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CLUSTER TARGET INDUSTRY STUDY

PREPARED FOR THE I-68 REGIONAL ECONOMIC PARTNERSHIP

TIP strategies
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ACKNOWLEDGMENTS

The TIP Strategies consulting team would like to thank the many individuals and organizations who participated in the development of the I-68 Regional Economic Partnership (REP) cluster target industry study. Your insight and expertise helped build a better understanding of the region's assets and opportunities. A special thank you to the I-68 partners for contributing their time and input throughout the planning process.

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I-68 REP PARTNER ORGANIZATIONS

TIP STRATEGIES, INC., is a privately held economic development consulting firm with offices in Austin and Seattle. TIP Strategies is committed to providing quality solutions for public and private sector clients. Established in 1995, the firm's primary focus is economic development strategic planning.

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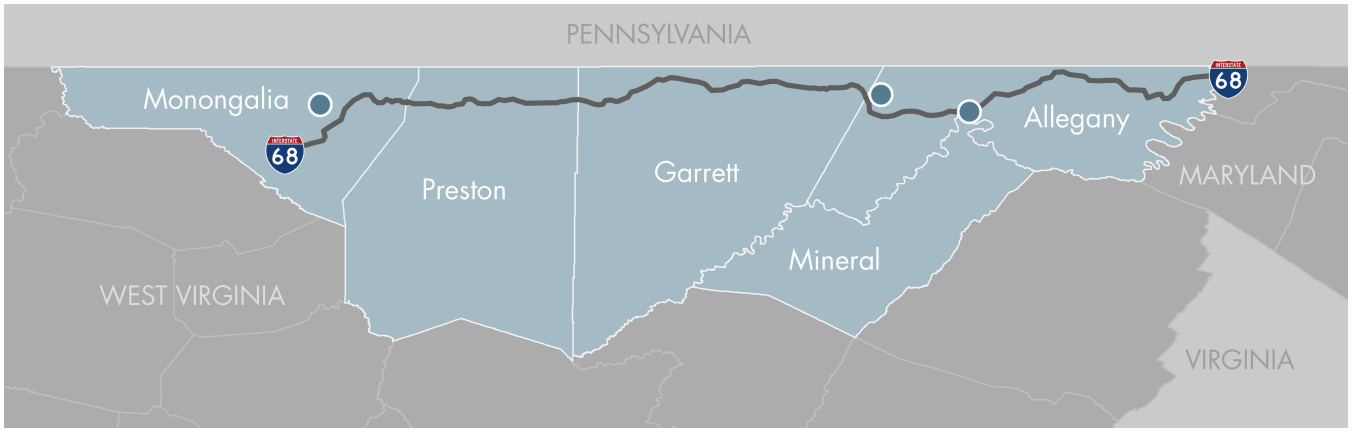
EXECUTIVE SUMMARY

Interstate 68 is a 113-mile, east-west, highway that traverses the mountain ranges and rural areas of western MD and northern WV, connecting I-70 in Hancock, MD, to I-79 in Morgantown, WV. The interstate was completed in 1991 and dubbed the "National Freeway," as it partially parallels the historic National Road.

In 2016, the counties and cities that share I-68 as a common asset came together to form the I-68 Regional Economic Partnership (REP). Allegany County, the City of Cumberland, the City of Frostburg, and Garrett County, MD; in addition to Mineral County, Preston County, Monongalia County, and the City of Morgantown, WV, comprise the REP, with organizational support from The Greater Cumberland Committee and the Tri-County Council for Western Maryland. This is the first time that a partnership of economic development organizations crossing the MD and WV state lines has been formed. While the cities and counties making up the partnership share many commonalities, they also vary in demographics, growth trends, and predominant industries.

FIGURE 1. I-68 REGION



In 2017, the Tri-County Council for Western Maryland was awarded a Partnerships for Opportunity and Workforce and Economic Revitalization (POWER) grant from the Appalachian Regional Commission for an economic development cluster target industry study for the I-68 REP. A major criteria and impetus of the grant award was the continuing decline of the coal industry and the need for the broader region to further diversify its industry base.

PURPOSE AND SCOPE

Target industry analysis is an analytical methodology used to identify business clusters that best fit and would likely benefit from a community's assets. If the business clusters succeed, the resulting economic activity provides stimulus to the community. Effective target industry analysis forms the foundation of a successful business attraction program. It provides a focused approach to conducting outreach and external marketing activities, thus appealing more directly to corporate decision-makers in the identified target industries.

This study is primarily aimed at identifying strategic recommendations that support economic diversification, job creation, capital investment, workforce development and re-employment opportunities that will counteract the declining demand for coal from the I-68 region. The project's scope of work included a regional asset inventory, regional laborshed analysis, recommended target industry sectors, target industry supply chain analysis, and county-specific strategic initiatives to increase competitiveness.

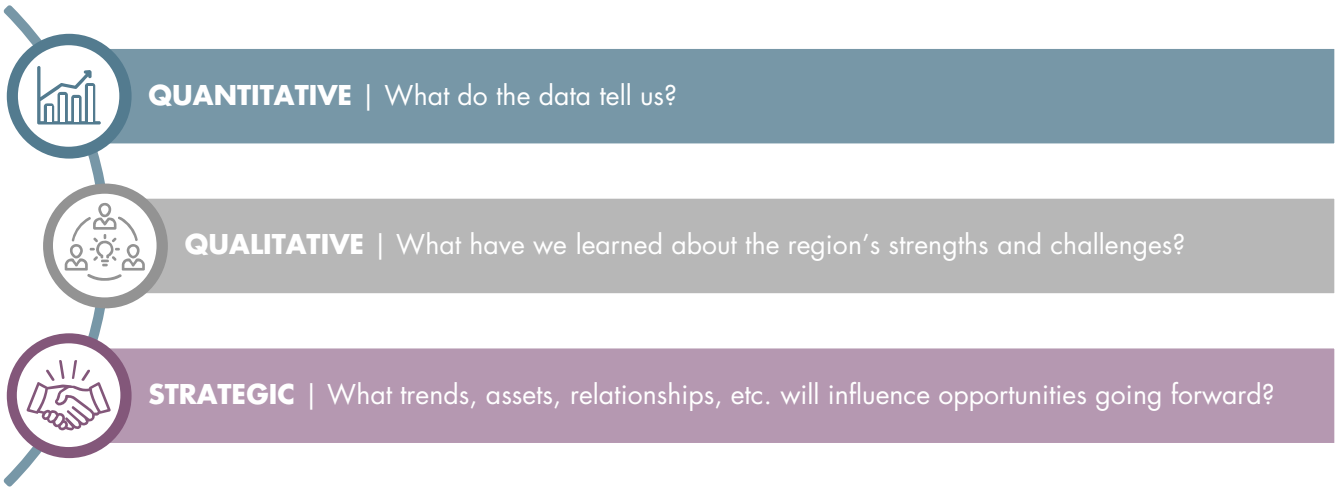
As part of this engagement, the consulting team documented demographic, workforce, and economic trends and characteristics in the region and assessed the competitiveness of the region based on various factors. With this understanding of the region, the consulting team employed a multifaceted approach to assess target industries, helping match the region's assets with national and international opportunities. The resulting strategic recommendations are outlined beginning on page 5. Full details of the targeting analysis begin on page 9, and target industry profiles start on page 22. An economic assessment and a strengths, weaknesses, opportunities, and threats (SWOT) analysis are provided in Appendix A on page 42.

Given that the I-68 region offers a stable, diverse economic base; excellent market access to a broad cross section of the US; and unparalleled scenic appeal and outdoor recreation opportunities; it is well-positioned for an enhanced business attraction effort.

TARGETS

As shown in Figure 2, the TIP Strategies consulting team used a three-pronged approach—quantitative, qualitative, and strategic—to identify the region's best prospects for growth. This approach helped match local assets with long-term trends to identify the industries that represent the highest potential for relocation or expansion. The consulting team's analysis was informed by interviews with stakeholders, an inventory of regional assets, and a demographic and economic assessment of the regional economy.

FIGURE 2. TARGETING APPROACH



Based on the findings of the demographic and economic assessment, SWOT analysis, and targeting analysis, the TIP Strategies consulting team recommends five areas that would benefit from a regional targeting initiative. In total, these broad sectors employ more than 66,000 workers across more than 3,100 establishments in the I-68 region. Additional information about each target and a more detailed rationale are provided beginning on page 9.

- *HOSPITALITY AND TOURISM.* Located in the heart of the beautiful Appalachian Mountains, the I-68 region is an outdoor enthusiast's paradise. The region boasts acres of parks, trails, lakes, and rivers. It is also home to MD's only four-season ski resort and the world's only mountaintop, recirculating, whitewater course. Various resorts and unique destinations call the region home and attract a significant number of tourists and visitors annually. While the hospitality and tourism industry is not a traditional focus of business attraction programs, this target can yield direct and indirect benefits for a regional community. From an economic development

standpoint, tourism and associated activities draw in dollars from outside the region, making it an attractive source of revenue. Given the rising importance of place-based assets in motivating workers to locate and stay in communities, this industry sector is also increasingly relevant to the region's talent attraction and retention efforts. This target combines traditional hospitality industries (accommodations, food service, and travel arrangements) with retail trade in recognition of the important role the retail sector can play in a successful tourism program and the shared focus on customer service among these activities.

- *HEALTHCARE.* The I-68 region has a robust healthcare sector. West Virginia University (WVU) Medicine, Western Maryland Health System, and Mon General Hospital are some of the most respected institutions in the Mid-Atlantic. The healthcare sector functions as both a significant economic driver and a vital quality of life asset in the region. The region's strong healthcare sector also provides the opportunity for healthcare-related spinoff businesses in other industries. Furthermore, healthcare occupations include a number of high-wage positions, with a robust career ladder offering multiple points of entry. Projections for continued growth, fueled by a wide range of trends—including the aging Baby Boomers and continued emphasis on medical testing and advanced technologies—make this sector an attractive target for expansion across the country. In the context of this analysis, the healthcare target includes establishments that provide healthcare to individuals on an outpatient (doctor's office and testing facilities) and an inpatient basis (hospitals and residential care facilities).
- *MANUFACTURING.* Despite shedding millions of jobs since the 1970s, manufacturing remains an essential sector of the US economy and the I-68 region. Strides in technology have enabled tremendous productivity gains and allowed manufacturers to increase output, even as payrolls have declined. To remain competitive, firms have increasingly turned to advanced processes for better, more efficient production. This emphasis on innovation is illustrated by local corporate investments, such as Orbital ATK, Mylan, ClosetMaid, and Hunter Douglas. Leveraging Northrop Grumman's proposed investment in the region is a major opportunity.
- *TECHNOLOGY.* The I-68 region is home to burgeoning technology activity, including security software and services, tech business support services, research and testing (e.g., biometrics), and unmanned aerial vehicles (UAVs). This activity is being driven in part by the region's proximity to a major research university and the emergence and concentration of technology related firms and activity in nearby metro areas. In the context of this analysis, the technology target includes a range of activities involved in transforming information into products that can be distributed for use by consumers and businesses, along with the specialized professional and technical services that rely heavily on information technology (IT) or other advanced technologies.
- *NATURAL RESOURCES.* The I-68 region has a long history of reliance on natural resource-based industries, including forestry, agriculture, and mining. While forestry and mining activity is on the decline nationwide, these sectors remain a significant portion of the region's industry base. Agricultural production and energy-related activities are the focus of this target. Currently, much of the locally produced crops in portions of the region is shipped out of the region to be processed in other areas, most often closer to the final market. However, there are opportunities for the I-68 region to process the products locally, thus reducing imports into the region. Capitalizing on the growing farm-to-table movement and craft brewing trends represents an additional approach for supporting value-added production in the region.

RECOMMENDATIONS

Based on a thorough evaluation of the region's assets and opportunities and a realistic acknowledgment of limitations, the consulting team identified three key areas of strategic recommendations to position the region for economic success. The three goals are outlined in Figure 3.

FIGURE 3. STRATEGIC FRAMEWORK

Marketing and Business Development	*Create a regional identity and increase awareness among decision-makers.*
Workforce	*Promote the region's available workforce and prepare I-68 residents for existing and future economic opportunities.*
Small Business and Entrepreneurship	*Enhance and elevate I-68's small business and entrepreneurship activities.*

1. *MARKETING AND BUSINESS DEVELOPMENT.* Since the economic recession ended, the battle for business attraction projects has grown increasingly competitive nationwide. Attracting businesses to the I-68 region requires a thoughtful approach to external marketing and business development. Nonconventional media channels, such as digital platforms and earned media, will provide the most effective and least costly impact, compared to more expensive advertising and print materials. Additionally, forming strategic partnerships within the broader four-state area and capitalizing on the region's proximity to three major metropolitan areas will be important in the business attraction process.
2. *WORKFORCE.* The region's natural resources have traditionally been a significant competitive advantage and catalyst for economic activity. However, the national economy is increasingly being driven by human knowledge rather than proximity to these types of resources. In other words—people, rather than raw materials, are the most important asset to companies' value and growth prospects. This applies to all industries, including manufacturing, professional services, and technology. This shift of economic focus from resources to people has been accompanied by a change in what motivates talented workers to locate and stay in communities. While the I-68 region's laborsheds provide access to a large labor force, the availability of skilled labor is a primary constraint. The region's strong school systems, trades programs, work ethic, and educational institutions can help employers overcome this challenge. The region's place-based assets (such as natural amenities and outdoor recreation opportunities) provide a valuable competitive advantage in terms of attracting and retaining talent in the region.
3. *SMALL BUSINESS AND ENTREPRENEURSHIP.* A renewed focus on small business ownership and entrepreneurship is driving the rebirth of rural economies in the US. These disciplines have the potential to boost the I-68 region's economy by tapping local talent and resources and providing an organic source of stimulus. Through small business and entrepreneurial growth, the I-68 region can diversify and become more resilient to the ups and downs affecting agriculture, energy, and other industries of which the region has traditionally been dependent. In short, small businesses and entrepreneurs can help ensure that the I-68 region will survive and thrive.

NEXT STEPS

The recommended target industries and strategic considerations form a strong foundation for the I-68 region's business attraction efforts. They are intended to provide a road map for the I-68 region; however, the ultimate success of the outcomes will depend on the unified implementation efforts of the I-68 REP partners. This target industry analysis is only the first step in the region's economic development strategy. Moving forward, a more comprehensive program will position the region for greater success.

STRATEGIC RECOMMENDATIONS

The TIP Strategies consulting team developed the strategies and actions below based on the input of regional stakeholders; a detailed analysis of demographic, economic, and market data; multiple community site visits and windshield tours; key findings from a review of relevant studies; and TIP Strategies' 20 years of experience working with communities across the country.

GOAL 1. MARKETING AND BUSINESS DEVELOPMENT

Create a regional identity and increase awareness among decision-makers.

1.1. Formalize the I-68 partnership as a regional marketing coalition for industry recruitment, retention, and expansion. Utilize a range of traditional and nontraditional marketing tools to promote the I-68 region.

1.1.1. Create an I-68 brand (logo and positioning statement) that reflects the region's unique personality and value proposition.

1.1.2. Develop an I-68 website.

- To minimize costs, consider conducting an online contest for regional residents to submit their favorite photos and write compelling stories about the region that will be featured on the website.

1.1.3. Create an I-68 social media presence and harness current partner social media activity.

- Utilize the I-68 partners' social media platforms to educate the community about positive findings and lesser-known facts uncovered throughout the strategic planning process.
- Develop a more consistent and strategic economic development voice across social media platforms, in particular LinkedIn and Twitter, to develop a greater awareness of economic development activities in the region.
- Solicit active social media users (individuals and organizations) to serve as ambassadors for the region. Develop a "social media tips sheet" to guide users on what to post.
- Develop a social media calendar that allows each organization to proactively plan content based on specific topics or focused on community events.
- Develop an external hashtag campaign, such as #WhyI-68, or an internal hashtag campaign, such as #ILoveI-68, and encourage regional residents and ambassadors to tell positive stories.
- Tell stories of regional successes via social media, instilling a sense of community pride.

1.1.4. Utilizing both the quantitative and qualitative findings generated throughout this study, the I-68 region should create customized digital and print marketing content for each of its target industries.

- Promote the region's overall value proposition and each industry's value proposition.
- Catalog evidence of the region's strong work ethic and collect testimonials from regional employers. Tell these stories on the I-68 website, social media, and in individual partner literature.
- Promote the region's accessibility to a civilian labor force of 325,000.

1.2. Employ a range of strategies to bolster business development efforts.

1.2.1. Develop an in-depth understanding of the target industries, including industry trends, key influencers, capital flows, and location trends.

- Keep up to date on trends and events through online industry-specific publications and general news sources, such as the *Wall Street Journal.*
- Attend select, relevant trade shows (found on target industry profiles) to gain a better understanding of industry dynamics and participants.
- Catalog and track any events or companies that could contribute to lead generation.

1.2.2. Strengthen relationships with regional employers and work with them to identify leads from their peer networks, including customers and suppliers.

- Assemble a team of CEOs who are willing to tap into their networks and help the I-68 region with outreach.
- Utilize this team when selling the region to prospects during site visits, on recruitment trips, and, as appropriate, at industry events that they are attending.

1.2.3. Pursue promising leads through industry research, regional networks, and targeted outreach.

- Maintain strong relationships with regional commercial brokers and developers to stay abreast of the local real estate market and which companies are seeking to relocate to the region.
- Partner with the states of MD and WV and other regional economic development organizations to coordinate lead generation activities and identify co-marketing opportunities.
- Cultivate relationships with key site selectors and ensure that they are informed of the I-68 region's assets, industry drivers, and advantages.
- Use tools such as LinkedIn Sales Navigator to target individual business owners with regional or state connections. Sales Navigator allows users to filter individuals by industry, company size, education, position, and a host of other variables; this can allow I-68 partners to identify and connect with people who have a higher propensity to relocate to the region.
- Partner with the region's high schools to identify alumni who own businesses or work in upper-level management in the selected target industries.
- Directly reach out to the most promising leads and articulate a clear value proposition about why they should consider the I-68 region as they expand.

1.2.4. Focus on recruiting firms in target industries with fewer than 50 workers to accommodate the average available building size in the region.

1.2.5. Identify and develop at least two larger (20 to 25 acres) shovel-ready and/or certified sites in the region to accommodate a larger industrial prospect.

1.2.6. Conduct annual I-68 business and/or talent recruitment missions to the three surrounding metro areas (Baltimore, Pittsburgh, and Washington, DC).

GOAL 2. WORKFORCE

Promote the region's available workforce and prepare I-68 residents for existing and future economic opportunities.

2.1. Strengthen existing partnerships and create new connections among the I-68 region's employers, economic development organizations, workforce development entities, and educational institutions to ensure that the region's business needs are being met and residents are receiving optimal skills training to advance their careers.

- **2.1.1.** Continue to collect input from employers and share this input widely across the education and training system.
- **2.1.2.** Regularly communicate with the region's higher education institutions to facilitate information sharing.
- **2.1.3.** Utilize the I-68 website to promote job opportunities and openings in the region.
- **2.1.4.** Convene career and technical education programs in the region to ensure they are offering courses that are related to high-demand occupations.
- **2.1.5.** Utilize partnerships with education partners to engage the region's youth, to inspire them to stay in, or return to, the community after graduation, and prepare them for becoming productive members of the region's workforce (including internships and apprenticeship programs).
- **2.1.6.** Support regional efforts to increase K–12 and postsecondary student achievement and the educational attainment of regional citizens and ensure they are prepared for the future workforce.
- **2.1.7.** Catalog the innovative programs in public schools that strengthen their academic offerings or workforce training capacity.

