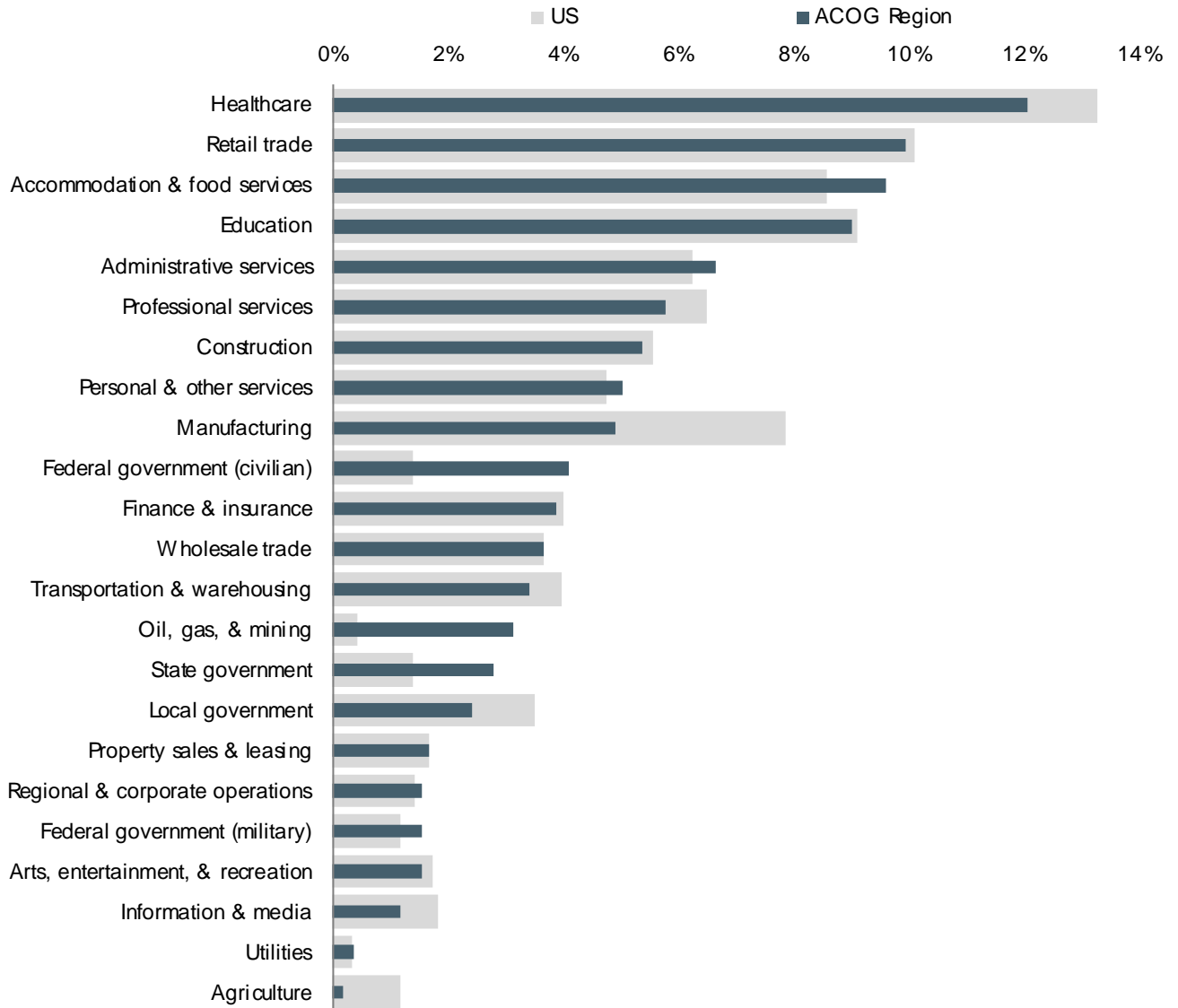
Source: (figures this page) Emsi 2019.2— QCEW Employees, Non-QCEW Employees, and Self-Employed.

FIGURE 73. ACOG REGION EMPLOYMENT BY SECTOR, 2018



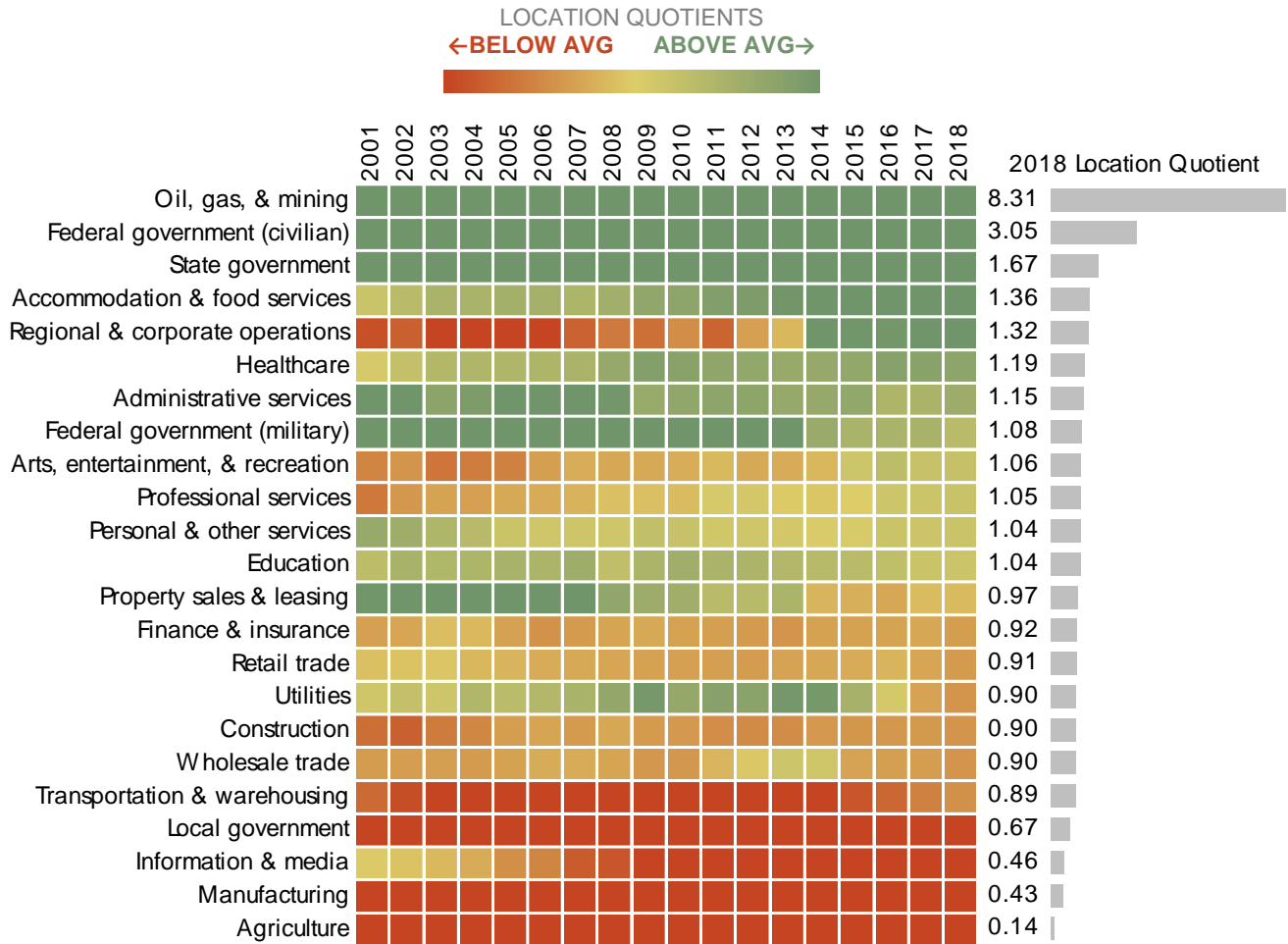
Source: Emsi 2019.2— QCEW Employees, Non-QCEW Employees, and Self-Employed.
 Note: Public sector employment in education (e.g., public schools, colleges, and universities), healthcare, and the US Postal Service are included with applicable private sector industry totals rather than government.