2.2. Promote the integration of soft skills and basic employability skills into regional educational curricula.

- **2.2.1.** Define which specific skills are valued by employers in the I-68 region and create soft-skill standards for entry-level positions across industries.
- **2.2.2.** Share the soft-skill standards with education and training providers in the region and facilitate a discussion about how best to teach these skills.
- **2.2.3.** Encourage the use of work-based learning as a means of developing soft skills by creating a database of work-based learning opportunities and sharing this across the region's education and training network so that more students have access to the opportunities.
- **2.2.4.** Support additional initiatives to teach soft skills by identifying funding opportunities and collaborating on the initiatives to optimize the return on investment of any funding secured.

2.3. Cultivate an active community alumni network that can serve as a larger talent pool beyond the region boundaries.

- **2.3.1.** Partner with local high school and college alumni networks to contact former residents and promote career opportunities in the region.

2.3.2. Consider leveraging an existing ambassador group to implement a social media campaign, such as #ComeHomeToI-68 or #10ReasonsToReturn. In the posts, highlight such items as new employers, new employment opportunities, and new quality of life amenities.

2.3.3. Facilitate the development of summer internship, apprenticeship, and/or mentorship programs so that college students returning home for the summer can connect with local employers.

2.4. Utilize tourism as a talent attraction strategy. Work with various tourism destinations to capture visitor contact information and promote employment opportunities to those individuals.

GOAL 3. SMALL BUSINESS AND ENTREPRENEURSHIP

Enhance and elevate I-68's small business and entrepreneurship activities

3.1. Position and promote I-68 as a "front door" of entry to regional entrepreneurship and small business programs and services.

3.2. Bolster entrepreneurial support resources in the region. Create a regional resource guide and promote it on the I-68 website.

3.3. Consider developing a coworking space that can be utilized by regional partners. This facility will help expand networking channels and relationship development among regional businesses to foster solidarity, learning, and collaboration.

3.4. Encourage all the region's higher education institutions to expand their focus on entrepreneurship curriculum as a way to enhance economic growth and retain graduates in the region.

3.5. Encourage "grassroots" innovation among K–12 students and young adults throughout the community by facilitating the creation of programs at local educational institutions that emphasize innovation, technology commercialization, and business development.

3.6. Consider developing a "reverse-pitch" program in partnership among the region's businesses, small businesses, and entrepreneurs. Catalog business needs and invite the region's current and prospective small businesses and entrepreneurs to make a "pitch" to them.

3.7. Explore the establishment of an innovation center to solve opportunities and problems faced by regional industries.

3.7.1. Support this initiative with teams from target industries in the region.

3.7.2. Explore the potential for spin-off companies and technologies from existing companies in the region.

3.7.3. Expand efforts to conduct research and development (R&D) in the region to encourage commercialization and the development of clusters.

3.7.4. Connect research activities and technological innovation occurring at West Virginia University and Frostburg State University to the private sector. Ensure their discoveries are translated into jobs, investments, or other benefits.

3.7.5. Work with the region's major employers and medical complexes to attract R&D spending from the region's universities.

3.7.6. Align research, education, and entrepreneurial resources with target industries.

3.7.7. Engage officials at I-68 higher education institutions to learn how to potentially replicate commercialization programs that have been successful.

TARGETING ANALYSIS

The consulting team used a three-pronged approach—quantitative, qualitative, and strategic—to identify the region's best prospects for growth. This approach helps match local assets with long-term trends to identify the industries that represent the highest potential for relocation or expansion. The analysis was informed by interviews with stakeholders, an inventory of regional assets, and an assessment of the regional economy.

INDUSTRY STRENGTHS

The top three industries in the I-68 region—healthcare and social assistance, education, and retail trade—make up roughly 43 percent of the region's employment base, following state and national trends. However, the I-68 region's share of jobs within these three industries exceeds the nation.

FIGURE 4. INDUSTRY DISTRIBUTION (% OF TOTAL)
COMPARISON OF I-68 WITH SELECTED GEOGRAPHIES AND US

NAICS Code & Description	I-68	West Virginia	Maryland	US
62 Healthcare & social assistance*	**19.9%**	**17.1%**	**13.3%**	**13.4%**
61 Education*	**13.2%**	**9.3%**	**10.3%**	**9.4%**
44-45 Retail trade	**11.5%**	**12.1%**	**10.2%**	**10.5%**
72 Lodging, restaurants, & bars	10.4%	9.0%	8.0%	8.7%
31-33 Manufacturing	8.3%	6.4%	3.6%	8.0%
23 Construction	5.2%	5.1%	6.5%	5.5%
81 Personal & other services	4.1%	4.7%	5.0%	4.9%
54 Professional services	3.7%	3.8%	9.4%	6.5%
56 Administrative & support services	3.6%	5.2%	6.3%	6.3%
48-49 Transportation & warehousing*	3.0%	3.5%	3.5%	3.9%
9039 Local govt.	2.8%	3.9%	3.2%	3.6%
9029 State govt.	2.5%	3.5%	1.9%	1.5%
9011 Federal govt. (civilian)	1.9%	2.7%	5.6%	1.5%
42 Wholesale trade	1.8%	2.9%	3.0%	3.8%
52 Finance & insurance	1.7%	2.6%	3.4%	3.9%
51 Information	1.4%	1.3%	1.4%	1.9%
53 Property sales & leasing	1.4%	1.1%	1.9%	1.7%
71 Arts, entertainment, & recreation	1.2%	1.1%	1.8%	1.7%
55 Corporate & regional offices	1.1%	0.8%	0.9%	1.4%
21 Mining (incl. oil & gas)	0.8%	2.6%	0.0%	0.4%
22 Utilities	0.4%	0.7%	0.3%	0.4%
11 Agriculture & forestry	0.3%	0.5%	0.4%	1.2%

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
*Includes related public-sector employment (e.g., Education includes public schools, colleges, and universities; Healthcare includes public hospitals; and Transportation and warehousing includes US Postal Service workers).
Note: Three largest industries are highlighted.

The I-68 region has a higher-than-average location quotient (LQ) of employment in mining, state government, healthcare and social assistance, education, federal government, utilities, and professional services (indicated by LQs greater than 1.25), as compared to the nation.

FIGURE 5. INDUSTRY CONCENTRATION (LQ)
COMPARISON OF I-68 WITH SELECTED GEOGRAPHIES AND US

NAICS	Code & Description	I-68	West Virginia	Maryland	US
21	Mining (incl. oil & gas)	**2.04**	**6.65**	0.10	1.00
9029	State govt.	**1.70**	**2.40**	**1.30**	1.00
62	Healthcare & social assistance*	**1.48**	**1.27**	0.99	1.00
61	Education*	**1.41**	1.00	1.10	1.00
901199	Federal govt. (civilian)	**1.34**	**1.89**	**3.86**	1.00
72	Lodging, restaurants, & bars	1.20	1.05	0.92	1.00
22	Utilities	1.16	**1.97**	0.95	1.00
44-45	Retail trade	1.10	1.16	0.97	1.00
31-33	Manufacturing	1.05	0.80	0.45	1.00
23	Construction	0.96	0.92	1.18	1.00
81	Personal & other services	0.85	0.96	1.03	1.00
53	Property sales & leasing	0.82	0.63	1.13	1.00
9039	Local govt.	0.77	1.09	0.88	1.00
51	Information	0.76	0.69	0.74	1.00
48-49	Transportation & warehousing*	0.76	0.89	0.90	1.00
55	Corporate & regional offices	0.75	0.59	0.62	1.00
71	Arts, entertainment, & recreation	0.70	0.63	1.06	1.00
54	Professional services	0.57	0.59	**1.45**	1.00
56	Administrative & support services	0.57	0.82	0.99	1.00
42	Wholesale trade	0.48	0.76	0.79	1.00
52	Finance & insurance	0.44	0.67	0.86	1.00
11	Agriculture & forestry	0.23	0.42	0.32	1.00

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
*Includes related public-sector employment (e.g., Education includes public schools, colleges, and universities; Healthcare includes public hospitals; and Transportation and warehousing includes US Postal Service workers).
Note: LQs greater than 1.25 are presumed to show competitive advantage and are highlighted.

ABOUT LOCATION QUOTIENTS (LQs)

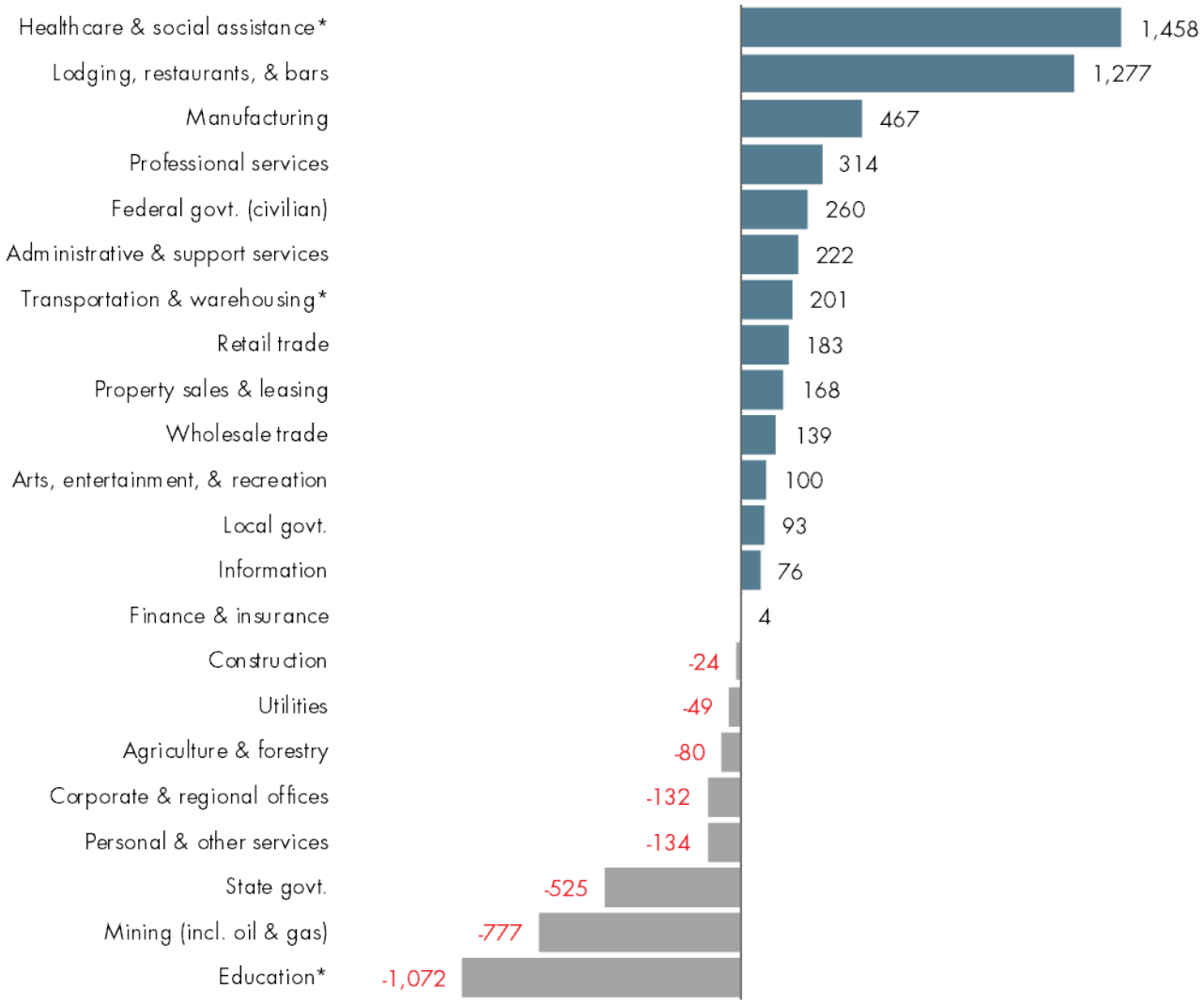
Location quotient analysis is a statistical technique used to suggest areas of relative advantage based on a region's employment base. LQs are calculated as an industry's share of total local employment divided by the same industry's share of employment at the national level.

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

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.

From 2012 to 2017, the healthcare and lodging/hospitality sectors led regional growth, adding just under 3,000 jobs combined during the period. The education, mining, and state government sectors shed the largest number of workers over this period. Losses in the education sector include cuts in local public schools (K–12) and state-funded colleges and universities.

FIGURE 6. I-68 NET CHANGE IN JOBS, 2012–2017



Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
*Includes related public-sector employment (e.g., Education includes public schools, colleges, and universities; Healthcare includes public hospitals; and Transportation and warehousing includes US Postal Service workers).

Figures 4, 5, and 6, which were excerpted from the economic assessment, focused on the region's strengths using standard industry classifications. For this analysis, an understanding of the region's strengths by industry cluster is instructive. Clusters are geographic concentrations of interconnected businesses, suppliers, and associated institutions in a particular field. Supporting the growth and health of these ecosystems has become a central element in economic development strategies.

Traded clusters—those that serve outside markets—are often the focus of recruitment efforts. This emphasis on traded clusters reflects the fact that businesses in these clusters generally have more choice in where they locate relative to local clusters, which primarily serve local markets. Traded clusters are generally economic drivers, due to their ability to bring in new money from outside the area.

Although local clusters typically do not have the same economic impact as traded clusters, they include industries that are often essential elements of quality of life. Examples include the presence of hospitals and other medical facilities, a diverse retail sector, and strong real estate and construction activity. As such, they play an important role in supporting the growth of all businesses.

Figure 8 and Figure 9 provide an overview of the region's top local and traded clusters (pages 13 and 14, respectively). For each cluster type, a bubble chart shows projected job growth for the top 15 clusters over the next 5 years (horizontal axis) relative to current employment concentration, as measured by LQs (vertical axis). The size of the bubble shows relative employment levels in the cluster in 2017. The corresponding data are also provided in tabular form.

Not surprisingly, the health services industry leads the region's local clusters, followed by hospitality and real estate. Education and knowledge creation is the largest traded cluster in terms of employment. This sector includes higher education institutions and research facilities. It is followed by business services, biopharmaceuticals, and hospitality and tourism. Nearly one-half of the top clusters are manufactured goods, highlighting the sector's importance to the regional economy. The region's roots in coal mining are also evident.

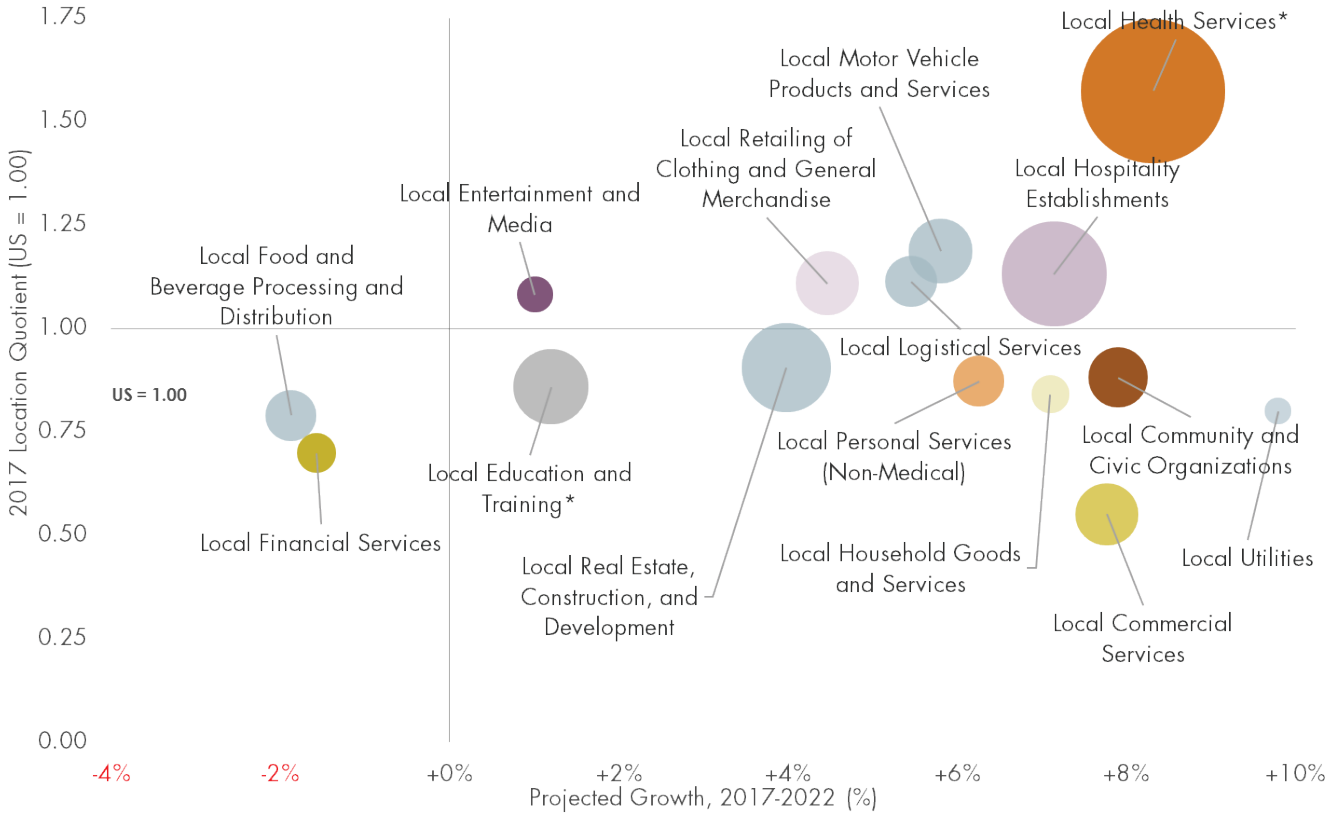
FIGURE 7. TRADED CLUSTERS VS. LOCAL CLUSTERS
WITH I-68 REGION EMPLOYMENT BY CLUSTER TYPE, 2017

TRADED CLUSTERS		LOCAL CLUSTERS	
• Bring in dollars from outside markets. • Greater freedom to choose where they locate. • Tend to be highly concentrated in regions with specific advantages.		• Primarily serve local markets. • Present in virtually every market. • Location is not dependent on regional competitive advantage.	
TOP 3 TRADED CLUSTERS	**2017**	**TOP 3 LOCAL CLUSTERS**	**2017**
Education and Knowledge Creation*	11,214	Local Health Services*	21,381
Business Services	5,026	Local Hospitality Establishments	11,312
Biopharmaceuticals	3,214	Local Real Estate, Construction, & Development	8,180
TOTAL TRADED CLUSTERS**	35,767	TOTAL LOCAL CLUSTERS**	76,787

Sources: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Cluster Mapping Benchmark Definitions (Delgado, Porter, Stern 2013); TIP Strategies.
*Figures include public-sector jobs (i.e., Education and Knowledge Creation includes employment at public higher education institutions. Local Health Services includes public education workers and jobs at publicly owned hospitals).
** Total includes all known clusters, including those not listed in Figure 7.