FIGURE 74. EMPLOYMENT DISTRIBUTION ACROSS SECTORS, 2018
 PERCENT OF TOTAL EMPLOYMENT, ACOG REGION VS. US



Source: Emsi 2019.2— QCEW Employees, Non-QCEW Employees, and Self-Employed.

FIGURE 75. ACOG REGION HISTORICAL SECTOR CONCENTRATION AS SHOWN BY LOCATON QUOTIENTS (LQS)



Source: Emsi 2019.2— QCEW Employees, Non-QCEW Employees, and Self-Employed.
 Note: Public sector employment in education (e.g., public schools, colleges, and universities), healthcare, and the US Postal Service are included with applicable private sector industry totals rather than government.

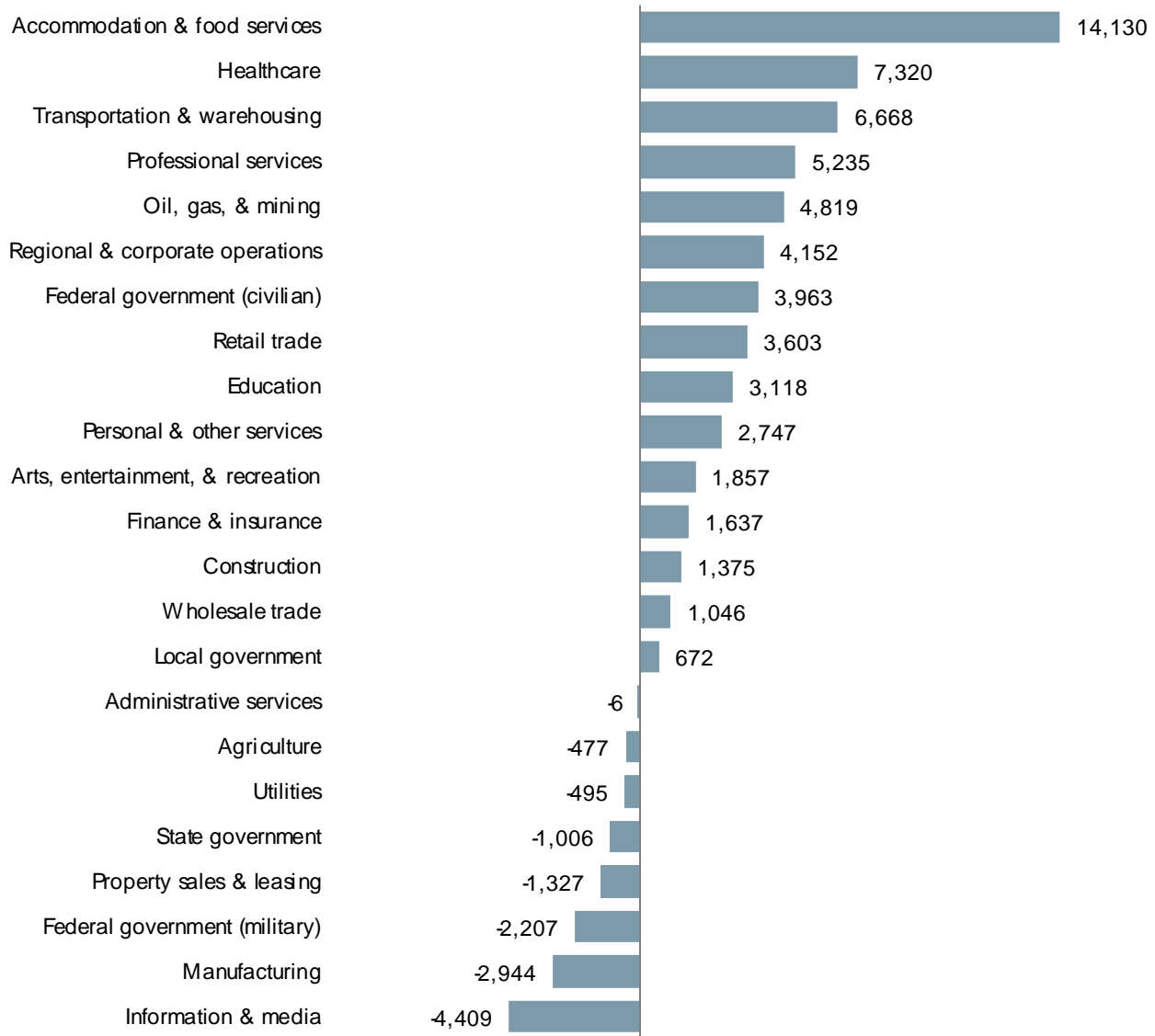
ABOUT LOCATION QUOTIENTS (LQS)

Location quotient analysis is a statistical technique used to suggest areas of relative advantage based on a region’s employment base. LQs are calculated as an industry’s share of total local employment divided by the same industry’s share of employment at the national level.

$$\frac{\text{(local employment in industry x / total local employment—all industries)}}{\text{(national employment in industry x / total national employment—all industries)}}$$

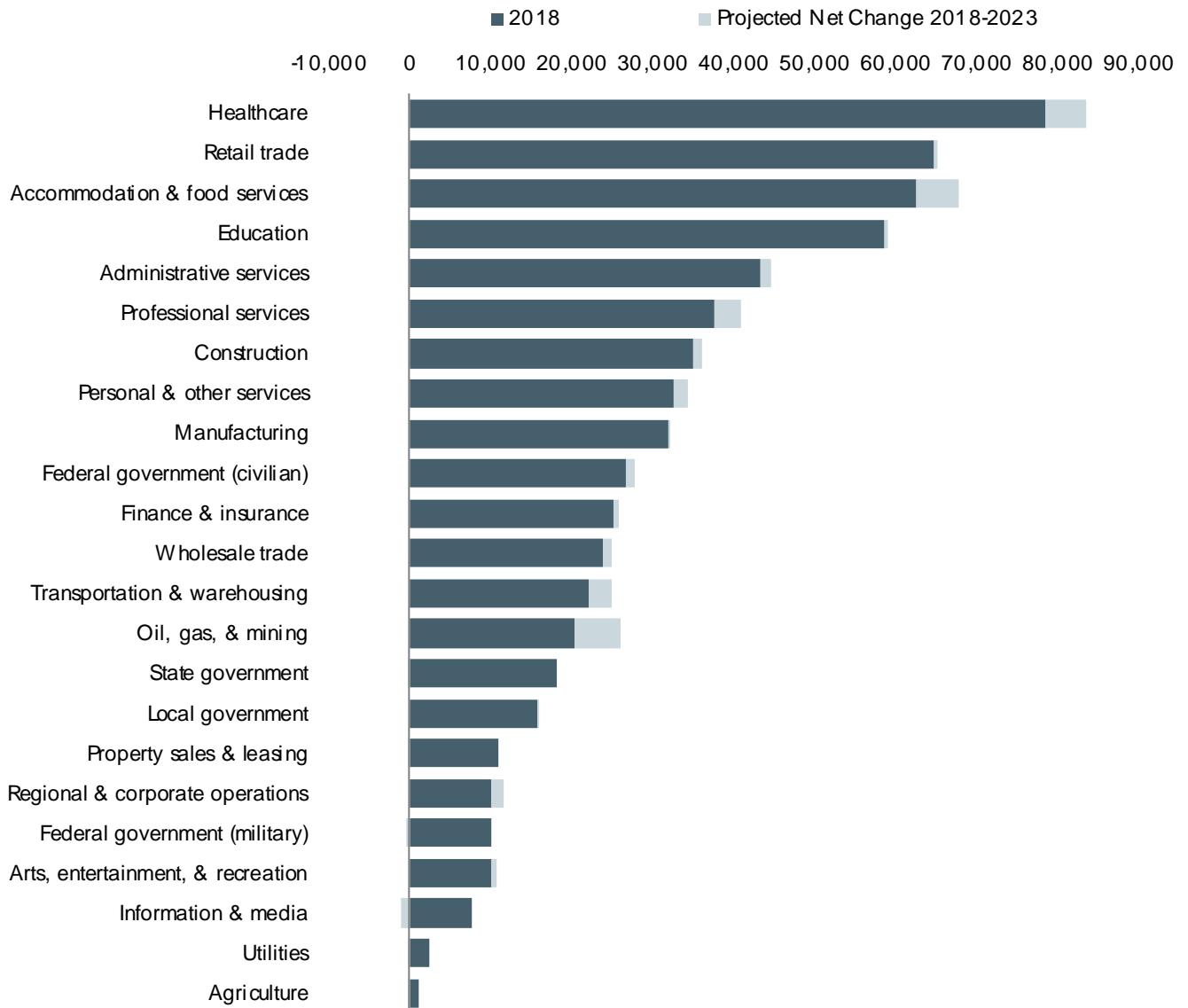
If the local industry and national industry are perfectly proportional, the LQ will be 1.00. LQs greater than 1.25 are presumed to indicate a comparative advantage; those below 0.75 suggest areas of weakness but also point to opportunities for expansion or attraction.

FIGURE 76. ACOG REGION 10-YEAR NET JOB GROWTH BY SECTOR, 2008–2018



Source: Emsi 2019.2— QCEW Employees, Non-QCEW Employees, and Self-Employed.
 Note: Public sector employment in education (e.g., public schools, colleges, and universities), healthcare, and the US Postal Service are included with applicable private sector industry totals rather than government.

FIGURE 77. ACOG REGION PROJECTED 5-YEAR NET JOB GROWTH BY SECTOR, 2018–2023



Source: Emsi 2019.2— QCEW Employees, Non-QCEW Employees, and Self-Employed.
 Note: Public sector employment in education (e.g., public schools, colleges, and universities), healthcare, and the US Postal Service are included with applicable private sector industry totals rather than government.

7. WORKFORCE

FIGURE 78. EDUCATIONAL ATTAINMENT, PERCENT OF POPULATION AGE 25 YEARS OR OLDER

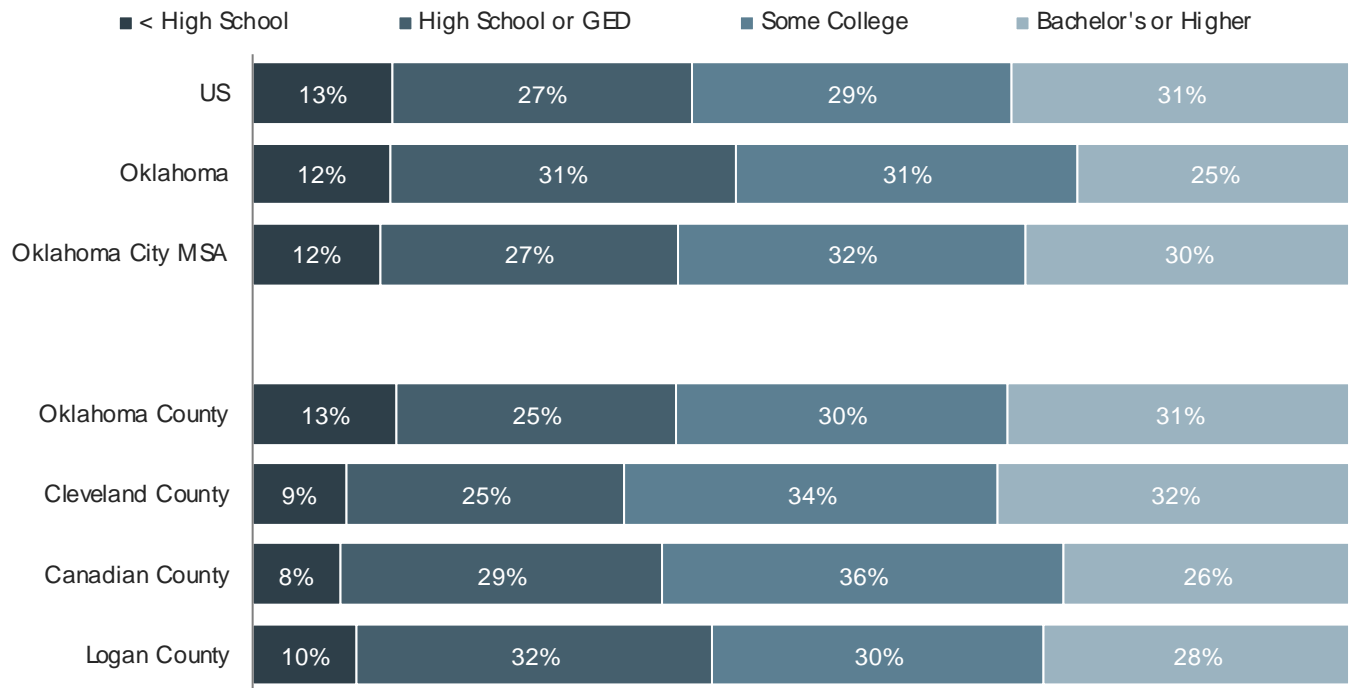
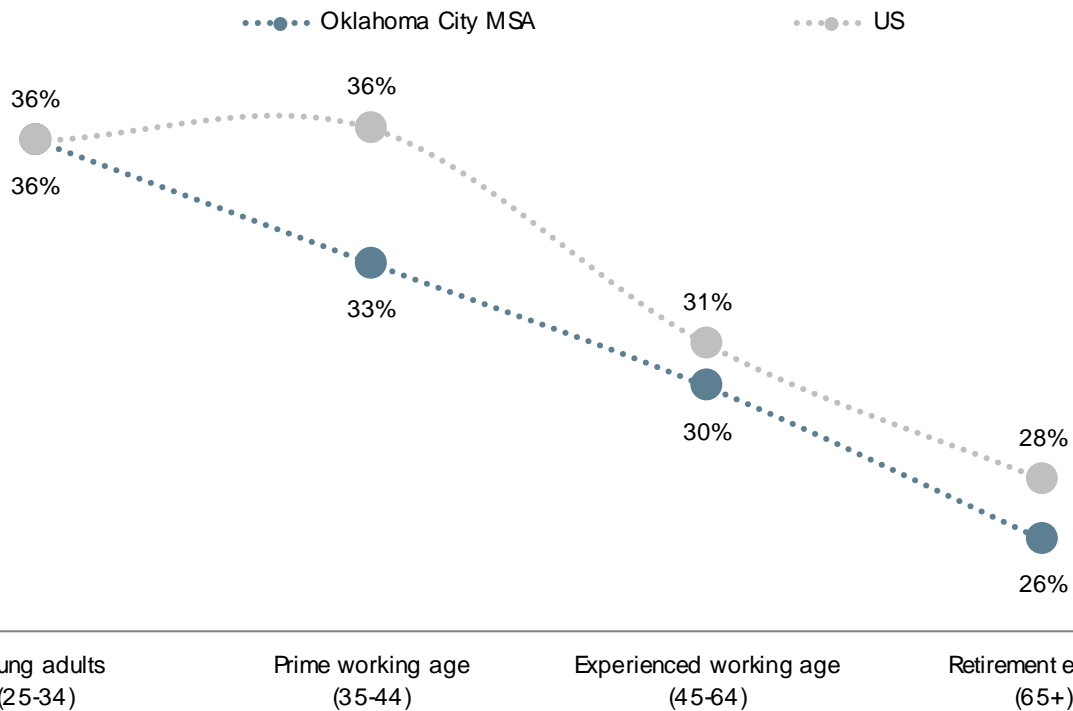