FIGURE 8. TOP LOCAL CLUSTERS IN I-68 REGION

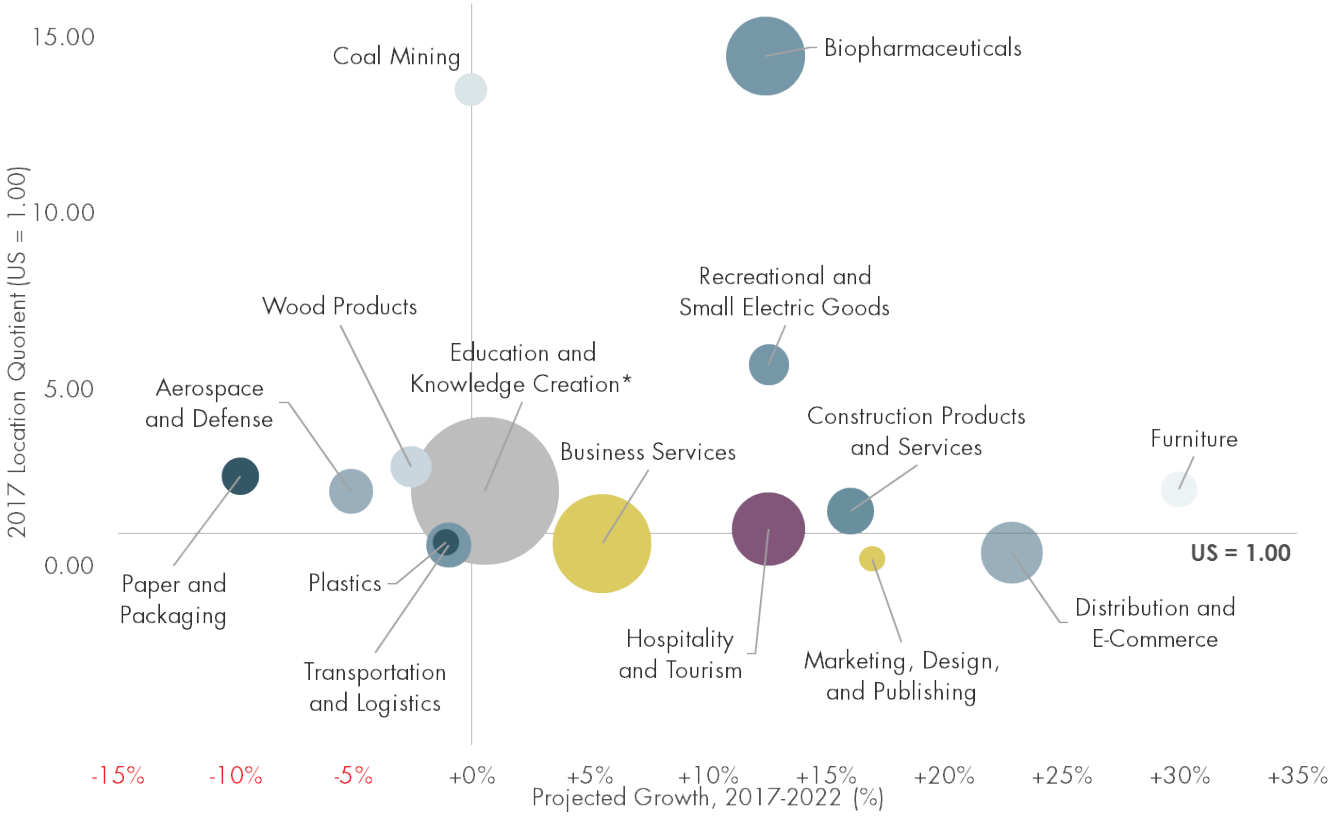
BUBBLE SIZE INDICATES RELATIVE EMPLOYMENT LEVELS IN THE CLUSTER



CLUSTER	2017	2022	% CHG., 2017–2022	LQ
Local Health Services	21,381	23,160	8.3%	1.57
Local Hospitality Establishments	11,312	12,121	7.2%	1.13
Local Real Estate, Construction, and Development	8,180	8,505	4.0%	0.90
Local Education and Training	5,880	5,951	1.2%	0.86
Local Motor Vehicle Products and Services	4,278	4,527	5.8%	1.19
Local Retailing of Clothing and General Merchandise	4,170	4,356	4.5%	1.11
Local Commercial Services	4,039	4,353	7.8%	0.55
Local Community and Civic Organizations	3,691	3,983	7.9%	0.88
Local Logistical Services	2,689	2,836	5.5%	1.11
Local Food and Beverage Processing and Distribution	2,675	2,625	-1.9%	0.79
Local Personal Services (Nonmedical)	2,656	2,823	6.3%	0.87
Local Financial Services	1,600	1,574	-1.6%	0.70
Local Household Goods and Services	1,492	1,598	7.1%	0.84
Local Entertainment and Media	1,371	1,385	1.0%	1.08
Local Utilities	723	794	9.8%	0.80

Sources: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Cluster Mapping Benchmark Definitions (Delgado, Porter, Stern 2013); TIP Strategies.
*Cluster includes public-sector jobs (i.e., Local Education and Training includes public schools and colleges. Local Health Services includes publicly owned hospitals).

FIGURE 9. TOP TRADED CLUSTERS IN I-68 REGION
BUBBLE SIZE INDICATES RELATIVE EMPLOYMENT LEVELS IN THE CLUSTER



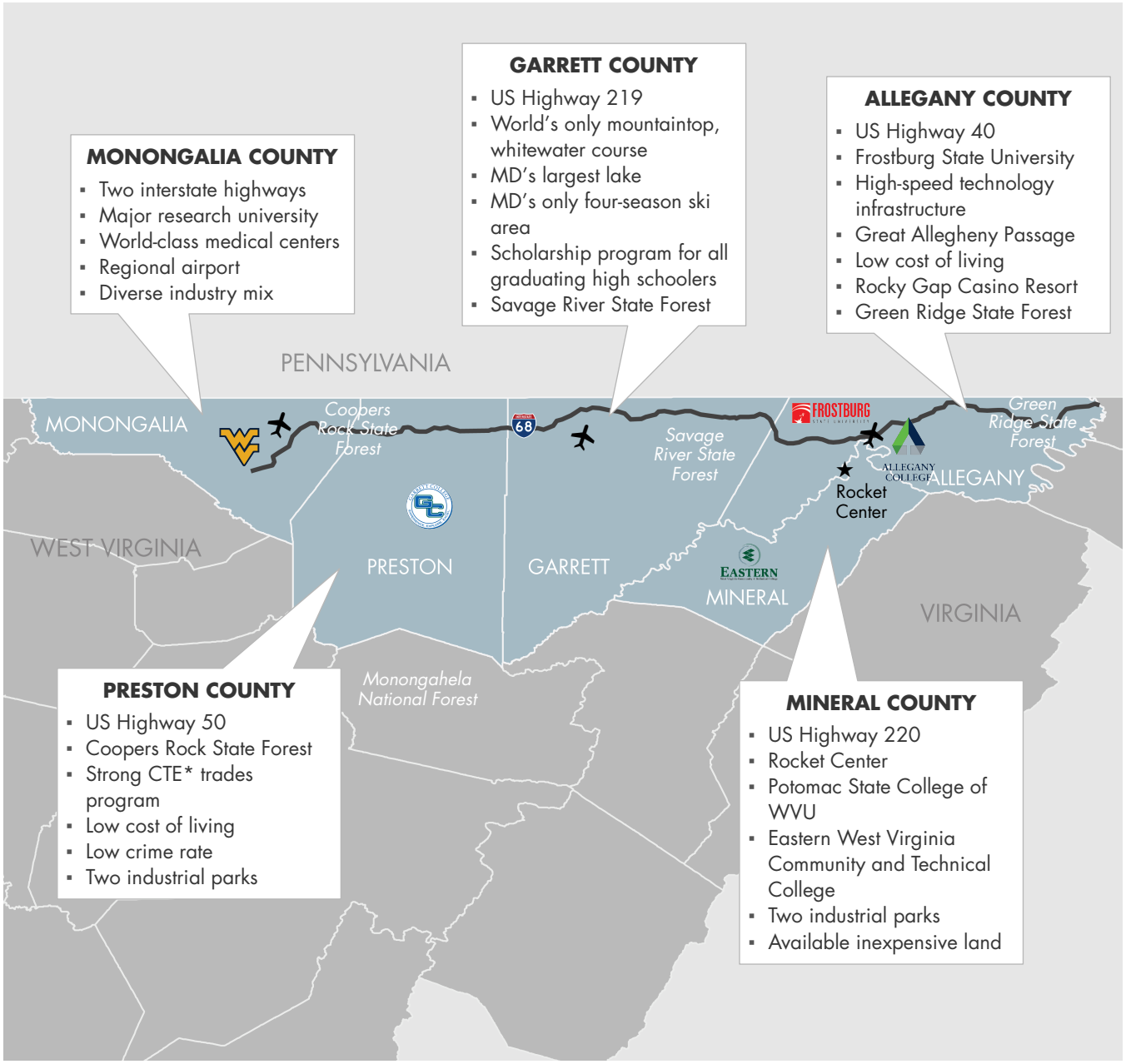
CLUSTER	2017	2022	% CHG., 2017–2022	LQ
Education and Knowledge Creation	11,214	11,275	0.5%	2.19
Business Services	5,026	5,304	5.5%	0.70
Biopharmaceuticals	3,214	3,614	12.5%	14.51
Hospitality and Tourism	2,807	3,159	12.6%	1.11
Distribution and E-Commerce	1,984	2,438	22.9%	0.44
Construction Products and Services	1,116	1,295	16.0%	1.61
Transportation and Logistics	1,060	1,050	-1.0%	0.66
Aerospace Vehicles and Defense	1,016	964	-5.1%	2.18
Recreational and Small Electric Goods	862	971	12.6%	5.76
Wood Products	860	838	-2.6%	2.88
Paper and Packaging	737	665	-9.8%	2.61
Furniture	688	894	30.0%	2.23
Coal Mining	565	565	0.0%	13.56
Plastics	355	351	-1.1%	0.72
Marketing, Design, and Publishing	344	402	17.0%	0.26

Sources: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed; US Cluster Mapping Benchmark Definitions (Delgado, Porter, Stern 2013); TIP Strategies.
*Cluster includes public-sector jobs (i.e., Education and Knowledge Creation includes employment at public higher education institutions).

REGIONAL ASSETS

At the outset of the planning process, the TIP Strategies consulting team worked with the regional partners to catalog assets across the five-county region. The results of this asset inventory were presented as an Excel-based matrix, with relevant assets mapped in a geographic information system (GIS)-based format. Some of the major assets are shown in Figure 10; target-specific assets (where applicable) are presented in the target industry profiles section, beginning on page 22. In addition, information on available sites and buildings in the region (as posted to state department of commerce websites) is provided as Appendix C, Sites and Buildings.

FIGURE 10. KEY ASSETS IN THE I-68 REGION



*CTE—career and technical education

COMPETITIVENESS FACTORS

Findings from *Area Development* magazine's Annual Survey of Corporate Executives help to illustrate how a corporate decision-maker might initially assess site location decisions based on readily available data. This section examines selected factors based on the 10 most important factors identified in the 2017 survey to illustrate the region's competitive position.

1. Highway accessibility
2. Labor costs
3. Availability of skilled labor
4. Quality of life
5. Occupancy or construction costs
6. Tax exemptions
7. Proximity to major markets
8. Corporate tax rate
9. State and local incentives
10. Available land

MARKET ACCESS

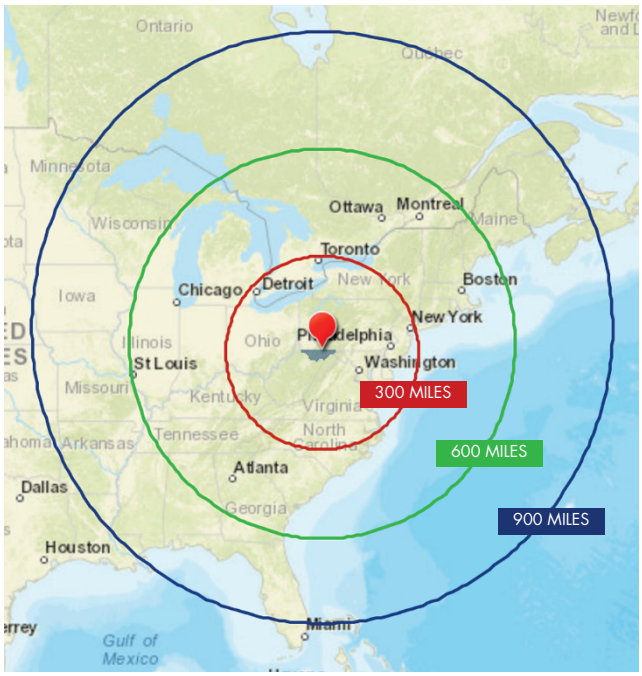
The I-68 region is well positioned to capture a large share of US consumers. According to Esri, a GIS supplier, more than 60 million US households—representing approximately 158 million people—are located within a one-day drive of the region (600 miles). This distance captures dozens of the nation's largest metropolitan areas, including Washington, DC; New York City; Boston; Philadelphia; Detroit; Atlanta; and St. Louis. Although not represented in the figures shown, Toronto, Ottawa, and Montreal are also located within a one-day drive.

HIGHWAY ACCESS. The I-68 region has a strong east-west connection via Interstate 68. Highways 219 and 220 provide north-south connectivity. The midpoint of the region is about 40–50 miles from I-79 in Morgantown and 80 miles to I-70 in Hancock.

AIR TRAVEL. Residents in the I-68 region have access to major airports in Pittsburgh, Baltimore, and Washington, DC, including daily flights from Morgantown to Pittsburgh and Baltimore. However, from a site selection standpoint, the lack of air service in the region might be a weakness for some projects. Runway expansion projects are planned for both Morgantown and Cumberland airports.

RAIL. Although the presence of rail is not a factor in most site selection decisions, the presence of CSX Transportation positions the region well for those projects where rail access is a requirement.

FIGURE 11. MARKET ACCESS
300-, 600-, 900-MILE RADIUS FROM I-68 REGION



RADIUS (EST. DRIVE TIME)	POPULATION	HHs
300 miles (½ day)	75.9M	29.3M
600 miles (1 day)	157.9M	60.8M
900 miles (1½ days)	202.3M	78.2M

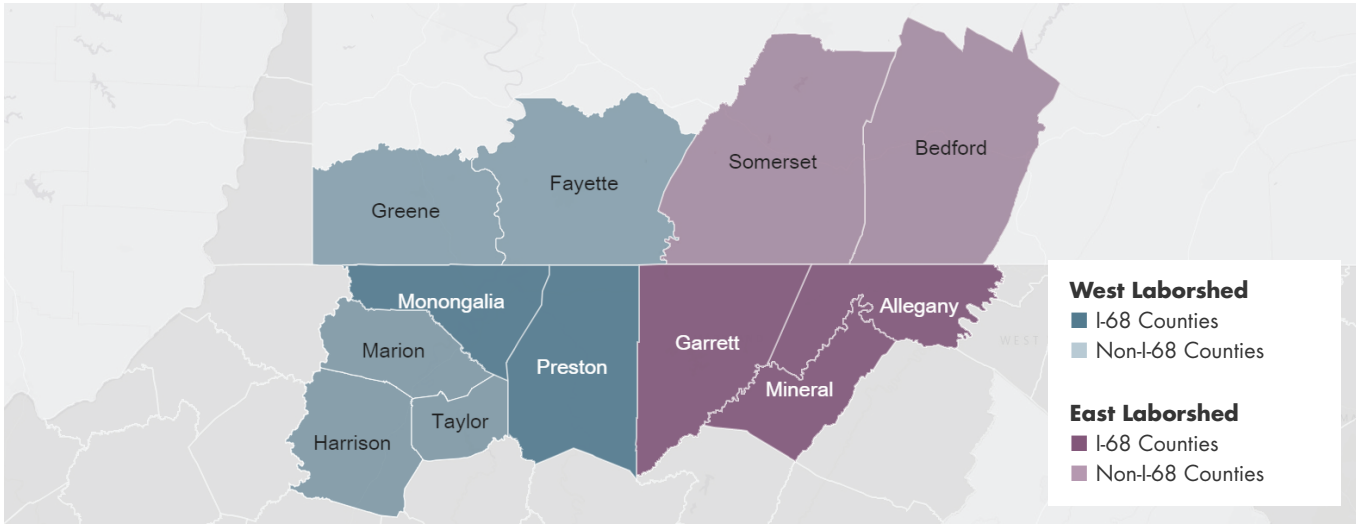
Source: Esri.
Note: Population and household (HH) figures are shown in millions (M) and represent US only.

WORKFORCE

An analysis of the regional workforce was conducted as part of the economic assessment. The following highlights are relevant to this analysis

LABOR FORCE. The I-68 region is home to a civilian labor force of approximately 127,000, with this figure rising to nearly 325,000 workers when the 12-county laborshed is considered. Unemployment averaged 4.7 percent across the five counties in 2017, a figure slightly higher than the US average. At the same time, the average labor force participation rate for the region of 56 percent falls well below the US rate (roughly 63 percent). Labor force participation rates can signal a variety of economic and demographic conditions within the workforce, including the effects of an aging population and chronic unemployment.