FIGURE 79. BACHELOR'S DEGREE OR HIGHER BY AGE COHORT



Sources: (Figure 78) US Census Bureau, American Community Survey, 5-year averages for the period 2013–2017; (Figure 79) US Census Bureau, American Community Survey, 2017.

FIGURE 80. LABOR FORCE PARTICIPATION BY GENDER

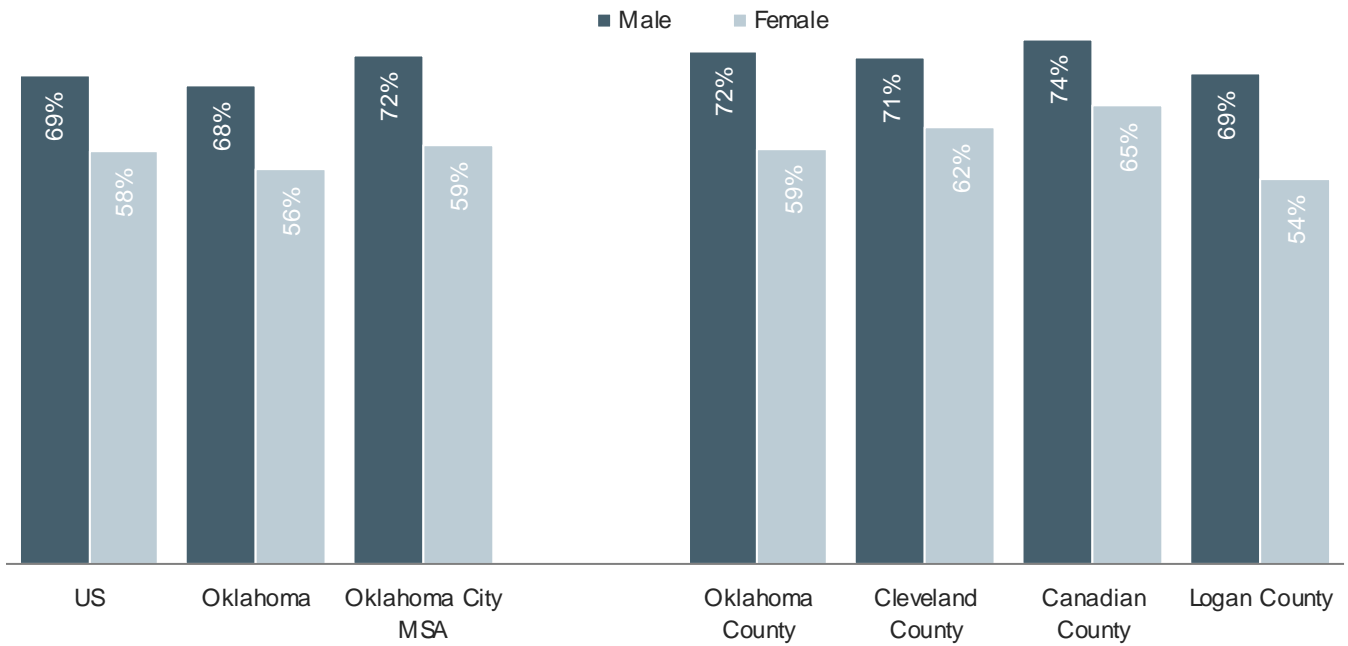
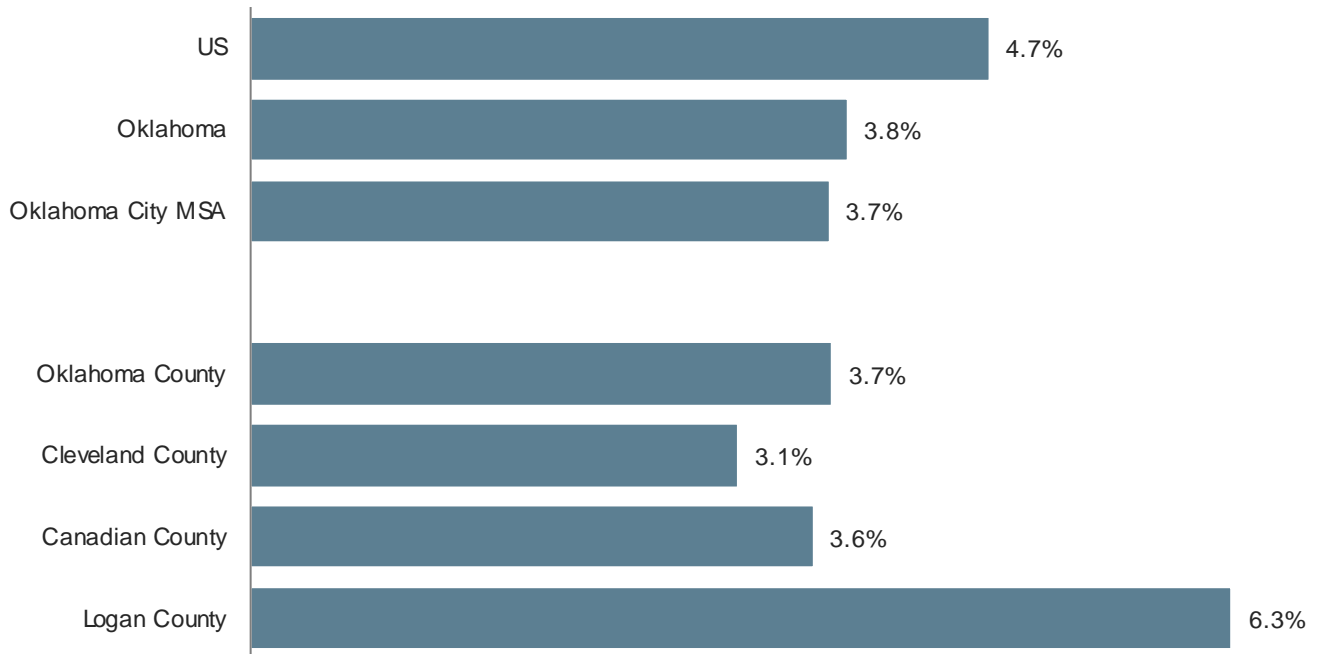
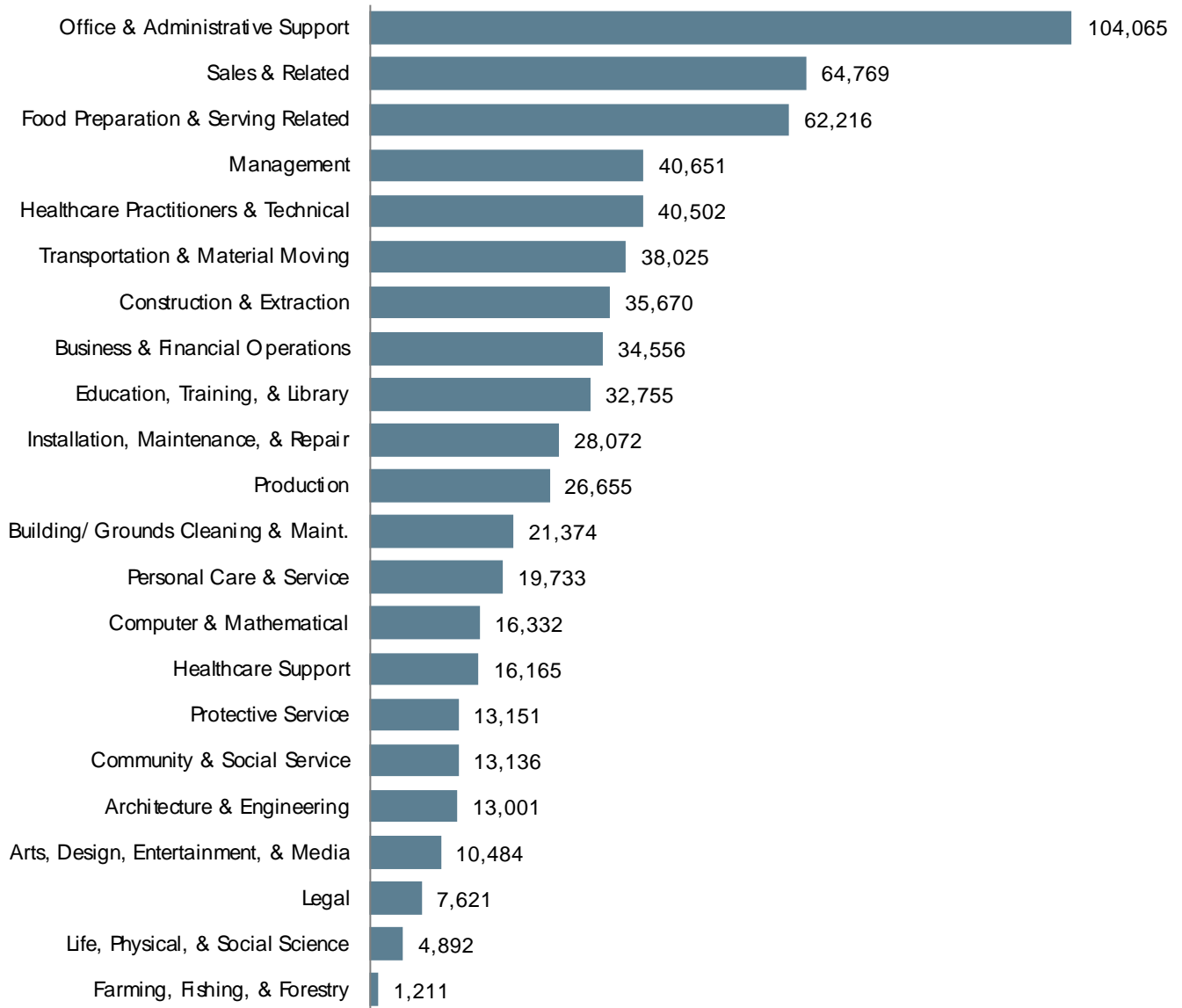


FIGURE 81. WORKING AT HOME
PERCENT OF WORKERS AGE 16 OR OLDER



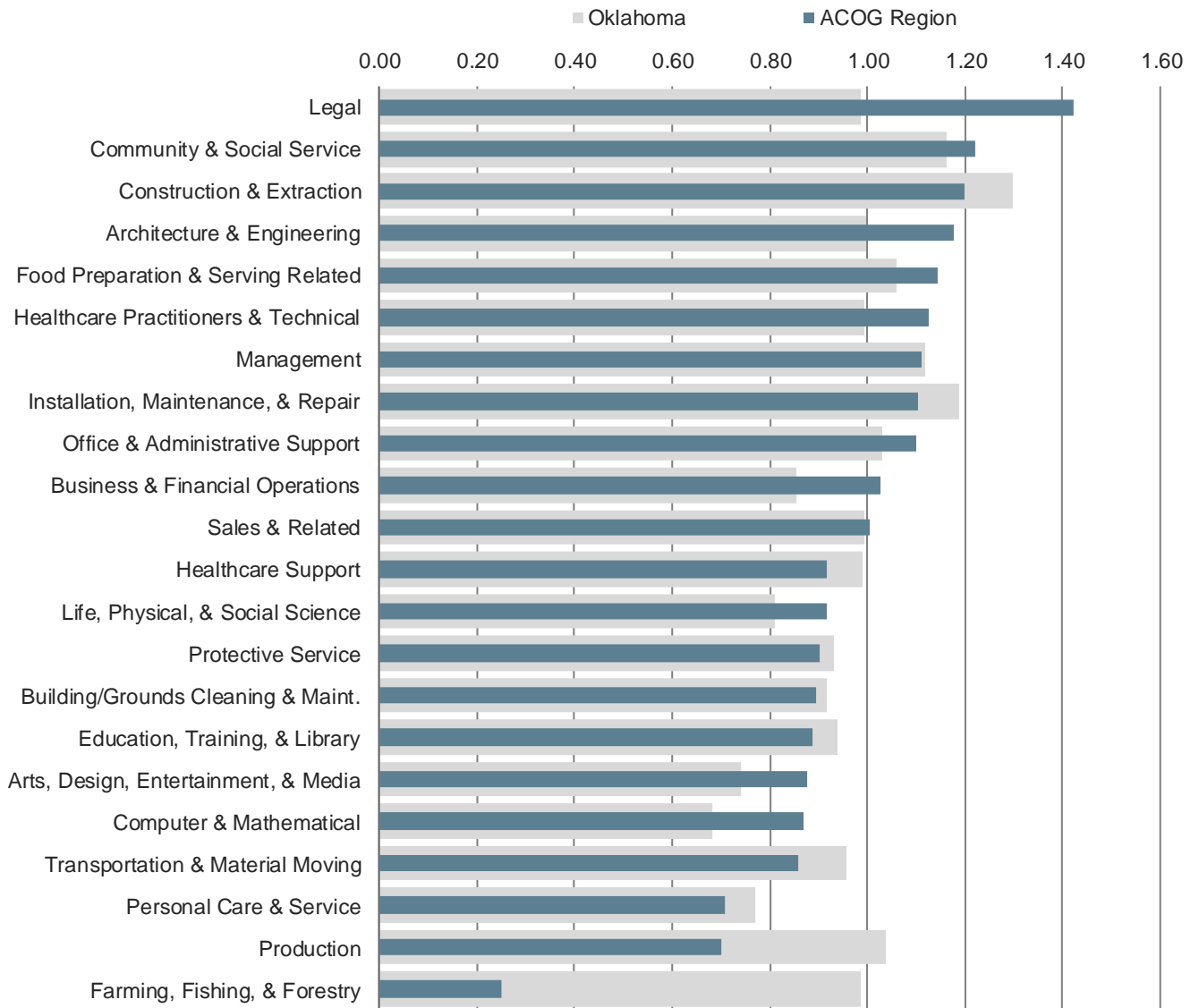
Source: (all figures) US Census Bureau, American Community Survey, 5-year averages for the period 2013–2017.