FIGURE 12. I-68 REGION WITH LABORSHED COUNTIES
INCLUDING SOURCE OF WORKERS FOR WEST AND EAST LABORSHED, 2015



WHERE I-68 **WEST** LABORSHED WORKERS LIVE, 2015

	County	Count	Share
1	**Monongalia Co., WV**	28,983	46.4%
2	**Preston County, WV**	7,402	11.9%
3	**Marion County, WV**	5,182	8.3%
4	**Fayette County, PA**	2,828	4.5%
5	**Harrison County, WV**	2,181	3.5%
6	**Greene County, PA**	1,611	2.6%
7	**Taylor County, WV**	1,154	1.8%
8	Washington County, PA	631	1.0%
9	Ohio County, WV	580	0.9%
10	Kanawha County, WV	534	0.9%
	Laborshed Total	**49,341**	**79.1%**
	All Other Locations	13,066	20.9%
	Total	62,407	100.0%

WHERE I-68 **EAST** LABORSHED WORKERS LIVE, 2015

	County	Count	Share
1	**Allegany County, MD**	18,440	42.5%
2	**Garrett County, MD**	8,319	19.2%
3	**Mineral County, WV**	6,138	14.1%
4	**Somerset County, PA**	1,373	3.2%
5	**Bedford County, PA**	1,172	2.7%
6	Preston County, WV	820	1.9%
7	Hampshire County, WV	555	1.3%
8	Washington County, MD	522	1.2%
9	Berkeley County, WV	483	1.1%
10	Grant County, WV	369	0.8%
	Laborshed Total	**35,442**	**81.6%**
	All Other Locations	7,975	18.4%
	Total	43,417	100.0%

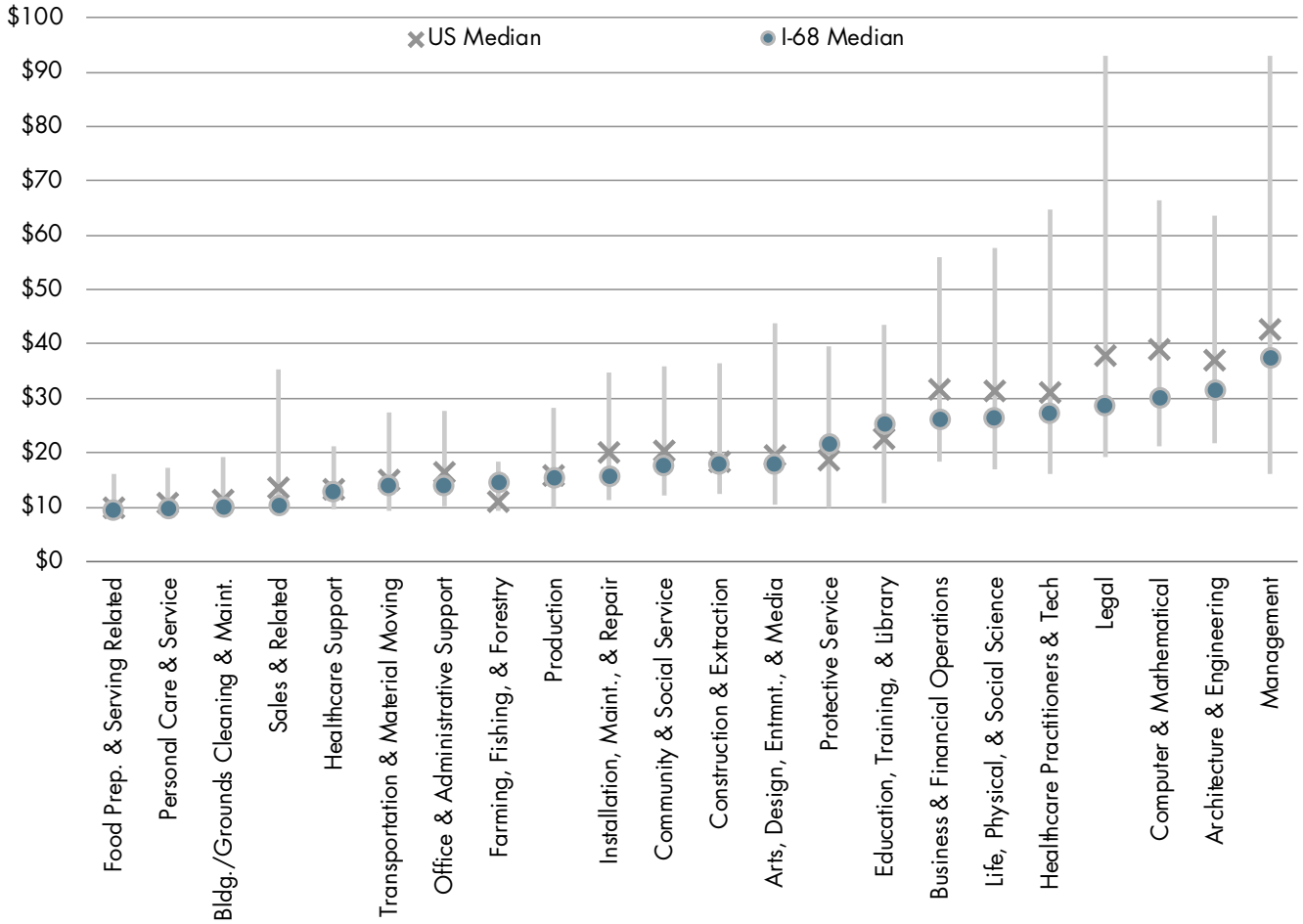
Sources: US Census Bureau, Local Employment Dynamics, and ArcGIS Online (map).

COMMUTING. In recent years, the number of inbound commuters has risen sharply, surpassing the number of residents leaving the region for work. The region's major population centers—the Morgantown area on the west side and the Cumberland/Frostburg area on the east side—are the primary employment centers. Despite the increase in inbound commuting flows, a significant share of the region's workforce lives in one of the five counties. In 2015, roughly seven out of ten jobs in the region were held by residents (72 percent).

LABOR COSTS. Labor availability and cost can be the highest operating expenses associated with a project, much more than the cost of real estate or taxes. The cost of labor in the I-68 region is on a par with the nation for low-skill occupations. However, as shown in Figure 13, wage rates for high-skill occupations—including business and financial operations to management—fall below the US average.

WORKFORCE CHALLENGES. Workforce is recognized as a key challenge among employers and stakeholders. Interviewees and partners indicated that a shortage of available and trained workers is a top issue in many parts of the region. With the exception of Monongalia County, educational attainment levels in the region fall below the US. In addition, the region is facing an increase in employees who are eligible for retirement.

FIGURE 13. I-68 WAGES IN THE CONTEXT OF THE NATIONAL WAGE RATES
BY MAJOR OCCUPATIONAL GROUPS
Line = US wage range from the 10th to the 90th percentile.



Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
Note: Figures exclude military occupations.

ECONOMIC DEVELOPMENT ECOSYSTEM

Regionalism has become an increasingly important tool for rural economic development. It is based on the principle that working together toward a common purpose is more efficient and effective than competing or operating in a vacuum. Pooling resources maximizes impact, allowing communities with limited resources to be more competitive than they could be on their own. However, to be successful, regionalism requires cooperation and true collaboration. This concept extends to leveraging shared resources, aligning priorities and values, and ensuring that all partners have "bought in" to the regional approach. For a bistate region like I-68, a regional strategy offers unique advantages and challenges.

- *Organizations.* The region is home to a network of economic development, workforce, and community development organizations. Creating a framework for collaboration across these varied groups will require a strong "backbone" organization. The Greater Cumberland Committee's mission lends itself to be a champion and lead implementing organization for this effort.
- *Incentives.* According to research conducted by The Council for Community and Economic Research (C2ER), the State of MD offers 76 incentive programs and the State of WV offers 39 incentive programs. In MD, grant programs are the most common. This differs from national trends, which favor tax credits, the most common programs for WV.
- *Tax climate.* According to the latest analysis of corporate income tax rates prepared by the Tax Foundation, top statutory corporate tax rates in the US range from a low of 3 percent to a high of 12 percent. With a top rate of 6.5 percent in WV and 8 percent in MD, I-68 sits in the middle of that range. According to the 2015 Moody's Analytics Cost of Doing Business index, the state and local tax burden index for Morgantown is 93 (US=100) and Cumberland Metropolitan Statistical Area (MSA) region is 86 (US=100). This score ranks Morgantown at 124 and Cumberland at 170 out of 382 metro areas (1 being the highest cost).
- *Current targeting initiatives.* Regional recruitment programs are most successful when they can leverage existing initiatives underway at the local and state levels. A review of initiatives in the five counties and key industries identified by the state departments of commerce reveals local and state efforts are concentrated in five major areas: healthcare, hospitality and tourism, manufacturing, natural resources (including extractive industries and agriculture), and technology-driven industries. An overview of this analysis is presented in Figure 14.

FIGURE 14. SUMMARY OF CURRENT STATE-LEVEL AND COUNTY-LEVEL TARGETING INITIATIVES

TARGET	NICHE	MARYLAND	*ALLEGANY*	*GARRETT*	WEST VIRGINIA	*MINERAL*	*MONONGALIA*	*PRESTON*
HEALTHCARE	Biohealth & Life Sciences	■						
	Health & Social			■				
	Health Services		■					
	Healthcare & Bioscience						■	
HOSPITALITY AND TOURISM	Arts & Culture			■				
	Retail & Hospitality						■	
	Service Sector		■					
	Tourism/Tourism & Recreation			■				■
MANUFACTURING	Advanced Manufacturing	■						
	Aerospace/Aerospace & Defense	■			■	■		
	Automotive				■			
	Building Products				■			
	Chemicals & Polymers				■			
	Manufacturing/Mfg. & Govt. Contracting		■		■	■	■	■
	Metals				■			
	Specialty Manufacturing			■				
	Wood Products							■
NATURAL RESOURCES	Agribusiness/Agricultural	■	■	■				
	Energy			■	■			
	Energy & Sustainability	■						
	Mining & Energy						■	
	Oil & Gas							■
TECHNOLOGY	Advanced Business Services						■	
	Education & Research						■	
	Engineering & Construction						■	
	Entrepreneurial Start-Ups		■					
	Information Technology & Cybersecurity	■	■			■		
	Technology/Tech. & Info. Services			■	■			
OTHER	Education			■		■		■
	Financial Services	■						
	Government/Military & Federal	■						■
	Warehousing & Distribution/Fulfillment				■	■		

Source: Websites of state and regional economic development organizations, including state departments of commerce (MD: https://open.maryland.gov/industries/ and WV: http://westvirginia.gov/key-industries.html).

STRENGTHS AND WEAKNESSES

An analysis of the region's strengths, weaknesses, opportunities, and threats (commonly referred to as a SWOT analysis), was presented as part of the economic assessment. Figure 15 presents a refinement of that analysis, focused on the strengths and weaknesses that are more directly associated with the site selection process.

FIGURE 15. STRENGTHS AND WEAKNESSES RELATED TO SITE SELECTION FACTORS

STRENGTHS	WEAKNESSES
• Interstate 68 • Lower wages for high-skill occupations • Large civilian labor force • Quality of life factors—cost of living, recreational opportunities, healthcare facilities, and colleges and universities • Excellent market access • Moderate corporate tax burden • Abundant state and local incentives	• North-south transportation linkages • Labor force participation and tight labor market • Quality of life factors—housing availability, cultural opportunities in parts of the region, crime perception in parts of the region • Insufficient availability of buildings and site-ready land, depending on the location of the region • Limited commercial air service

TARGET INDUSTRY PROFILES

The analysis outlined in the previous section points to five areas that would benefit from a regional targeting initiative. As a group, these broad sectors employ more than 66,000 workers across more than 3,100 establishments in the I-68 region (Figure 16).

Hospitality and Tourism. This target combines traditional hospitality industries (accommodations, food service, and travel arrangements) with retail trade in recognition of the important role that the retail sector can play in a successful tourism program and the shared focus on customer service between these activities.

Healthcare. This target includes establishments that provide healthcare to individuals on an outpatient (doctor's office and testing facilities) and an inpatient basis (hospitals and residential care facilities). Establishments solely involved in the delivery of social assistance, such as childcare; nonresidential vocational rehabilitation services; and food, housing, or other relief services, are excluded.

Manufacturing. The manufacturing sector covers a wide range of products and processes, including a number of industries in which the I-68 region has specific strengths, including pharmaceuticals, aerospace and defense, and wood products.

Technology. This target includes a range of activities involved in transforming information into products that can be distributed for use by consumers and businesses, along with the specialized professional and technical services that rely heavily on information technology (IT) or other advanced technologies.

Natural Resources. The region's natural resource-based industries are the focus of this target, specifically agricultural production and energy-related activities.

This section provides profiles of each target. The profiles include a description of the target and niche areas, employment trends for selected component industries, a summary of I-68's value proposition with regard to the target, strategic considerations for future investment, and resources for tracking industry trends (including trade associations, trade publications, and trade shows). Some target niches are included for strategic or qualitative reasons and might not appear to be strong prospects from a purely quantitative perspective.

FIGURE 16. I-68 REGION EMPLOYMENT IN BROAD TARGET SECTORS

SECTOR	2017	2022	PROJECTED NET CHG.	PROJECTED % CHG.	LQ (US=1.00)	ESTABLISH-MENTS
TOTAL ALL SECTORS	**122,131**	**128,872**	**+6,741**	**+6%**	**—**	**6,368**
Hospitality and Tourism	27,917	29,634	+1,717	+6%	1.11	1,711
Healthcare	20,103	21,872	+1,769	+9%	1.66	552
Manufacturing	10,068	10,664	+596	+6%	1.05	188
Technology	6,174	6,796	+622	+10%	0.61	563
Natural Resources	1,799	1,757	-42	-2%	0.76	133

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
Note: Employment figures shown are based on the following NAICS categories: Hospitality and Tourism (44–45, 71, 72); Healthcare (621, 622, 623); Manufacturing (31–33); Technology (51, 54); and Natural Resources (11, 21, 22). The target sector definitions used in the profiles presented in the following section might include a small number of NAICS codes from other relevant sectors.

HOSPITALITY AND TOURISM

DEFINITION: This target combines traditional hospitality industries (accommodations, food service, and travel arrangements) with retail trade in recognition of the important role the retail sector can play in a successful tourism program and the shared focus on customer service between these activities.

While the hospitality and tourism industry is not a traditional focus of business recruitment programs, this target can yield direct and indirect benefits. From an economic development standpoint, tourism and associated activities draw in dollars from outside the region, making it an attractive source of revenue.

From a workforce perspective, tourism is often seen as a source of low-wage jobs with few benefits and little security. However, this view ignores the important role that tourism can play with regard to talent recruitment. A successful tourism strategy provides a mechanism for introducing new people to an area who might later become residents, establish businesses, or attend college in the region.

OVERVIEW

PRIMARY INDUSTRY SECTORS

- Retail Trade (NAICS 44–45)
- Arts, Entertainment, and Recreation (NAICS 71)
- Accommodation and Food Services (NAICS 72)

NICHE ACTIVITIES

- Specialty food and beverage (including local foods movement)
- Specialty and independent retail

On a regional level, a well-coordinated tourism initiative can increase media exposure and maximize resources. This can, in turn, raise the profile of a region and help to change perceptions of an area (among both internal and external audiences).

FIGURE 17. SELECTED HOSPITALITY AND TOURISM INDUSTRIES IN THE I-68 REGION
INCLUDING HISTORIC (2012–2017) AND PROJECTED (2017–2022) JOB CHANGE (CONTINUED, NEXT PAGE)

NAICS CODE	DESCRIPTION	2017	HISTORIC CHG.		PROJECTED CHG.		LQ (US=1.00)	ESTAB.
722511	Full-Service Restaurants	5,026	12%	▲	7%	▲	1.22	199
722513	Limited-Service Restaurants	3,788	1%	▲	3%	▲	1.15	204
721110	Hotels (except Casino Hotels) and Motels	1,332	-14%	▼	-8%	▼	1.09	50
722410	Drinking Places (Alcoholic Beverages)	820	9%	▲	14%	▲	**2.71**	75
721120	Casino Hotels	488	>100%	▲	65%	▲	**2.38**	<5
722515	Snack and Nonalcoholic Beverage Bars	470	69%	▲	21%	▲	0.93	36
713920	Skiing Facilities	310	32%	▲	14%	▲	**10.11**	<5
722310	Food Service Contractors	266	10%	▲	15%	▲	0.66	17
713290	Other Gambling Industries	251	-23%	▼	2%	▲	**6.53**	45
445120	Convenience Stores	201	18%	▲	2%	▲	**1.47**	24
722514	Cafeterias, Grill Buffets, and Buffets	159	35%	▲	14%	▲	**1.75**	13
445310	Beer, Wine, and Liquor Stores	137	11%	▲	8%	▲	1.09	20
713910	Golf Courses and Country Clubs	135	-21%	▼	0%	–	0.47	11
453220	Gift, Novelty, and Souvenir Stores	117	-31%	▼	-14%	▼	0.90	16
445299	All Other Specialty Food Stores	109	-11%	▼	12%	▲	**1.67**	10
454390	Other Direct Selling Establishments	108	-6%	▼	6%	▲	1.11	<5

NAICS CODE	DESCRIPTION	2017	HISTORIC CHG.		PROJECTED CHG.		LQ (US=1.00)	ESTAB.
424810	Beer and Ale Merchant Wholesalers	94	-10%	▼	-6%	▼	1.11	7
721191	Bed-and-Breakfast Inns	80	>100%	▲	67%	▲	**5.83**	<5
722320	Caterers	69	83%	▲	19%	▲	0.41	8
713990	All Other Amusement and Recreation Industries	68	23%	▲	4%	▲	0.42	13

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.

INDUSTRY TRENDS

In the hospitality and tourism industry, restaurants (full-service and limited-service) employ the largest number of people, followed by hotels and motels. However, in the past 5 years, hotels and motels have experienced a decline in jobs that is projected to continue, while restaurants are expected to continue growing. Notably, casino hotels and bed-and-breakfast inns have more than doubled in jobs, historically, and are projected to continue growing. Other strong sources of growth in the past 5 years include snack and nonalcoholic beverage bars and caterers. Gift, novelty, and souvenir stores and golf courses and country clubs experienced the largest declines in employment. Several detailed industries have strong location quotients representing a unique advantage. At 10.11, skiing facilities has the highest LQ, followed by other gambling activities (6.53) and bed-and-breakfast inns (5.83). In terms of number of individual establishments, restaurants (full-service and limited-service) and bars (drinking places) have the highest number.

I-68 VALUE PROPOSITION

- Vast natural amenities and numerous outdoor recreation opportunities
- Lower cost of doing business and cost of living, especially relative to surrounding tourism markets
- A wide variety of family-oriented attractions
- Within a short drive of a number of major population centers
- Gaming dealers are projected to be the fastest growing occupation between 2017 and 2022 in percentage terms, and make a 30 percent premium over the US average wage

I-68 ATTRACTIONS

- Rocky Gap Casino Resort
- Rocky Gap State Park
- Savage River State Forest
- Great Allegheny Passage
- Deep Creek Lake
- Wisp Resort and ski area
- Coopers Rock State Forest
- Cheat Lake
- Cathedral State Park
- Monongahela River

STRATEGIC CONSIDERATIONS

- Link I-68 regional assets by theme and/or traveler with other tourism promotion activities in the four-state area.
  - *By theme.* Some regional attractions would benefit from being marketed under distinct themes—for example, heritage tourism—which do not fall neatly within the current approach. Promotion of other themes could be accomplished through the creation of relevant trails or by linking with state and national sites catering to specific populations.
  - *By traveler.* Diverse types of travelers look for different types of attractions and accommodations. Examples of potential target populations include recreational vehicle (RV) owners, off-road vehicle aficionados, adventure travelers, and outdoor sports enthusiasts. Packaging regional assets in customized itineraries designed to appeal to these groups could increase visitor traffic throughout the region.

- *Road trips.* Designing and marketing a series of attractions as an integrated route, or as part of a larger trip, creates excellent opportunities to highlight lesser-known destinations in an area. Road trips appeal to retirees, RV enthusiasts, families, and adventure travelers, for different reasons. Online magazines, like *National Geographic*'s travel pages, can provide inspiration for packaging road trips around various themes, such as food.
- *Weekend getaways.* The region's proximity to major metropolitan areas (like Pittsburgh, Baltimore, and Washington, DC) makes them convenient sources for potential tourists looking for a short-term reprieve from urban living.
- *Festivals and events.* Building itineraries around major regional festivals or sporting events can help visitors make the decision to extend their stay. Rather than driving to the region for a single-day event, a packaged itinerary suggests other attractions that would appeal to attendees.
    - *By market.* Targeting attractions at a specific geographic market (Washington, DC, for example) would require an understanding of consumer preferences in those areas. International tourists are another potential target. Outreach efforts could be focused on key countries or on leveraging the international connections of existing companies in the region.