FIGURE 82. ACOG REGION EMPLOYMENT BY OCCUPATION



Source: Emsi 2019.2— QCEW Employees, Non-QCEW Employees, and Self-Employed.
 Note: Excludes military and unclassified occupations.

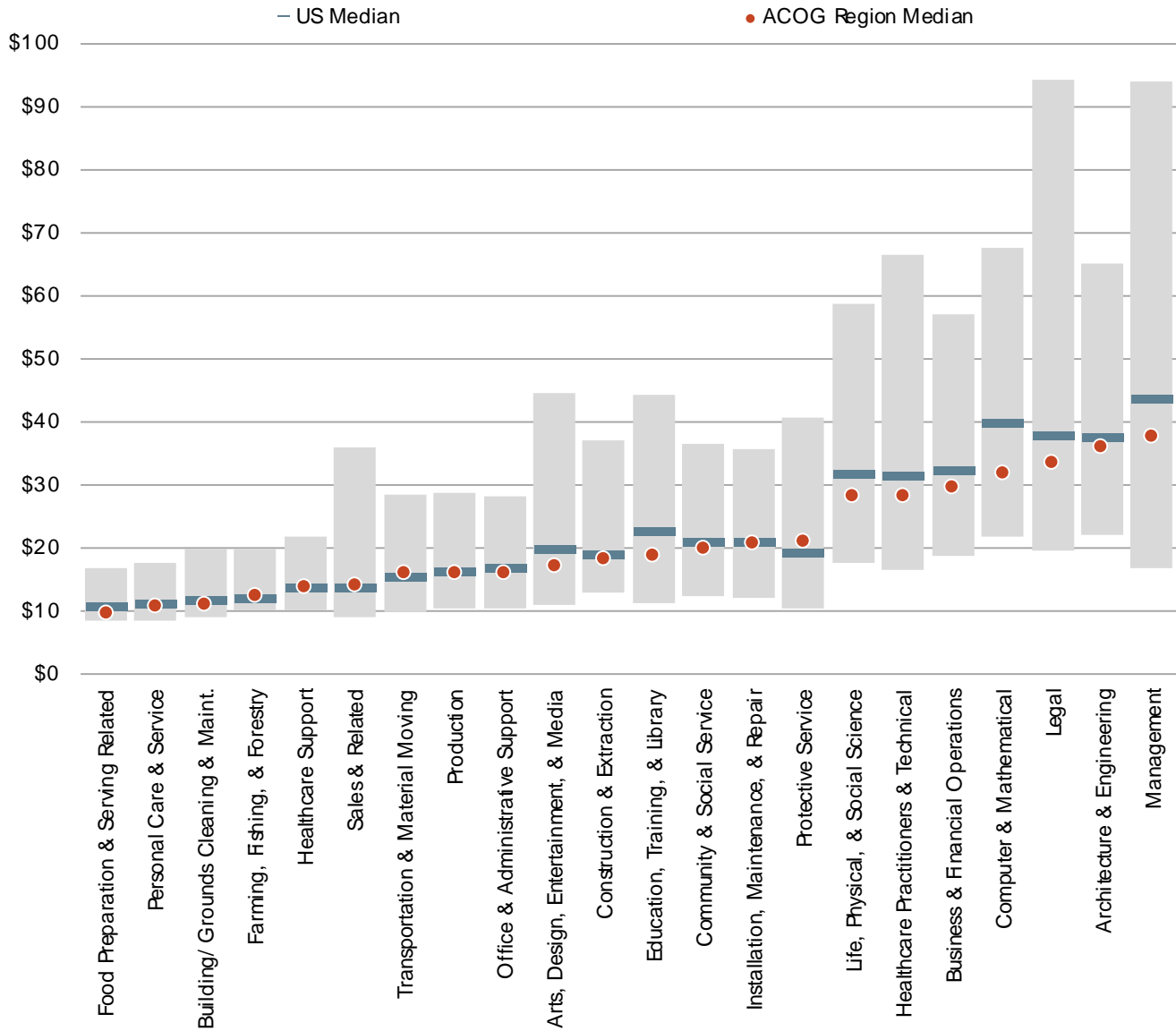
FIGURE 83. OCCUPATIONAL GROUP CONCENTRATIONS



1.00 = US average 1.25 or more = potential advantage 0.75 or less = potential weakness

Source: Emsi 2019.2— QCEW Employees, Non-QCEW Employees, and Self-Employed.
 Note: Excludes military and unclassified employment.

FIGURE 84. MEDIAN HOURLY WAGES, ACOG REGION VS. US
 BAR REFLECTS US WAGE RANGE FROM THE 10TH TO 90TH PERCENTILE



Source: Emsi 2019.2— QCEW Employees, Non-QCEW Employees, and Self-Employed
 Notes: Excludes military occupations; Bar = US wage range from the 10th to the 90th percentile; Markers = Median hourly wage rates for US (—) and ACOG Region (•).

APPENDIX 2. EMPLOYMENT DATA DETAIL

DATA SOURCE

The industry and occupational data presented in this report were prepared using Emsi's foundational dataset, which integrates economic, labor market, demographic, and education data from over 90 government and private sector sources, creating a comprehensive and current database that includes published data and detailed estimates with full coverage of the United States.

For a complete list of Emsi data sources, see: <https://www.economicmodeling.com/data-sources/>.

The company's core data consists of jobs (historical and projected) and earnings (current year) by industry and occupation for every ZIP Code, metropolitan statistical area, and county in the United States. Emsi data are annual averages of jobs (not workers); full-time and part-time jobs are counted equally. Three classes of workers are included in the core dataset.

- **QCEW Employees:** A form of the US Bureau of Labor Statistics Quarterly Census of Employment and Wages (BLS QCEW) dataset that has been modified slightly by Emsi. Suppressions have been removed, public sector employment has been reorganized, and county and NAICS changes have been modified in past years for consistency. This dataset is designed to match QCEW in almost all cases and should be used in analyses where it is important to match official sources.
- **Non-QCEW Employees:** Attempts to cover jobs that fall under an employer-employee relationship but are not covered by QCEW. The major types of employment covered in this set include military jobs, railroad jobs, many nonprofit and religious workers, certain salespersons, miscellaneous federal government, and some other government workers.
- **Self-Employed:** Covers people who, when responding to US Census Bureau surveys, consider self-employment to be a significant part of their income or time spent working. Most people normally considered "self-employed" would fall into this dataset.