- Raise awareness among local retailers of tourism assets and events (e.g., promote the number of visitors to Rocky Gap Casino Resort each year, and encourage retailers to tailor hours and offerings to specific events).
- Identify small- and mid-size conferences and events that align with other targets that could be held in the region.
- Coordinate regional marketing efforts and media strategies.
- Consider employing a "wayfinding" strategy to connect the region's assets. For example, Nashville, TN, has introduced a live music wayfinding plan, in which a guitar pick is posted outside each live music venue, so that each destination is connected and easily identifiable.

INDUSTRY INTELLIGENCE AND NETWORKING RESOURCES

RESOURCES: HOSPITALITY AND TOURISM		
TRADE ASSOCIATIONS		
U.S. Travel Association		www.ustravel.org
American Hotel & Lodging Association		www.ahla.com
World Food Travel Association		www.worldfoodtravel.org
Craft Beverage Education Association		www.craftbeverage.org
Retail Industry Leaders Association		www.rila.org
West Virginia Hospitality & Travel Association		www.wvhta.com
Maryland Hotel Lodging Association		mdlodging.org
Restaurant Association of Maryland		www.marylandrestaurants.com
RELEVANT CONFERENCES/EVENTS		
Educational Seminar for Tourism Organizations (ESTO)		
11–14 August 2018	*Phoenix, AZ*	esto.ustravel.org
Mid-Atlantic Expo (Food Service/Hospitality)		
2 October 2018	*Baltimore, MD*	www.midatlanticexpo.com
Craft Beverage Expo 2018		
4–6 December 2018	*Louisville, KY*	www.craftbeverageexpo.com
National Travel and Tourism Week		
5–11 May 2019	*Nationwide, US*	www.ustravel.org/events/national-travel-and-tourism-week
U.S. Travel Association IPW		
1–5 June 2019	*Anaheim, CA*	www.ipw.com
TRADE PUBLICATIONS		
Journal of Tourism & Hospitality		www.omicsonline.org/tourism-hospitality.php
Hospitality Net		www.hospitalitynet.org
Wine & Craft Beverage News		wineandcraftbeveragenews.com
Craft Beer & Brewing Magazine		beerandbrewing.com
Journal of Retailing		www.journals.elsevier.com/journal-of-retailing

HEALTHCARE

DEFINITION: This target includes establishments that provide healthcare to individuals on an outpatient (doctor's office and testing facilities) and inpatient basis (hospitals and residential care facilities). Establishments solely involved in the delivery of social assistance, such as childcare; nonresidential vocational rehabilitation services; and food, housing, or other relief services, are excluded.

The healthcare sector functions as both a significant economic driver and a vital quality of life asset. In addition, healthcare occupations include a number of high-wage positions, with a robust career ladder offering multiple points of entry. Furthermore, projections for continued growth, fueled by a wide range of trends—including the aging Baby Boomers and continued emphasis on medical testing and advanced technologies—makes this sector an attractive target for expansion across the country. Locally, the presence of major healthcare facilities and training programs (anchored by West Virginia University School of Medicine) make it a fit for the I-68 region.

Strategies for the recruitment and expansion of firms in this sector often differ from traditional approaches. For some industries, such as hospitals, the focus is likely to be on the retention of existing facilities and the development and recruitment of talent. Recruitment strategies for other industries, including doctors' offices and testing facilities, are closely tied to the availability of appropriate office space.

OVERVIEW

PRIMARY INDUSTRY SECTORS

- Ambulatory Health Care Services (NAICS 621)
- Hospitals (NAICS 622)
- Nursing and Residential Care Facilities (NAICS 623)

NICHE ACTIVITIES

- Testing labs
- Residential care
- Environmental and health monitoring and related software

FIGURE 18. SELECTED HEALTHCARE INDUSTRIES IN THE I-68 REGION
INCLUDING HISTORIC (2012–2017) AND PROJECTED (2017–2022) JOB CHANGE (CONTINUED, NEXT PAGE)

NAICS CODE	DESCRIPTION	2017	HISTORIC CHG.		PROJECTED CHG.		LQ (US=1.00)	ESTAB.
622110	General Medical and Surgical Hospitals	10,595	6%	▲	5%	▲	**2.99**	9
621111	Offices of Physicians (exc. Mental Health Specialists)	2,135	12%	▲	13%	▲	1.10	180
623110	Nursing Care Facilities (Skilled Nursing Facilities)	2,095	-6%	▼	4%	▲	**1.66**	24
621610	Home Health Care Services	1,080	-6%	▼	18%	▲	0.98	23
621210	Offices of Dentists	588	1%	▲	6%	▲	0.79	80
623210	Residential Intellectual and Dev. Disability Facilities	579	5%	▲	12%	▲	**1.87**	39
621340	Offices of Physical, Occupational and Speech Therapists, and Audiologists	513	34%	▲	21%	▲	**1.73**	41
622310	Specialty Hospitals (exc. Psychiatric/Substance Abuse)	336	0%	–	8%	▲	**1.94**	<5
621420	Outpatient Mental Health/Substance Abuse Centers	328	>100%	▲	23%	▲	**1.79**	9
903622	Hospitals (Local Government)	324	7%	▲	5%	▲	0.64	<5

NAICS CODE	DESCRIPTION	2017	HISTORIC CHG.		PROJECTED CHG.		LQ (US=1.00)	ESTAB.
621910	Ambulance Services	270	15%	▲	19%	▲	**1.97**	11
902622	Hospitals (State Government)	225	>100%	▲	9%	▲	0.81	<5
623312	Assisted Living Facilities for the Elderly	223	>100%	▲	51%	▲	0.68	8
622210	Psychiatric and Substance Abuse Hospitals	204	-9%	▼	7%	▲	**2.30**	<5
623220	Residential Mental Health/Substance Abuse Facilities	178	-9%	▼	10%	▲	1.03	7
621320	Offices of Optometrists	116	-1%	▼	4%	▲	1.08	14
623311	Continuing Care Retirement Communities	96	-47%	▼	32%	▲	0.26	<5
621310	Offices of Chiropractors	95	-17%	▼	-3%	▼	0.79	21
621399	Offices of All Other Misc. Health Practitioners	93	76%	▲	36%	▲	0.78	12
621112	Offices of Physicians, Mental Health Specialists	89	>100%	▲	35%	▲	**1.74**	9
623990	Other Residential Care Facilities	85	-14%	▼	3%	▲	0.67	5
621498	All Other Outpatient Care Centers	73	-37%	▼	17%	▲	0.57	7
621492	Kidney Dialysis Centers	72	-46%	▼	-5%	▼	0.71	6
334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals	69	-19%	▼	-30%	▼	**2.42**	<5
621493	Freestanding Ambulatory Surgical/Emergency Centers	60	>100%	▲	51%	▲	0.52	5

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.

INDUSTRY TRENDS

Hospitals are the largest sources of employment in the healthcare industry. Physicians' offices, nursing care facilities, and home healthcare services are the next largest sources. Over the past 5 years, outpatient mental health/substance abuse centers, assisted living facilities, mental health specialists, and freestanding ambulatory surgical/emergency centers have had the most growth in employment in the private sector. Hospitals had the most growth in the public sector over the same time period. While these subsectors are still expected to grow in the future, most will grow at a slower rate. Two exceptions are assisted living facilities and freestanding ambulatory surgical/emergency centers, which are expected to grow over 50 percent in the next 5 years. Kidney dialysis centers, chiropractors, and instrument manufacturing for measuring and testing electricity and electrical signals experienced declines in the past 5 years and are projected to continue in a downward trend. Many subsectors in the healthcare industry in the I-68 region have significant LQs (over 1.25). General medical and surgical hospitals, psychiatric and substance abuse hospitals, and instrument manufacturing for measuring and testing electricity and electrical signals stand out as having the highest LQs. Offices of physicians and dentists have the largest number of individual establishments.

I-68 VALUE PROPOSITION

- Relative to the US, the I-68 region shows high-skill concentrations in healthcare occupations (especially healthcare practitioners, technicians, and support). The largest occupation, registered nurses, is also projected to be the fastest growing in terms of jobs between 2017–2022. With a median hourly wage of $29, it is also one of the highest paying of the fastest-growing occupations, just below general and operations managers.

- In 2016, the region had 8,142 completions at public, 4-year schools. Registered nursing had the most completions in the region at 501, followed by business administration and management at 445. This correlates with the demand for healthcare workers in the region. Most of the nursing and business administration and management completions were at the bachelor's degree level.

STRATEGIC CONSIDERATIONS

- Work with WVU Medicine, Mon General Hospital, Western Maryland Health System, and other regional medical organizations to target service providers, suppliers, and other related companies for relocation or expansion into the I-68 region.
- Pursue the growth of medical specialties to serve the region's changing demographics and population.
- Promote the large concentration of high-skill occupations to various healthcare industry prospects.
- Build a pipeline of talent to support the growth of the region's healthcare sector.
    - Coordinate with healthcare-related employers and higher education entities to match graduates to available positions, ensuring they remain in the region.
    - Conduct career fairs in conjunction with employers and higher education entities to recruit in-demand healthcare occupations to the area. Promote the reputation of the region's healthcare entities and relatively high wages of the industry's occupations.
- Focus a portion of business attraction efforts on assisted living facilities and freestanding ambulatory surgical/emergency centers, which are projected to grow in the short-term.
- Focus region-wide business retention and expansion activities on existing healthcare facilities to ensure they stay and grow in the region.
- Ensure an adequate supply of office space for the development and expansion of doctors' offices, labs, and testing facilities

INDUSTRY INTELLIGENCE AND NETWORKING RESOURCES

RESOURCES: HEALTHCARE		
TRADE ASSOCIATIONS		
American Health Care Association		www.ahcancal.org
American Medical Association		www.ama-assn.org
American Clinical Laboratory Association		www.acla.com
The American Society for Clinical Laboratory Science		www.ascls.org
Analytical, Life Science & Diagnostics Association		thealda.org
National Association for Home Care & Hospice		www.nahc.org
Mid-Atlantic Association of Community Health Centers		www.machc.com
Health Facilities Association of Maryland		www.hfam.org
West Virginia Health Care Association		www.wvhca.org
Maryland-National Capital Homecare Association		mncha.org
RELEVANT CONFERENCES/EVENTS		
ASCLS 86th Annual Meeting and Exposition		
29 July–2 August 2018	*Chicago, IL*	www.ascls.org/education-meetings/annual-meeting
MACHC Annual Conference: Access to Healthcare: Empowering Change		
20–21 September 2018	*Dover, DE*	www.machc.com/content/access-healthcare-empowering-change
MNHCA Annual Meeting 2018: The Total Cost of Care		
21 September 2018	*Baltimore, MD*	mncha.org/event-2716941
2018 Home Care and Hospice Conference and Expo		
7–9 October 2018	*Grapevine, TX*	www.nahc.org
6th Annual AHCA/NCAL Convention & Expo		
7–10 October 2018	*San Diego, CA*	www.eventscribe.com/2018/AHCANCAL
TRADE PUBLICATIONS		
The American Journal of Medicine		www.amjmed.com
Healthcare		www.mdpi.com/journal/healthcare
HealthCare: The Journal of Delivery Science and Innovation		www.journals.elsevier.com/healthcare-the-journal-of-delivery-science-and-innovation
Nursing & Residential Care		www.magonlinelibrary.com/loi/nrec
Journal of Medical Laboratory and Diagnosis		www.academicjournals.org/journal/JMLD

MANUFACTURING

DEFINITION: the manufacturing sector covers a wide range of products and processes, including a number of industries in which the I-68 region has specific strengths including pharmaceuticals, aerospace and defense, and wood products.

The I-68 region has a diverse manufacturing base with strengths in pharmaceuticals, aerospace and defense, and wood products and related industries, to name but a few. Several of these activities fall under the heading of advanced manufacturing, which can be thought of as manufacturing processes that involve either (1) the production of technologically advanced products, or (2) the use of advanced technologies in the production of traditional goods. Although generally desirable in terms of tax base (due to the relatively high levels of capital investment required), the increasingly sophisticated process automation found even in downstream industries typically translates to fewer jobs relative to more traditional, labor-intensive manufacturing.

OVERVIEW

PRIMARY INDUSTRY SECTORS

- Manufacturing (NAICS 31–33)

NICHE ACTIVITIES

- Aerospace and defense
- Pharmaceutical products
- Outdoor recreation equipment
- Wood products
- Specialty products (e.g., craft beverages)

FIGURE 19. SELECTED MANUFACTURING INDUSTRIES IN THE I-68 REGION
INCLUDING HISTORIC (2012–2017) AND PROJECTED (2017–2022) JOB CHANGE (CONTINUED, NEXT PAGE)

NAICS CODE	DESCRIPTION	2017	HISTORIC CHG.		PROJECTED CHG.		LQ (US=1.00)	ESTAB.
325412	Pharmaceutical Preparation Manufacturing	3,214	19%	▲	12%	▲	**20.58**	<5
336415	Guided Missile/Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	1,016	-8%	▼	-5%	▼	**135.27**	<5
337920	Blind and Shade Manufacturing	808	29%	▲	14%	▲	**80.25**	<5
322121	Paper (except Newsprint) Mills	704	17%	▲	-10%	▼	**15.88**	<5
337110	Wood Kitchen Cabinet and Countertop Manufacturing	607	31%	▲	28%	▲	**6.22**	6
321113	Sawmills	367	-20%	▼	-22%	▼	**5.58**	12
321920	Wood Container and Pallet Manufacturing	312	>100%	▲	16%	▲	**6.29**	6
326112	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	173	-21%	▼	-8%	▼	**11.13**	<5
327993	Mineral Wool Manufacturing	152	50%	▲	2%	▲	**11.60**	<5
332710	Machine Shops	150	-10%	▼	2%	▲	0.70	10
332999	All Other Misc. Fabricated Metal Product Mfg.	134	-38%	▼	4%	▲	**2.19**	<5
332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	126	-39%	▼	-27%	▼	**2.74**	<5
327212	Other Pressed and Blown Glass/Glassware Mfg.	116	49%	▲	22%	▲	**9.60**	<5
335311	Power, Distrib., and Specialty Transformer Mfg.	103	57%	▲	15%	▲	**5.28**	<5
327320	Ready-Mix Concrete Manufacturing	88	41%	▲	11%	▲	1.19	7
312111	Soft Drink Manufacturing	87	-72%	▼	-49%	▼	**1.40**	<5
315220	Men's and Boys' Cut and Sew Apparel Mfg.	83	-39%	▼	-25%	▼	**3.96**	<5
339113	Surgical Appliance and Supplies Mfg.	77	>100%	▲	33%	▲	0.99	<5

NAICS CODE	DESCRIPTION	2017	HISTORIC CHG.		PROJECTED CHG.		LQ (US=1.00)	ESTAB.
337215	Showcase, Partition, Shelving, and Locker Mfg.	75	>100%	▲	48%	▲	**2.12**	<5
321214	Truss Manufacturing	73	>100%	▲	16%	▲	**3.40**	<5
332312	Fabricated Structural Metal Manufacturing	71	73%	▲	2%	▲	1.05	<5
334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals	69	-19%	▼	-30%	▼	**2.42**	<5
326199	All Other Plastics Product Manufacturing	67	-56%	▼	-53%	▼	0.29	<5
323113	Commercial Screen Printing	63	-28%	▼	8%	▲	1.03	<5
333999	All Other Misc. Gen. Purpose Machinery Mfg.	62	12%	▲	4%	▲	**2.08**	<5
311811	Retail Bakeries	56	11%	▲	10%	▲	0.77	7
332722	Bolt, Nut, Screw, Rivet, and Washer Mfg.	50	-38%	▼	-2%	▼	**1.66**	<5
325211	Plastics Material and Resin Manufacturing	50	>100%	▲	38%	▲	1.13	<5

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.

INDUSTRY TRENDS

Pharmaceutical preparation manufacturing and guided missile/space vehicle propulsion unit and propulsion unit parts manufacturing employ the largest number of people in the manufacturing industry. Historically, there were five detailed industries that grew over 100 percent. In the future, fewer industries will see as rapid a rate of growth. Wood kitchen cabinet and countertop manufacturing, surgical appliance and supplies manufacturing, other pressed and blown glass/glassware manufacturing, and plastics material and resin manufacturing are expected to grow over 20 percent in the next 5 years. Soft drink manufacturing and all other plastics product manufacturing experienced the largest declines in employment in the past 5 years and are expected to continue losing jobs at a high rate. The manufacturing industry in the I-68 region has many detailed industries with high location quotients. Twenty of the twenty-eight included in this analysis are considered to have a unique advantage with an LQ above 1.25. Guided missile/space vehicle propulsion unit and propulsion unit parts manufacturing and blind and shade manufacturing have especially high LQs (135.27 and 80.25). A smaller number of establishments per detailed industry is typical for the manufacturing industry. Sawmills and machine shops have the most establishments at 12 and 10, respectively.

I-68 VALUE PROPOSITION

- Highly specialized advanced manufacturing sectors serving niche markets
- Proximity to large customer base (regional life science cluster, federal government)
- Strong transportation network (highways, Port of Baltimore)
- Strong research and innovation capacity

STRATEGIC CONSIDERATIONS

- Continue to focus on retaining, expanding, and recruiting advanced manufacturing firms to create high-wage jobs and attract new corporate capital investment to the regional economy.

- Build on the region's recent wins in the aerospace industry (Northrop Grumman in particular) to attract additional job growth and investment. Build awareness of the I-68 region as an emerging center for technology-based manufacturing.
- Work with partners to ensure that appropriate real estate options, infrastructure, and incentives are available to meet the needs of current and prospective employers.
- Grow the region's outdoor equipment sector and target "rec tech" (recreational technology) and other outdoor product manufacturers by leveraging both existing industry referrals and the growing national reputation of the region as an outdoor destination.
- Market the region's advantages to recruit manufacturing, assembly, and distribution operations in outdoor equipment and rec tech.
- Promote the region's craft beverage sector. Capitalize on the value created by existing breweries as a significant amenity for attracting Millennials and creative professionals.
- Pursue growth opportunities for brewery expansions from small- to mid-size microbrewers in the Central and Western US to establish an East Coast brewery and distribution hub in the region.
- Work with the region's breweries to identify opportunities to strengthen and diversify the industry by building vertical linkages and growing the supply chain.
- Develop an in-depth understanding of the increasing convergence of digital technology and manufacturing processes.
- Increase knowledge of cloud computing in manufacturing processes.

INDUSTRY INTELLIGENCE AND NETWORKING RESOURCES

RESOURCES: MANUFACTURING		
TRADE ASSOCIATIONS		
Aerospace Industries Association		www.aia-aerospace.org
Association for Unmanned Vehicle Systems International		www.auvsi.org
American Composites Manufacturers Association		acmanet.org
Pharmaceutical Research and Manufacturers of America		www.phrma.org
International Federation of Pharmaceutical Manufacturers & Associations		www.ifpma.org
Outdoor Recreation Roundtable		www.rvia.org/?ESID=ORIR
Outdoor Industry Association		outdoorindustry.org
Association of Outdoor Recreation and Education		www.aore.org
Wood Products Manufacturers Association		www.wpma.org
RELEVANT CONFERENCES/EVENTS		
Outdoor Retailer Summer Market		
23–26 July 2018	*Denver, CO*	www.outdoorretailer.com
International Woodworking Fair 2018		
22–25 August 2018	*Atlanta, GA*	www.iwfatlanta.com
2018 National Aerospace Week		
10–14 September 2018	*Washington, DC*	www.aia-aerospace.org/event/2018-national-aerospace-week
228th National Aerospace Standards Committee Meeting		
11–13 September 2018	*Philadelphia, PA*	www.aia-aerospace.org/events
WPMA 89th Annual Meeting		
26–27 September 2018	*Nashville, TN*	www.wpma.org/pages/wpmaevents/default/WPMA89thAnnualMeeting
AUVSI Hill Day & Science and Tech Fair 2018		
26 September 2018	*Washington, DC*	www.auvsi.org/events/hill-day/auvsi-hill-day-science-and-tech-fair-2018
The Composites and Advanced Materials Expo		
15–18 October 2018	*Dallas, TX*	www.thecamx.org
2018 AORE WEA Joint National Conference		
24–26 October 2018	*Snowbird, UT*	www.aore.org/2018_aore_wea_national_confere.php
Pharma Research 2019		
26–27 April 2019	*Houston, TX*	research.pharmaceuticalconferences.com
TRADE PUBLICATIONS		
Aviation Week & Space Technology		aviationweek.com/aviation-week-space-technology
Unmanned Systems		www.unmannedsystemsmagazine.org
Composites Manufacturing		compositesmanufacturingmagazine.com
Pharmaceutical Manufacturing		www.pharmamanufacturing.com
Outdoor Insider		www.aore.org/outdoor_insider.php
Wood Products Magazine		www.woodworkingnetwork.com/wood-products-magazine
Aerospace Manufacturing Magazine		www.aero-mag.com

TECHNOLOGY

DEFINITION: This target includes a range of activities involved in transforming information into products that can be distributed for use by consumers and businesses, along with the specialized professional and technical services that rely heavily on information technology (IT) or other advanced technologies.

The continued integration of technology across industry sectors and the growth of technology-enabled products and services present a range of opportunities for investment. In addition to demand for traditional IT services—such as data hosting, networking, and computer programming—a number of niche markets merit consideration. These include security software and services (driven by the region's location in the Washington, DC, corridor), biomedical testing (building on MD's strengths in life sciences), research and development (driven by West Virginia University's R&D programs), and unmanned aerial vehicles (connected to the region's aerospace strengths). Although there are manufacturing and repair and maintenance industries that fall under the technology heading, the target as defined is focused on services.

OVERVIEW

PRIMARY INDUSTRY SECTORS

- Information (NAICS 51)
- Professional and Technical Services (NAICS 54)

NICHE ACTIVITIES

- Security software and services
- Tech business support services
- Research and testing (e.g., biometrics)
- Unmanned aerial vehicles (UAVs)

FIGURE 20. SELECTED TECHNOLOGY INDUSTRIES IN THE I-68 REGION
INCLUDING HISTORIC (2012–2017) AND PROJECTED (2017–2022) JOB CHANGE

NAICS CODE	DESCRIPTION	2017	HISTORIC CHG.		PROJECTED CHG.		LQ (US=1.00)	ESTAB.
518210	Data Processing, Hosting, and Related Services	604	17%	▲	11%	▲	**2.53**	12
541715	R&D in the Physical, Engineering, and Life Sciences (except Nanotechn. and Biotech.)	519	-3%	▼	10%	▲	**1.58**	11
541512	Computer Systems Design	457	>100%	▲	36%	▲	0.59	39
541330	Engineering Services	420	3%	▲	9%	▲	0.56	36
517311	Wired Telecommunications Carriers	343	7%	▲	13%	▲	0.75	23
541511	Custom Computer Programming	152	82%	▲	18%	▲	0.21	20
541990	All Other Professional, Scientific, and Tech. Svcs.	88	13%	▲	17%	▲	0.48	5
517312	Wireless Telecomm. Carriers (except Satellite)	54	8%	▲	23%	▲	0.55	<5
517911	Telecommunications Resellers	46	-19%	▼	-26%	▼	1.11	<5
811219	Other Electronic and Precision Equip. Repair/Maint.	40	-48%	▼	-9%	▼	**1.31**	5
541380	Testing Laboratories	37	6%	▲	19%	▲	0.29	<5
541513	Computer Facilities Management	34	36%	▲	32%	▲	0.61	<5
541519	Other Computer Related Services	23	-38%	▼	22%	▲	0.24	<5
541713	Research and Development in Nanotechnology	22	>100%	▲	52%	▲	**1.25**	<5
511210	Software Publishers	20	>100%	▲	56%	▲	0.07	<5
811212	Computer/Office Machine Repair and Maint.	13	-21%	▼	4%	▲	0.33	<5
541714	R&D in Biotechnology (except Nanobiotech.)	11	-84%	▼	-56%	▼	0.08	<5

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.

INDUSTRY TRENDS

Data processing, hosting, and related services, R&D in the physical, engineering, and life sciences, and computer systems design are the largest sources of employment in the technology industry. These detailed industries grew in the past and are projected to grow in the next 5 years. Custom computer programming also experienced high growth over the past 5 years. In the next 5 years, research and development in nanotechnology and software publishers are expected to experience the most gains in employment, at 52 percent and 56 percent, respectively. Telecommunications resellers, other electronic and precision equipment repair and maintenance, and R&D in biotechnology are worth noting because these detailed industries declined in the past 5 years and are expected to continue declining. Data processing, hosting, and related services and R&D in the physical, engineering, and life sciences show advantages in the concentration of jobs, with LQs well above 1.25. Many detailed industries in the technology sector have a small number of individual establishments. Computer systems design and engineering services stand out as having over 30 establishments.

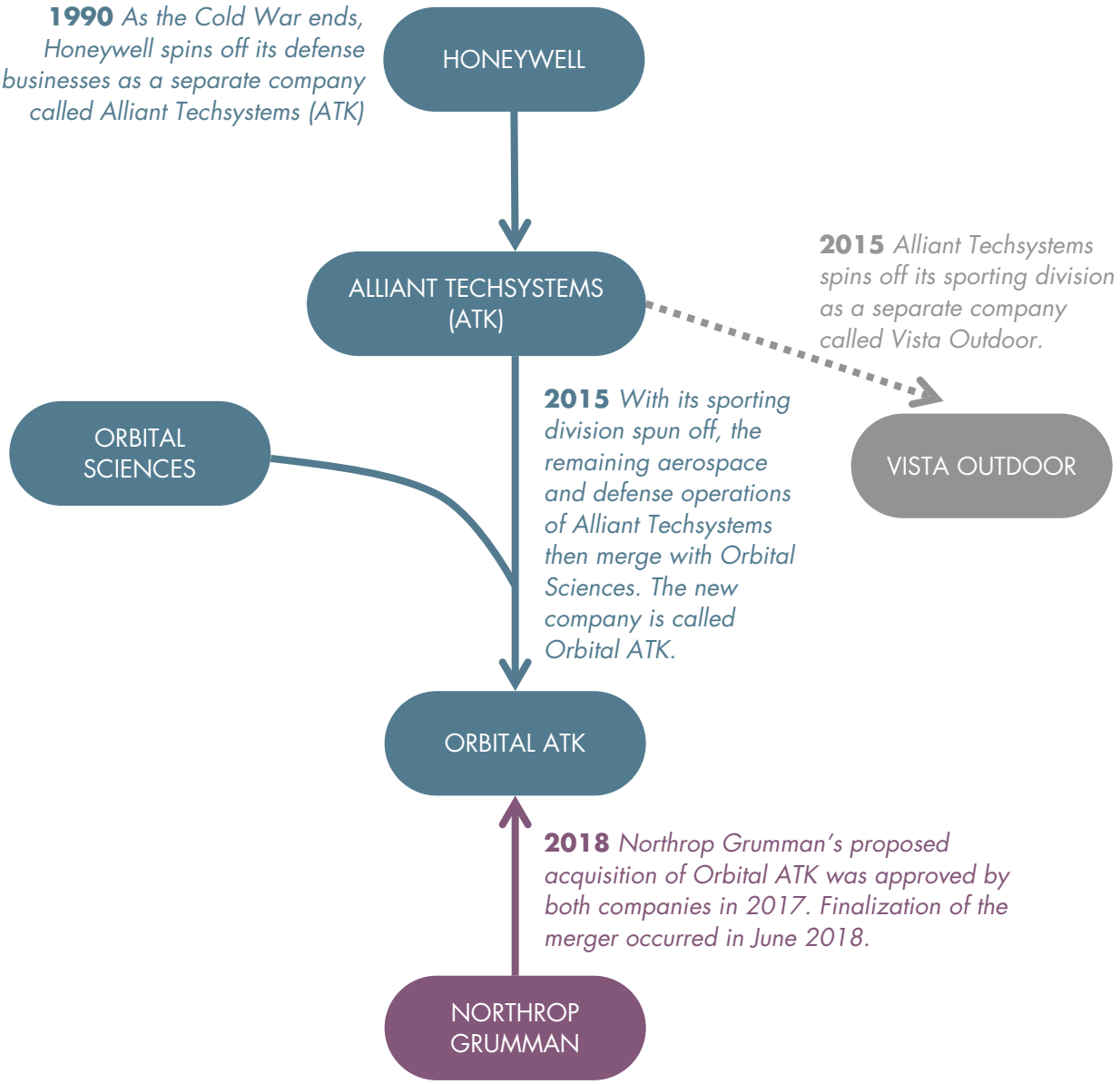
I-68 VALUE PROPOSITION

- Proximity to a major research university
- Proximity to cybersecurity activity in the Washington, DC, metro area
- Northrop Grumman's acquisition of Orbital ATK in June 2018 is a major asset relevant to the technology target. See Figure 21 for more information.

STRATEGIC CONSIDERATIONS

- Promote the continued integration of technology across industry sectors and the growth of technology-enabled products and services.
- Encourage networking across the region's R&D community, both from higher education institutions and the private sector.
- Work with the region's tech companies and larger firms reliant on tech workers to promote the region's technology business climate for the purpose of talent attraction.
- Support efforts to create new industry clusters centered on unmanned aerial vehicles (UAVs). Leverage the Cumberland Regional Airport UAV feasibility analysis to encourage growth in the industry.

FIGURE 21. HISTORY OF ORBITAL ATK



Source: TIP Strategies Research.

INDUSTRY INTELLIGENCE AND NETWORKING RESOURCES

RESOURCES: TECHNOLOGY		
TRADE ASSOCIATIONS		
Information Systems Security Association		www.issa.org
Security Industry Association		www.securityindustry.org
Armed Forces Communications and Electronics Association		www.afcea.org
International Biometrics + Identity Association		www.ibia.org
International Biometric Society		www.biometricsociety.org
HDI		www.thinkhdi.com
Institute of Electrical and Electronics Engineers		www.ieee.org
RELEVANT CONFERENCES/EVENTS		
Cyber Investing Summit		
15 May 2018	*New York, NY*	cyberinvestingsummit.com
CVPR 2018		
18–22 June 2018	*Salt Lake City, UT*	cvpr2018.thecvf.com
Service Management World		
15–17 October 2018	*Orlando, FL*	www.smworld.com
Secure WV- Hack3rCon		
30 November–2 December 2018	*South Charleston, WV*	infosec-conferences.com/events-in-2018/securewv-hack3rcon
AFCEA Defensive Cyber Operations Symposium		
14–16 May 2019	*Baltimore, MD*	events.afcea.org/AFCEACyberOps19/Public/enter.aspx
TRADE PUBLICATIONS		
Journal of Cybersecurity		academic.oup.com/cybersecurity
Infosecurity		www.infosecurity-magazine.com
Cyber Defense Magazine		www.cyberdefensemagazine.com
Biometrics		www.biometricsociety.org/publications/biometrics
SupportWorld		www.thinkhdi.com/library/supportworld.aspx

NATURAL RESOURCES

DEFINITION: The region's natural resource-based industries are the focus of this target, specifically agricultural production and energy-related activities.

The region has a long history of reliance on natural resource-based industries, including forestry, agriculture, and mining. These industries can be cyclical (meaning they are sensitive to downturns) and are often more vulnerable to economic shocks (including natural disasters and price fluctuations). However, like the economy as a whole, these industries are being revolutionized by technology.

For this reason, tapping into the region's strengths in energy-related activities, forestry, and agriculture can offer potential for investment. Although existing employment in some of the component industries is relatively low, several are expected to show increases in the next 5 years, including mining support, oil and gas, and dairy product manufacturing. To reflect differences in production processes and targeting strategies, the data in Figure 22 has been grouped under two subheadings: Energy and Mining and Agriculture and Forestry.

OVERVIEW

PRIMARY INDUSTRY SECTORS

- Agriculture, Forestry, Fishing and Hunting (NAICS 11)
- Mining, Quarrying, and Oil and Gas Extraction (NAICS 21)
- Utilities (NAICS 22)

NICHE ACTIVITIES

- Agribusiness
- Energy

FIGURE 22. SELECTED NATURAL RESOURCES INDUSTRIES IN THE I-68 REGION
INCLUDING HISTORIC (2012–2017) AND PROJECTED (2017–2022) JOB CHANGE

NAICS CODE	DESCRIPTION	2017	HISTORIC CHG.		PROJECTED CHG.		LQ (US=1.00)	ESTAB.
ENERGY AND MINING								
2211	Electric Power Generation, Transmission and Distr.	436	-8%	▼	1%	▲	**1.44**	13
2131	Support Activities for Mining	375	-37%	▼	14%	▲	**1.83**	24
2121	Coal Mining	330	-59%	▼	-12%	▼	**8.77**	13
2123	Nonmetallic Mineral Mining and Quarrying	206	-32%	▼	-14%	▼	**2.90**	13
2111	Oil and Gas Extraction	51	75%	▲	31%	▲	0.40	<5
2212	Natural Gas Distribution	21	-33%	▼	-42%	▼	0.24	<5
AGRICULTURE AND FORESTRY								
1133	Logging	131	-23%	▼	-17%	▼	**2.31**	38
112	Animal Production and Aquaculture	102	-31%	▼	-21%	▼	0.31	8
3115	Dairy Product Manufacturing	92	40%	▲	24%	▲	0.85	<5
1151	Support Activities for Crop Production	53	-2%	▼	7%	▲	0.14	<5
1110	Crop Production	18	68%	▲	7%	▲	0.03	<5
3116	Animal Slaughtering and Processing	16	>100%	▲	29%	▲	0.04	<5
1153	Support Activities for Forestry	13	-20%	▼	-20%	▼	0.88	<5
1152	Support Activities for Animal Production	12	-2%	▼	21%	▲	0.37	<5

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.

INDUSTRY TRENDS

Electric power generation, transmission, and distribution; support activities for mining; and coal mining have the largest numbers for employment in the natural resources industry. Oil and gas extraction and animal slaughtering and processing experienced growth in the past 5 years and are expected to continue growing. Coal mining and support activities for mining had the largest losses in employment, historically. Natural gas distribution, animal production, and support activities for forestry are expected to lose the most jobs in the next 5 years. Six of the fourteen detailed industries analyzed stand out because they have experienced job losses in the past 5 years and will continue to lose jobs in the next 5 years. In terms of job concentration, several industries have unique advantages as shown by a LQ above 1.25. Coal mining has the highest LQ at 8.77, followed by nonmetallic mineral mining and quarrying (2.90) and logging (2.31). Logging and support activities for mining have larger numbers of individual establishments at 38 and 24, respectively.

I-68 VALUE PROPOSITION

- The I-68 region's proximity to abundant natural resources—agriculture and energy—drive opportunities in this sector.

STRATEGIC CONSIDERATIONS

- Attend regional agriculture and energy events to build stronger relationships with the participants in each of the states and market the I-68 region as the destination for professional support.
- Stay abreast of the energy research around each state, including demonstration projects and new product testing. Look for opportunities for business attraction related to this work where successful ventures will likely be scaled up, particularly where new companies are capitalized for expanded production.
- Attend key trade shows related to renewable energy technology and clean coal to gain industry knowledge and make contact with innovative companies that could bring their technologies to the region. Attend these in partnership with state organizations whenever possible and appropriate.
- Forge relationships with regional innovative small- to medium-scale farmers, cooperatives, and agricultural associations to better understand sales/distribution channels, market challenges, and opportunities for diverting product to local value-added facilities.
- Partner with the States of MD and WV to identify co-marketing opportunities, particularly around specialty foods and beverages, and organize a trade mission or attend a trade show jointly.
- Organize a farm-to-table expo that would connect regional growers and specialty foods producers to restaurants, schools, stores, and other institutions in the I-68 region and other regional cities.
- Work with community visitor bureaus to attract one of the regional or national trade shows or agribusiness expos.
- Seize opportunities to process locally grown products within the region, thus reducing imports to the region.

INDUSTRY INTELLIGENCE AND NETWORKING RESOURCES

RESOURCES: NATURAL RESOURCES		
TRADE ASSOCIATIONS		
The Agribusiness Council		www.agribusinesscouncil.org
West Virginia Agribusiness Council		www.agribusinesscouncil.org/westvirginia.htm
Delaware-Maryland Agribusiness Association		demdagribusiness.org
American Solar Energy Society		www.ases.org
World Coal Association		www.worldcoal.org
International Minerals & Mining Association		www.iom3.org/international-mining-minerals-association
International Council on Mining & Metals		www.icmm.com/en-gb
American Coal Council		www.americancoalcouncil.org
American Coalition for Clean Coal Electricity		www.americaspower.org
Western Mining Alliance		themeningalliance.com
West Virginia Coal Association		www.wvcoal.com
RELEVANT CONFERENCES/EVENTS		
Solar Summit 2018		
1–2 May 2018	*San Diego, CA*	www.greentechmedia.com/events/live/solar-summit
Solar 2018: Pathways to the Renewable Energy Transformation		
5–8 August 2018	*Boulder, CO*	www.ases.org/conference
AgriCon		
18–19 September 2018	*Des Moines, IA*	www.irmi.com/conferences/agribusiness-conferences
Solar Power International 2018		
24–27 September 2018	*Anaheim, CA*	www.solarpowerinternational.com
POWER-GEN International		
4–6 December 2018	*Orlando, FL*	www.power-gen.com
TRADE PUBLICATIONS		
Agribusiness		www.onlinelibrary.wiley.com/journal/15206297
Mining Journal		www.mining-journal.com/
Solar Energy		www.journals.elsevier.com/solar-energy
Renewable Energy World Magazine		www.renewableenergyworld.com/magazine/renewable-energy-world.html
International Journal of Clean Coal and Energy		www.scirp.org/journal/ijcce

APPENDIX A. ECONOMIC ASSESSMENT

The purpose of an economic assessment is to understand a region's relative economic position and highlight its competitive advantages and disadvantages. The data assessed provide context for the target industry analysis and help build a framework for the strategic recommendations. The TIP Strategies consulting team conducted an economic assessment of the I-68 region using statistical data on the five-county region, with comparisons to each partner county, MD, WV, and the US, where appropriate. As part of the assessment, the consultants also conducted phone interviews with 29 stakeholders and employers in the region. Recurring themes from these interviews are presented on page 45.

The findings presented in this assessment are based on several sources.

- A review of relevant studies, plans, and other material provided by the I-68 partners and others.
- A review of economic and demographic data from primary and secondary sources, including the US Census Bureau, the US Bureau of Labor Statistics, Economic Modeling Specialists International (Emsi), and Esri.
- Findings from community site visits, roundtables, and interviews with over 40 regional representatives and stakeholders.
- TIP Strategies' 20 years of experience working with communities across the country and compiling best practices.