CLASSIFICATION SYSTEMS

The employment data presented in this report are organized using two federal classification systems.

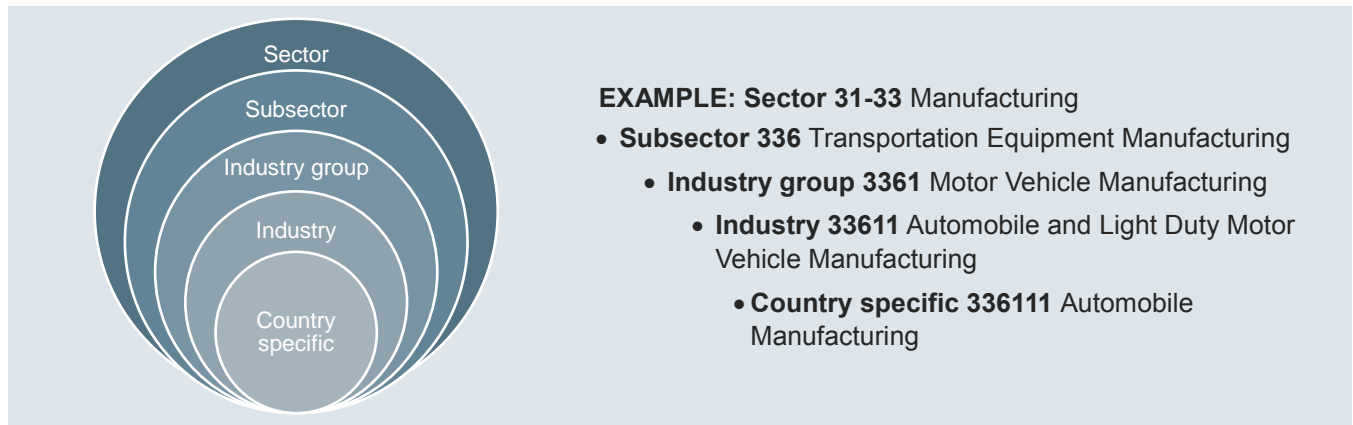
- North American Industry Classification System (NAICS)
- Standard Occupational Classification (SOC) system

A brief overview of each classification system, including an illustration of the structure and an example, are provided.

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS)

The North American Industry Classification System (NAICS, pronounced nakes) was developed under the direction and guidance of the US Office of Management and Budget (OMB) as the standard for use by federal statistical agencies in classifying business establishments for the collection, tabulation, presentation, and analysis of statistical data describing the US economy. The classification system was developed jointly with government agencies in Canada and Mexico to allow for a high level of comparability in business statistics among North American countries. NAICS classifies industries into 20 sectors based on production processes. These sectors are broken into subsectors, industry groups, and individual industries, with an additional level of detail to accommodate industry codes specific to the three countries. The most recent version, 2017 NAICS, was finalized in 2016 and will continue to be implemented by agencies over the next several years.

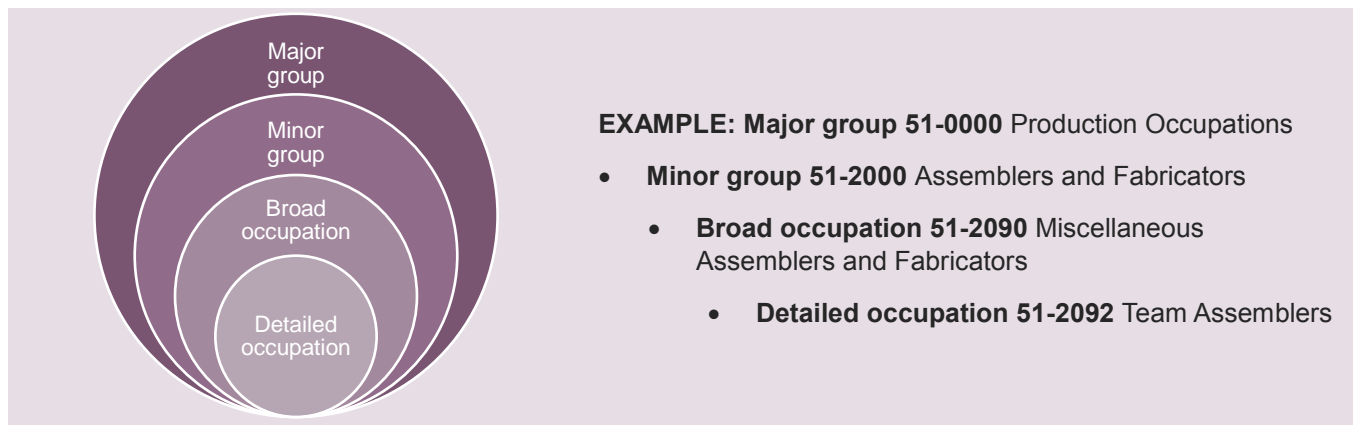
FIGURE 85. NAICS STRUCTURE AND EXAMPLE



STANDARD OCCUPATIONAL CLASSIFICATION (SOC) SYSTEM

The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into categories for the purpose of collecting, calculating, or disseminating data. This system groups all occupations in which work is performed for pay or profit according to the type of work performed and, in some cases, on the skills, education, or training needed to perform the work at a competent level. Under the 2018 SOC system, workers are classified into one of 867 detailed occupations, which are combined to form 459 broad occupations, 98 minor groups, and 23 major groups. Federal agencies began implementing the newly updated SOC system in 2018.

FIGURE 86. SOC SYSTEM STRUCTURE AND EXAMPLE



APPENDIX 3. IMPLEMENTATION MATRIX

CAPEDD CEDS IMPLEMENTATION MATRIX						
	LEAD ORGANIZATION(S)	POTENTIAL PARTNERS	STATUS	TIMEFRAME		
				Next 12 mo.	1 to 3 years	3 to 5 years
GOAL 1: INFRASTRUCTURE						
1.1 Transit-Oriented Development. Prioritize transit-oriented development (TOD) and support projects, such as the Innovation District, that include TOD.						
1.1.1 Develop an enhanced mapping tool with information on demographics, employment center sites, businesses (by sector), housing density, transportation infrastructure, utility infrastructure, as well as schools and other public services.	ACOG	OKC Chamber, Alliance, APA, ULI, CNU, AIA		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> Establish a task force comprised of public and private sector leaders, as well as members of the Metropolitan Planning Organization (MPO), to understand the region's infrastructure needs as it relates to economic development. 	ACOG/MPO	Name(s)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2 RTA. Engage the Regional Transportation Authority (RTA) on economic development issues by understanding regional employment and connectivity needs.						
1.2.1 Support RTA initiatives that relate to economic development, including transit-oriented development (Strategy 1.1)	RTA, COTPA	Name(s)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2.2 Support the infrastructure and multimodal transportation priorities identified in the Innovation District master plan, including pedestrian, bicycle, automobile, and mass transit (Strategy 3.1)	Innovation District	RTA, COTPA		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 Freight Mobility. Convene a regular freight mobility working group meeting (bimonthly or quarterly) of public and private sector leaders involved in freight mobility to discuss transportation issues affecting the region's economy.						
1.3.1 This meeting should be designed to encourage networking within the region's logistics and distribution industry, including representation from the public and private sectors. The focus of the meetings should include evaluation of the region's needs and opportunities associated with freight transportation.	ACOG	Name(s)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3.2 The meetings should also include presentations from local/state/federal transportation planners and knowledge sharing about major transportation policies and infrastructure projects.						
1.3.3 The meetings should also include presentations from local/state/federal transportation planners and knowledge sharing about major transportation policies and infrastructure projects.						