KEY FINDINGS

The economic assessment provided numerous insights into the I-68 regional economy. The most significant findings are highlighted below.

- ***Slowly declining and aging population.*** Although the I-68 region saw modest population gains between 2010 and 2016, Monongalia County accounted for the vast majority of this growth. The remaining counties saw stagnancy or modest declines over the same period. Similarly, Monongalia County's large young adult population skewed the regional data toward a younger demographic. In reality, the majority of the region's geographic area had a higher percentage of working age and senior populations.
- ***Low bachelor's degree attainment.*** The region falls below the US in terms of the share of the adult population with a bachelor's degree or higher. However, at 39 percent, Monongalia County's attainment levels surpass the other five counties and exceed state and national rates.
- ***Tight labor market.*** In 2017, the I-68 region had an estimated civilian labor force of 127,000 workers. With an annual unemployment rate of 4.7 percent overall, the region as a whole appears to be close to full employment. However, the labor force participation rate is approximately 56 percent, which is significantly below the US rate of about 63 percent.
- ***Two distinct laborsheds.*** Commuting patterns data suggest the I-68 region is served by two separate laborsheds. The state line and mountain passes between Preston and Garrett Counties form the boundary between the two. In total, the entire I-68 region is home to a civilian labor force of nearly 325,000. This is a more favorable dynamic in comparison to other parts of the nation, where employers are finding it more difficult to find talent.

- ***Two employment centers and a high percentage of resident workers.*** The population centers within the I-68 region (Morgantown area on the west side and Cumberland/Frostburg area on the east side) function as employment centers, with more people commuting into the region for work than leaving. Additionally, 71 percent of the region's employed workers live and work in the region.
- ***Stable job base and industry sectors***. Between 2007 and 2017, the region's job base grew approximately 5 percent, from just over 116,000 to just under 122,000. Healthcare, education, and retail trade make up roughly 43 percent of the region's employment base. State government, education, and federal government also play important roles in terms of concentration relative to the US. These sectors are all considered relatively stable industry sectors and less susceptible to economic fluctuations, although the impacts of globalization and technology are causing retail trade to face more uncertainty and disruption.
- ***Healthcare-focused occupations and lower than average wages.*** Relative to the US, the I-68 region shows high-skill concentrations in healthcare occupations (especially healthcare practitioners, technicians, and support). The largest occupation, registered nurses, is also projected to be the fasted growing in terms of jobs between 2017-2022. With a median hourly wage of $29, it is also one of the highest paying of the fastest growing, just below general and operations managers. The region also shows significant concentrations in agriculture, government, and education occupations. Gaming dealers are projected to be the fastest growing occupation between 2017-2022 in percentage terms and also make a 30 percent premium over the US average wage. Among major occupational groups, the average wage of all but three is at or below the national median.
- ***Nursing: the largest field of study.*** In 2016, the region had 8,142 completions at public, 4-year schools. Registered nursing had the most completions in the region at 501, followed by business administration and management at 445. This correlates with the demand for healthcare workers in the region. Most of the nursing and business administration and management completions were at the bachelor's degree level.
- ***Outdoor amenities a top asset among residents.*** In speaking with stakeholders from across the region, the natural environment was the most mentioned strength of the area. This is an important strategic asset, given that quality of place is an increasingly key factor in site location decisions, business retention, and talent attraction and retention.
- ***Workforce a key challenge among employers and stakeholders.*** Interviewees and partners indicated that a shortage of available and trained workers is a top issue in many parts of the region. Labor shortages in the US are an increasingly common issue, especially in more rural areas. Nationally, middle-skill occupations currently show the highest demand. However, middle-skill occupations in the region have not grown proportionally to those of the US, and they also grew slower than both low-skill and high-skill occupations in the region.

STAKEHOLDER INTERVIEWS

As part of the project, the TIP Strategies consulting team conducted interviews with 29 stakeholders and major employers in the region. The consulting team guided the conversations using these four questions.

1. What are the key regional assets that support business and industry attraction and retention?
2. What are the challenges to business and industry attraction and retention in the region?
3. What are the region's greatest economic opportunities?
4. What has been tried in the past (with regard to economic and/or community development) but wasn't successful?

Below is the list of interviewees and their respective organizations.

NAME	ORGANIZATION
Jonathan Kessler	Deep Creek Lake
Ishmael Sparkman	Automated Packaging Systems
Skylar Dice	Rocky Gap Casino Resort
Cynthia Bambara	Allegany College of Maryland
Jennifer Orlikoff	Potomac State College of WVU
Lucas Tylor	Potomac State College of WVU
Nicole Christian	Garrett County Chamber of Commerce
Sarah Duck	Garrett County Chamber of Commerce
Barry Ronan	Western Maryland Health System
Joe Thomas	Phenix Technologies
Alex Morris	ClosetMaid
Jim Bailey	GCC Technologies
Jerry Geisler	Wisp Resort
William Lantz	University of Maryland Extension
Richard Midcap	Garrett College
Julie Yoder	Garrett College
Mike Dreisbach	Savage River Lodge
Mark Boucot	Garrett Regional Medical Center
Damian Ferek	The Stick Company
Susan Riddle	Greater Morgantown Convention & Visitors Bureau
Chris Pulice	Hazelton Federal Correctional Complex
Mike Koch	FireFly Farms
Ron Justice	WVU Government Relations
Duane Yoder	Garrett County Community Action
Timi Hadra	IBM
Mike McGregor	Orbital ATK
Mitch Wilson	WebstaurantStore.com
Cathy MacFawn	Allegany Coal and Land
Steve Jenkins	Allegany Coal and Land

RECURRING THEMES FROM INTERVIEWS

The table below summarizes the most common responses from interviewees.

ASSETS

- Outdoor amenities, natural beauty
- I-68; proximity and access to major metros
- Higher education institutions; workforce training partnerships
- Quality medical institutions
- Work ethic
- K–12 school systems

CHALLENGES

- Shortage of available and trained workers
- Demographics (e.g., aging workforce; stagnating or decreasing population in some counties)
- Inadequate housing stock, especially affordable workforce housing
- Limited broadband access in rural areas of the region
- Resistance to growth and/or change

OPPORTUNITIES

- Prospecting small- to mid-size companies versus large companies
- Promoting inexpensive land
- Leveraging tourism/outdoor assets for talent attraction and economic growth
- Increasing collaboration, coordination of efforts
- Expanding airports/carriers
- Supplying local food

GENERAL CHARACTERISTICS

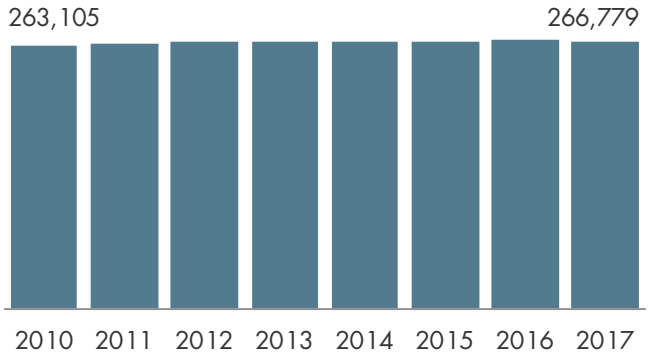
The following section provides an overview of demographic and economic data for the five-county, I-68 region.

DEMOGRAPHICS

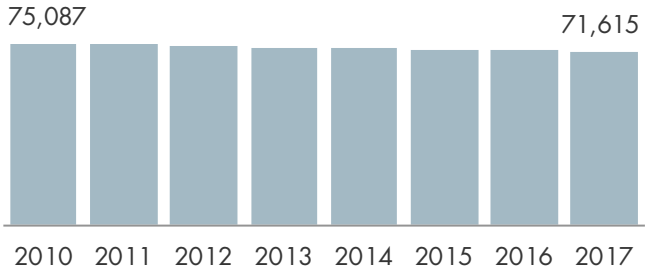
From 2010 to 2017, the I-68 region's population grew by just under 4,000 residents, or 1.6 percent. This growth predominately occurred in Monongalia County and was offset by gradual declines in Allegany, Garrett, and Mineral Counties. Preston County showed a modest increase.

FIGURE 23. POPULATION

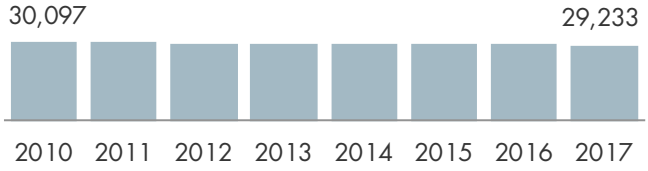
I-68 REGION



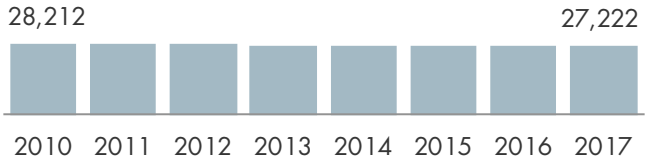
ALLEGANY



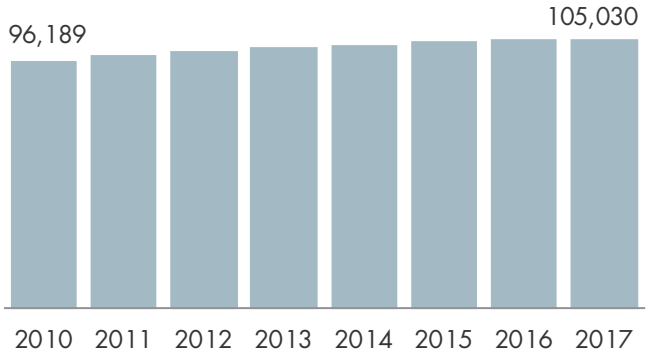
GARRETT



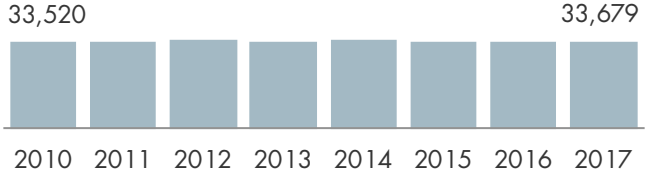
MINERAL



MONONGALIA



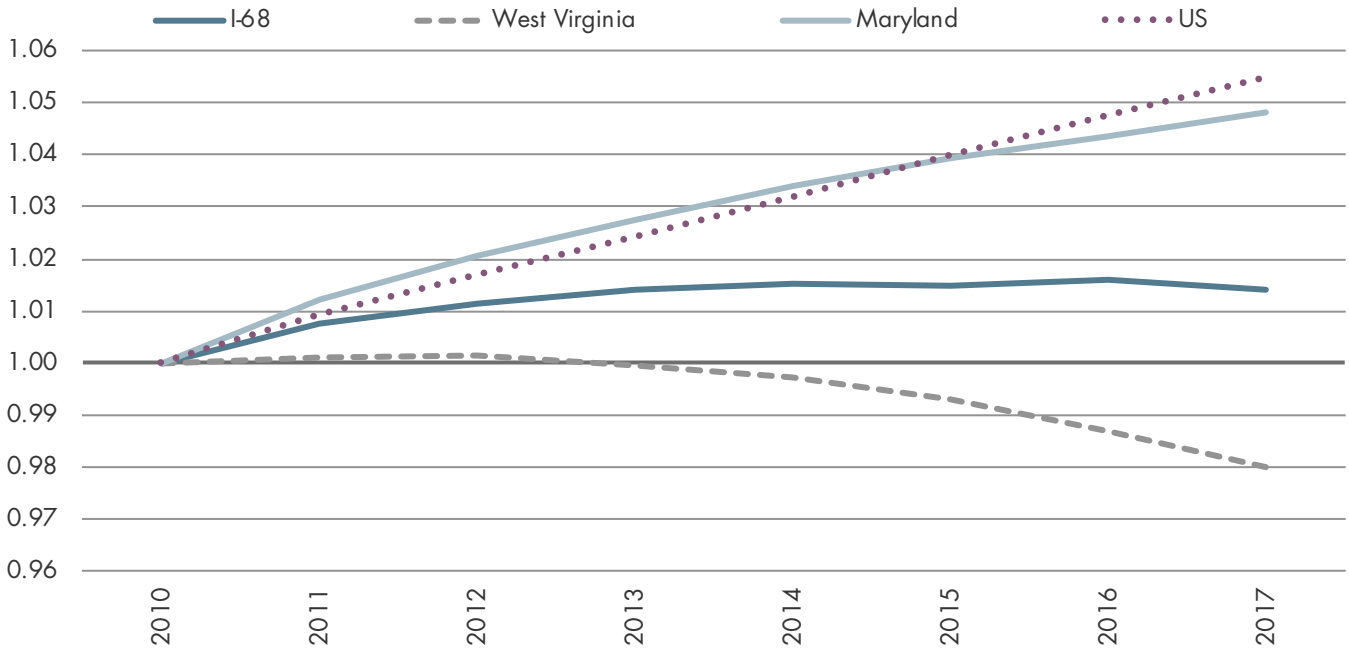
PRESTON



Source: (all figures this page) US Census Bureau, Population Estimates Program.

During the same period, the I-68 region grew at a slower rate than MD and the US, but faster than WV.

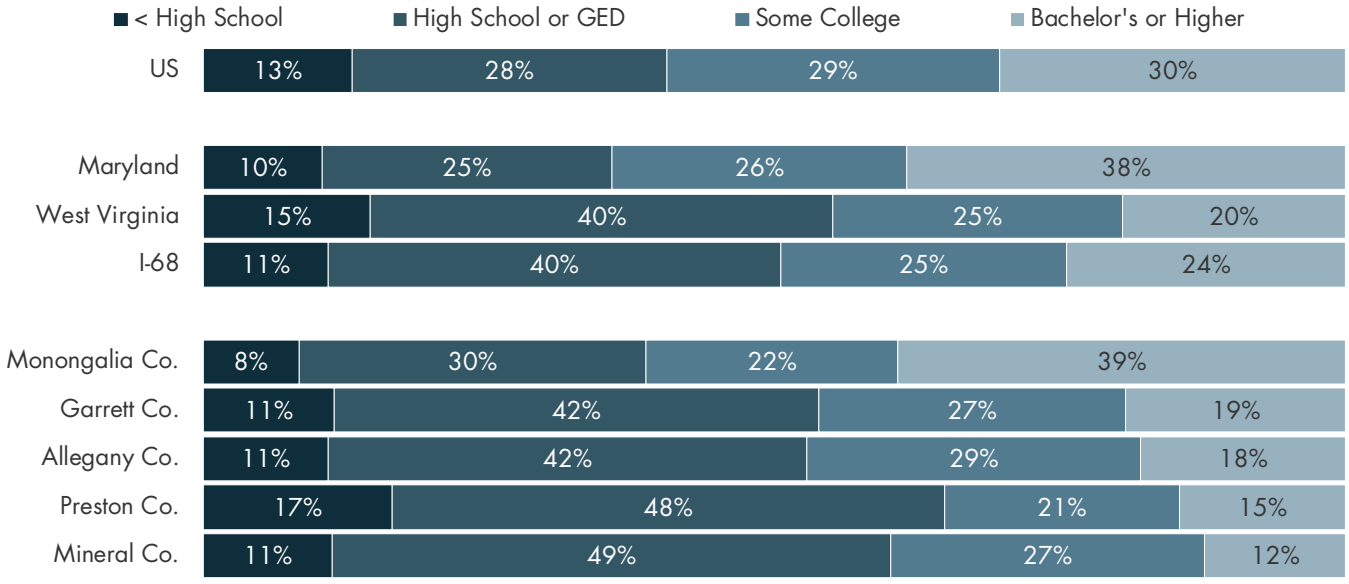
FIGURE 24. COMPARATIVE POPULATION TRENDS
INDEXED TO 2010=1.00



Source: US Census Bureau, Population Estimates Program.

Residents of the I-68 region have relatively low educational achievement levels compared to the US. Monongalia County is the only exception. In addition to low overall bachelor's degree attainment, 51 percent of the I-68 residents achieved a high school diploma or less—higher than the US average of 41 percent.

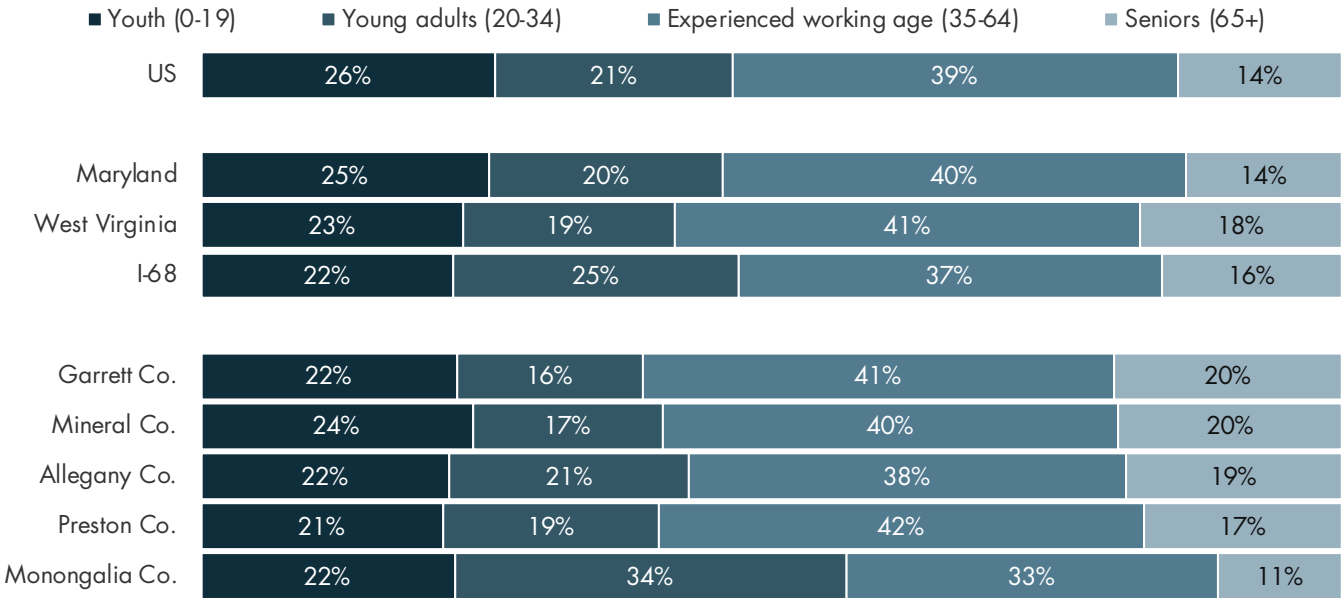
FIGURE 25. EDUCATIONAL ATTAINMENT (AGE 25 AND OLDER)



Source: US Census Bureau, Population Estimates Program.