CAPEDD CEDS IMPLEMENTATION MATRIX						
	LEAD ORGANIZATION(S)	POTENTIAL PARTNERS	STATUS	TIMEFRAME		
				Next 12 mo.	1 to 3 years	3 to 5 years
1.3.4 Build on the ACOG 2018 reports about platooning trucks and connected and autonomous vehicles (AV). Support the MPO planning efforts for AVs, including infrastructure for passenger and commercial vehicles.	ACOG/MPO	Name(s)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4 Broadband and 5G. Establish a task force comprised of public and private sector members to evaluate regional broadband service and prepare for future 5G service. Broadband is critical infrastructure that enhances quality of life and improves business competitiveness.						
1.4.1 Identify opportunities to expand broadband service in rural areas, especially in high need areas, such as Langston, where university and community needs are not being adequately met.	ACOG	Name(s)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4.2 Track opportunities for federal and private funding assistance for broadband infrastructure expansion.	ACOG	Name(s)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4.3 Explore options to offer free Wi-Fi in the region, especially around innovation areas, including but not limited to, downtown Oklahoma City, the Innovation District, the University of Oklahoma, and Langston University.	Downtown OKC, Alliance, OKC Chamber	Name(s)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.5 OKC Airport. Support the Will Rogers World Airport (OKC) terminal expansion project and serve as an advocate for expanded air service.	OKC	ACOG				
GOAL 2: RESILIENCY						
2.1 Target Sectors. Develop the region's target sector industry clusters to grow a resilient and diverse economy.						
2.1.1 Utilize a Web-based platform, such as Slack, for industry groups to connect and discuss issues affecting the region. This fosters a collaborative environment, and it engages the business community around economic development issues.	OKC Chamber	Name(s)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.1.2 Prioritize business recruitment initiatives and projects in target industries and traded sector businesses.	OKC Chamber	EDOs		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.1.3 Support efforts to build the supply chain around target sectors and encourage businesses to source materials and services locally whenever possible.	OKC Chamber	EDOs		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.1.4 Focus on developing the emerging sectors, especially weather tech. The ACOG region is uniquely positioned with the National Weather Center and the University of Oklahoma Advanced Radar Research Center to attract companies and develop new technology.	OKC Chamber, OU	EDOs		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2 Business Growth and Recruitment. Support the region's business retention and expansion (BRE) and recruitment programs to ensure local businesses have the tools and support they need to thrive.						

CAPEDD CEDS IMPLEMENTATION MATRIX

	LEAD ORGANIZATION(S)	POTENTIAL PARTNERS	STATUS	TIMEFRAME		
				Next 12 mo.	1 to 3 years	3 to 5 years
2.2.1 Convene economic development partners on a quarterly basis to share best practices and understand opportunities and challenges in the regional economic development landscape.	ACOG	Chambers, EDOs		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2.2 Nurture innovation in existing business by leveraging assets at the University of Oklahoma Tom Love Innovation Hub and in the Innovation District.	OU, Innovation District	EDOs		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2.3 Coordinate business recruitment and marketing efforts at a regional level and ensure broad representation of opportunities in urban and rural areas.	OKC Chamber	EDOs		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2.4 Develop and maintain a toolkit with resources for businesses to enhance their economic and environmental resiliency.	OKC Chamber	EDOs		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3 Workforce Development. Support the region’s workforce development partners in strengthening the talent pipeline.						
2.3.1 Advocate for the alignment of workforce development tools and programs at state and local levels. Work collaboratively to remove silos within organizations and programs.	COWIB	Chambers		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3.2 Emphasis should be placed on developing skill sets that align and meet the needs of employers in the region’s targeted industries.	COWIB	Higher Ed		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3.3 Support efforts to cross-train and upskill employees in critical skill sets.	COWIB	Name(s)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3.4 Maintain partnerships with the region’s higher education systems and work aggressively to retain graduating talent.	ACOG	Higher Ed, COWIB, OKC Chamber		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.4 Talent Attraction. Grow the regional talent pool by recruiting skilled workers and remote workers.						
2.4.1 Ensure the region has the resources needed to attract and support remote workers.	OKC Chamber	EDOs, Chambers		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.4.2 Support regional marketing efforts to attract talent.	OKC Chamber	EDOs, Chambers		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.5 Placemaking. Support the unique community assets that enhance regional competitiveness.						
2.5.1 Advocate for projects that contribute to the unique identity of communities in the ACOG region and enhance the quality of life for residents.	ACOG	Jurisdictions, APA, ULI, CNU, AIA		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.5.2 Engage the arts and design community in projects that elevate the role of arts and culture in downtown Oklahoma City and throughout the region to create an atmosphere of creativity.	ACOG	Jurisdictions		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.5.3 Support the preservation and revitalization of historic, and historically significant, buildings in the region.	OKC, Alliance	Jurisdictions		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.6 Environmental Resiliency. Develop a set of regional environmental resiliency standards that can be adopted by jurisdictions throughout the region.						

CAPEDD CEDS IMPLEMENTATION MATRIX						
	LEAD ORGANIZATION(S)	POTENTIAL PARTNERS	STATUS	TIMEFRAME		
				Next 12 mo.	1 to 3 years	3 to 5 years
2.6.1 Form a task force comprised of public and private sector partners to inventory and evaluate regional resiliency standards.	ACOG, Tinker	Jurisdictions		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.6.2 Economic development business outreach efforts should include working with employers to create and improve disaster preparedness (Action 2.2.4)	ACOG	EDOs, Chambers		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GOAL 3: INNOVATION						
3.1 Innovation District. Support implementation of the Innovation District master plan and explore opportunities for bringing elements of the Innovation District to other communities in the region.						
<ul style="list-style-type: none"> Leadership from the CEDS committee should directly support implementation of the Innovation District master plan. 	ACOG			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2 OU Innovation Hub. Work with leadership at the University of Oklahoma Tom Love Innovation Hub to map the region's innovation ecosystem and entrepreneurship resources.						
3.2.1 Update the inventory of coworking spaces in the region.	OKC Chamber	ACOG		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2.2 Support the Innovation Hub efforts to inventory the local, state, and national entrepreneurship programs and resources.	OU	Chambers, EDOS		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2.3 Promote and encourage use of Innovation Hub resources during business outreach (Action 2.2.2)	OKC Chamber	EDOs, Chambers		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3 Opportunity Zones. Support regional coordination around marketing and development of the Opportunity Zones in Cleveland, Logan, and Oklahoma Counties.						
3.3.1 Identify opportunities to align the needs of underserved communities with the development goals of the Opportunity Zones.	Alliance	Jurisdictions, ACOG		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.2 Explore funding mechanisms to establish seed funds for entrepreneurs in Opportunity Zones.	Alliance	Jurisdictions, ACOG		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



acog

association of central oklahoma governments

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