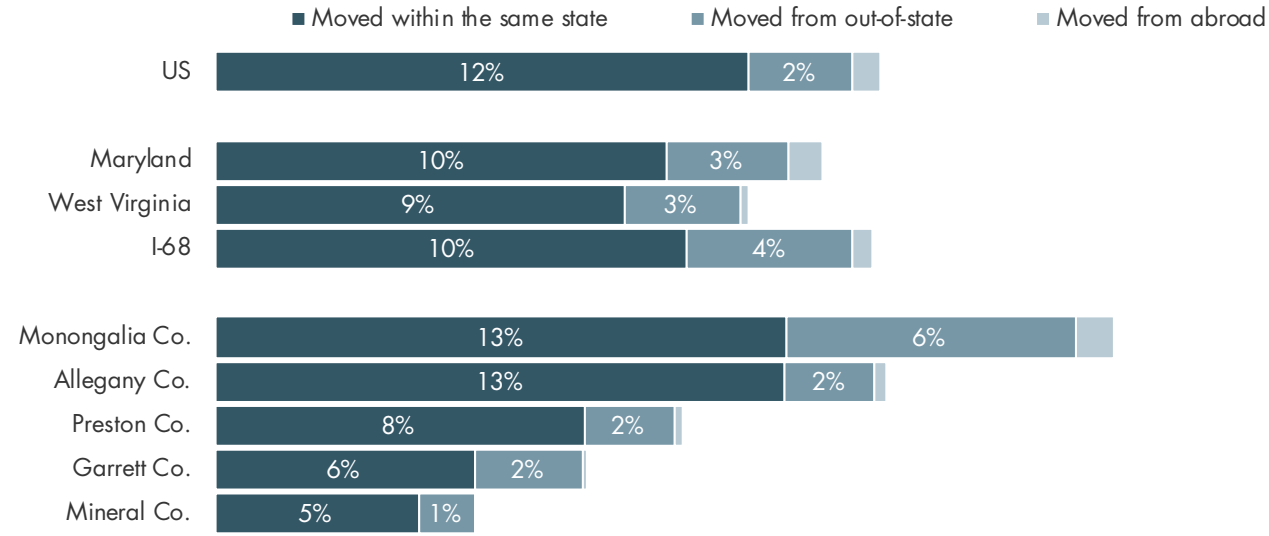
Approximately 16 percent of the region's residents are seniors (65 or older). The largest percentage of residents (37 percent) falls within the experienced working age demographic. This age distribution is not significantly different from that of the US (14 percent and 39 percent, respectively); however, Monongalia County's unique distribution within the region skews these figures slightly.

FIGURE 26. AGE STRUCTURE



Compared to the national average, MD and WV's populations are similarly mobile. Within the region, Monongalia County has a higher-than-average percentage of people who moved from out of state (6 percent, compared to state averages of 3 percent, and a national average of 2 percent). Mobility in the I-68 region overall is similar to the US.

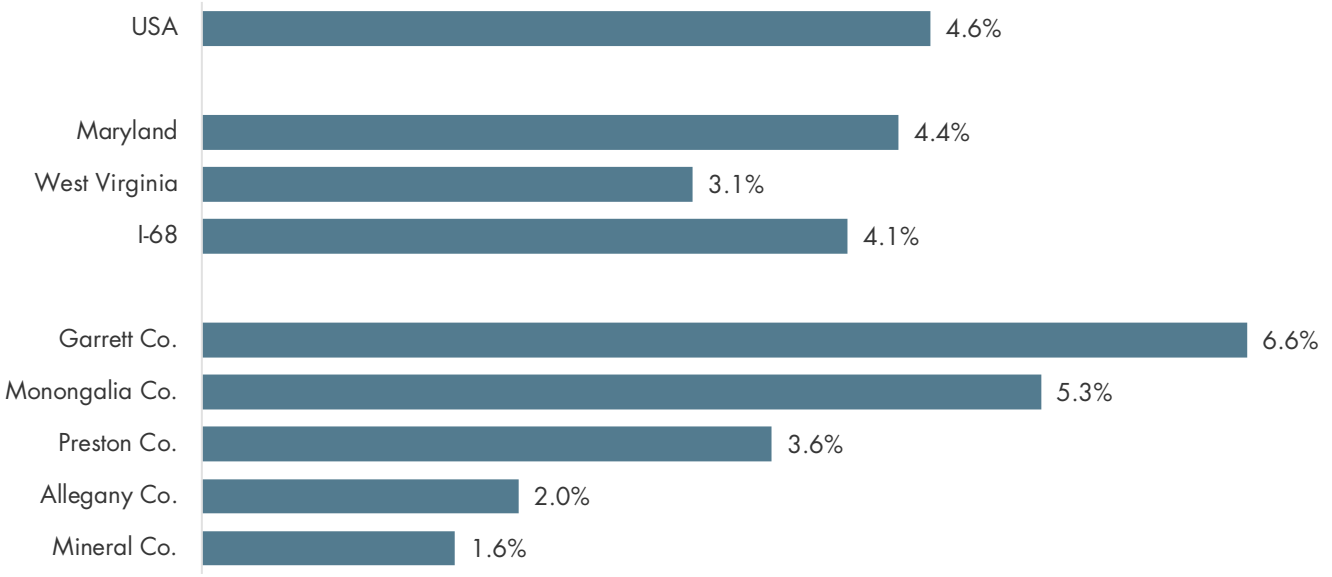
FIGURE 27. MOBILITY OF POPULATION, 2016
PERCENT OF POPULATION 1 YR.+ CHANGING RESIDENCE IN THE PAST YEAR



Source: (all figures this page) US Census Bureau, American Community Survey, 5-year averages for the period 2012–2016.

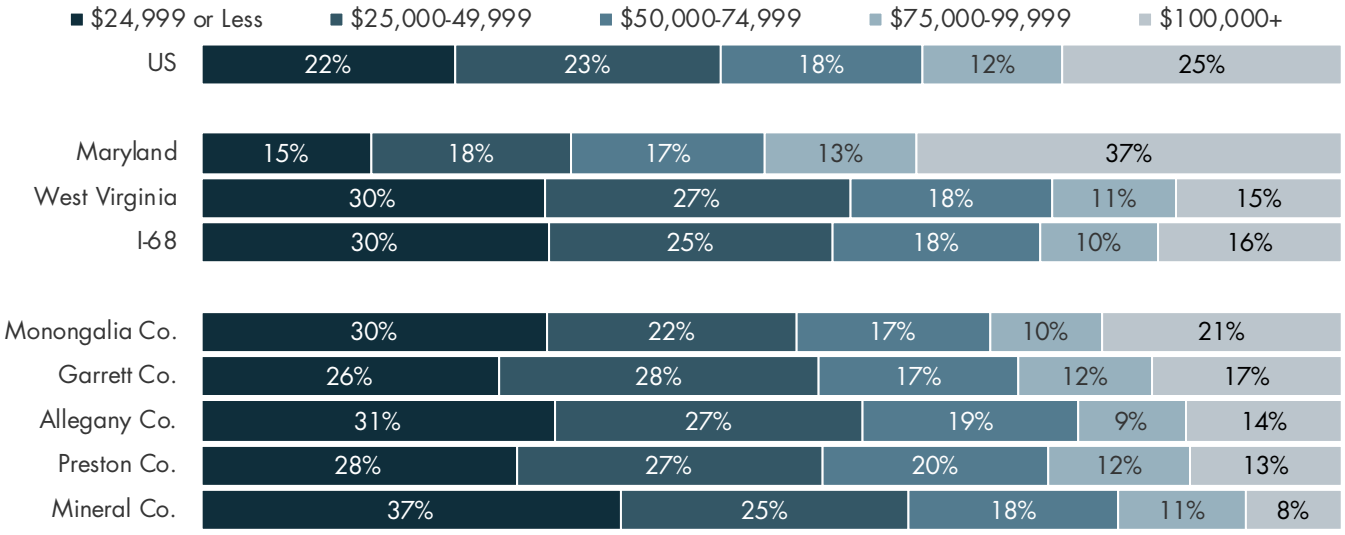
The I-68 region has a similar percentage of people working from home compared to the national average. Garrett and Monongalia Counties have competitively high work-from-home populations (6.6 percent and 5.3 percent, respectively), exceeding both the region (4.1 percent) and the nation (4.6 percent).

FIGURE 28. WORK FROM HOME, 2016
PERCENT OF POPULATION 16 YRS.+



Compared to the national average (22 percent), the I-68 region has a higher proportion of households making less than $24,999 (30 percent). Mineral County has the greatest share of households making less than $24,999 at 37 percent. The I-68's region averages for the middle three income brackets are the same as the national average (nearly 18 percent), while the proportion of households earning more than $100,000 is significantly less. MD is by far the most affluent of the benchmark geographies with more than double the percentage of residents making more than $100,000 (37 percent) of WV (15 percent).

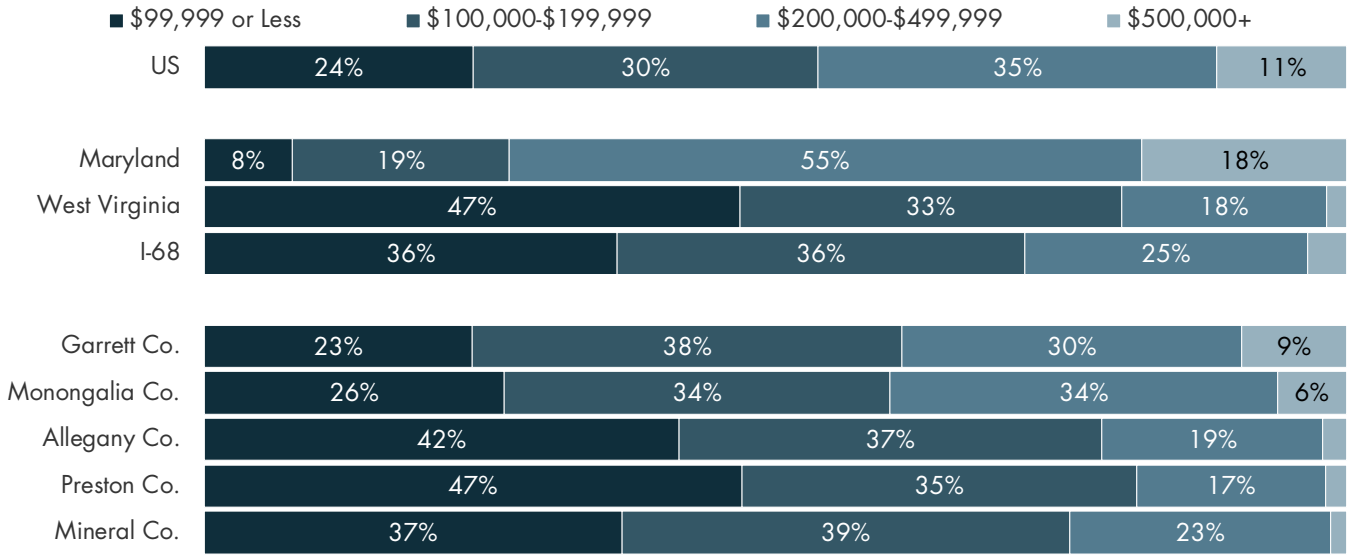
FIGURE 29. HOUSEHOLD INCOME DISTRIBUTION, 2016



Source: (all figures this page) US Census Bureau, American Community Survey, 5-year averages for the period 2012–2016.

The majority of houses in the I-68 region (72 percent) have a median value of less than $199,999, which is significantly more than the national average of 54 percent. Not surprisingly (due to the percentage of high-income households), a larger share of Monongalia and Garrett Counties' homes have a median value of $200,000 and above, making up 40 percent and 39 percent of all homes, respectively.

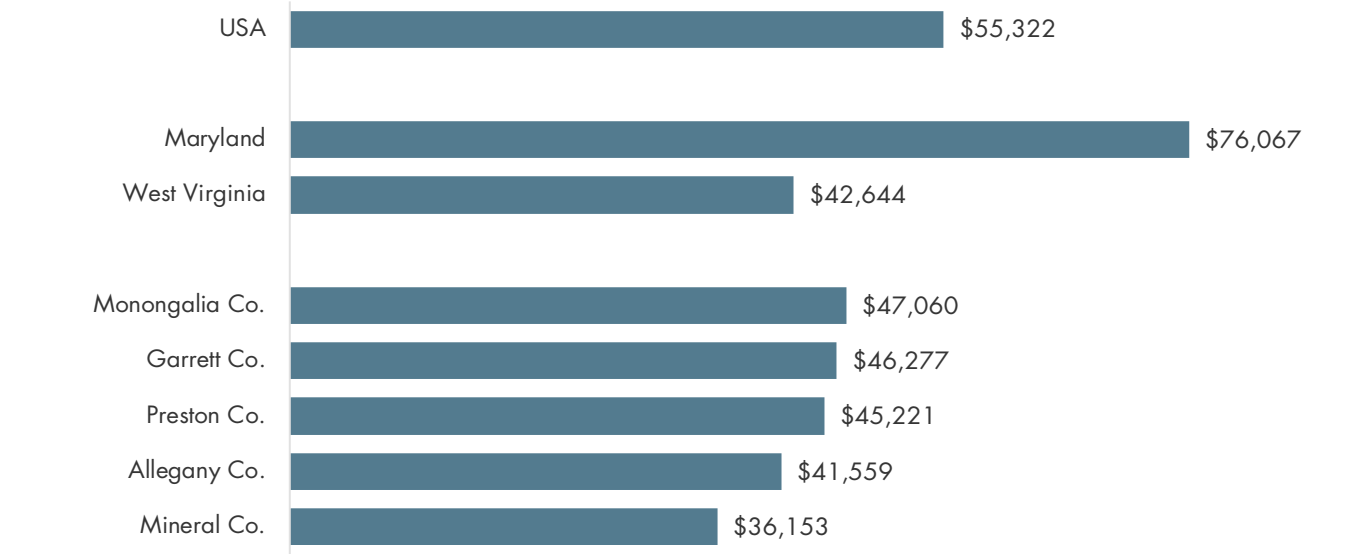
FIGURE 30. HOME VALUE DISTRIBUTION, 2016



Median household income (Figure 31) and median home value (Figure 32) are useful measures for assessing the affordability of a region. When compared to each other, these measures can form a housing affordability index (Figure 33), which provides a more comprehensive comparison point.

In summary, Allegany and Preston Counties offer more affordable housing than the US. Garrett, Mineral, and Monongalia Counties have slightly higher affordable housing indices.

FIGURE 31. MEDIAN HOUSEHOLD INCOME* 2016



Source: (all figures this page) US Census Bureau, American Community Survey, 5-year averages for the period 2012–2016.
*Not available for the I-68 region.

FIGURE 32. MEDIAN HOME VALUE* 2016

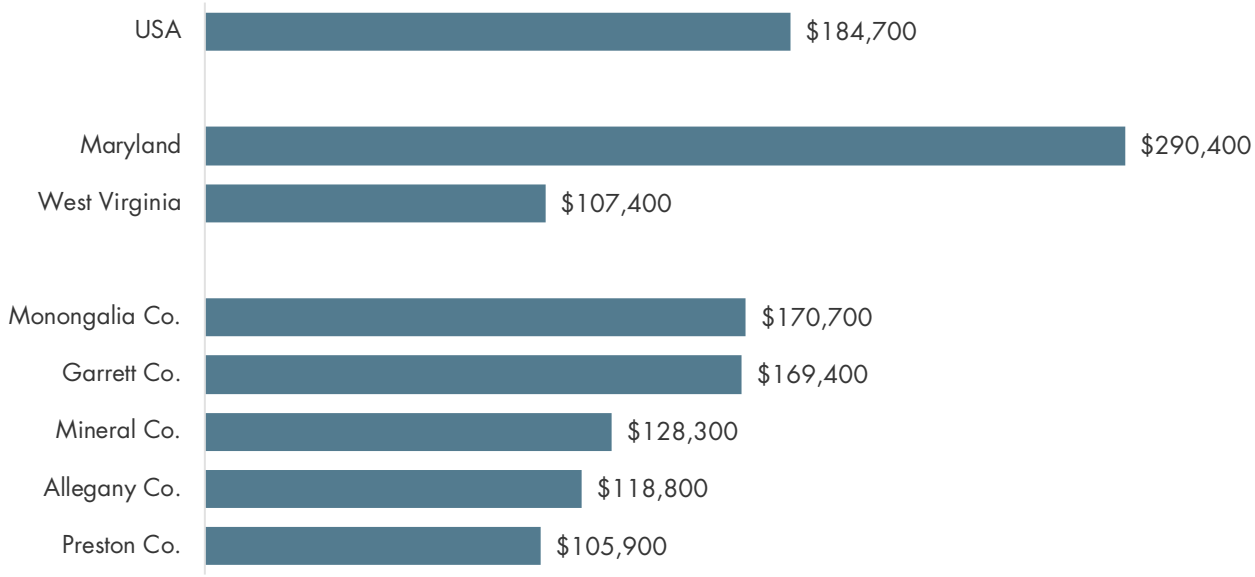
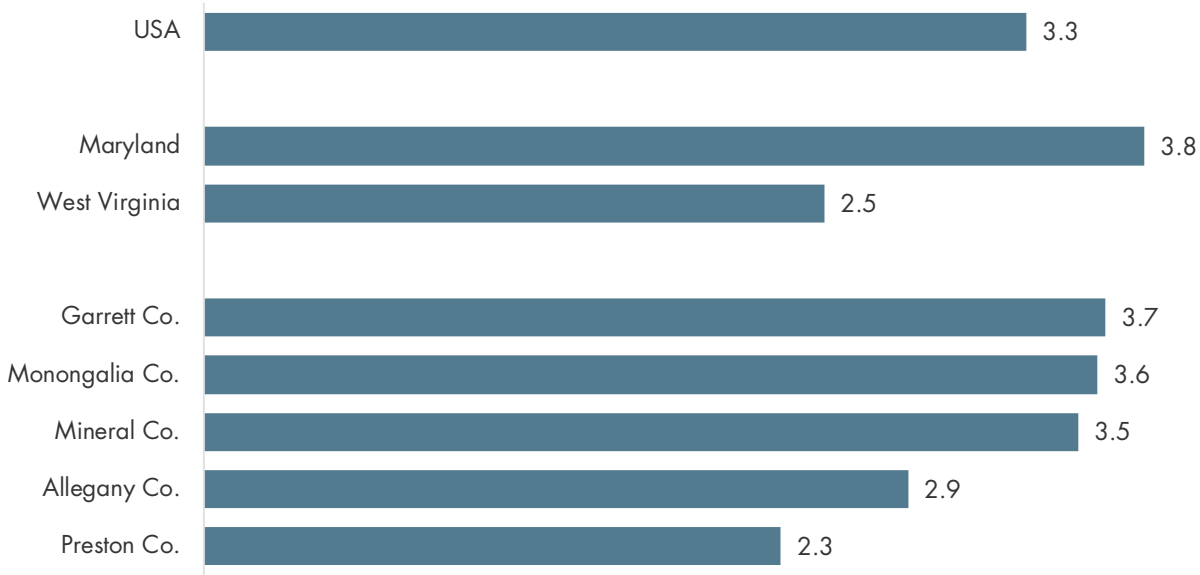


FIGURE 33. HOUSING AFFORDABILITY INDEX, 2016
RATIO OF MEDIAN HOME VALUE TO MEDIAN HH INCOME*



Source: (all figures this page) US Census Bureau, American Community Survey, 5-year averages for the period 2012–2016.
*Not available for the I-68 region.

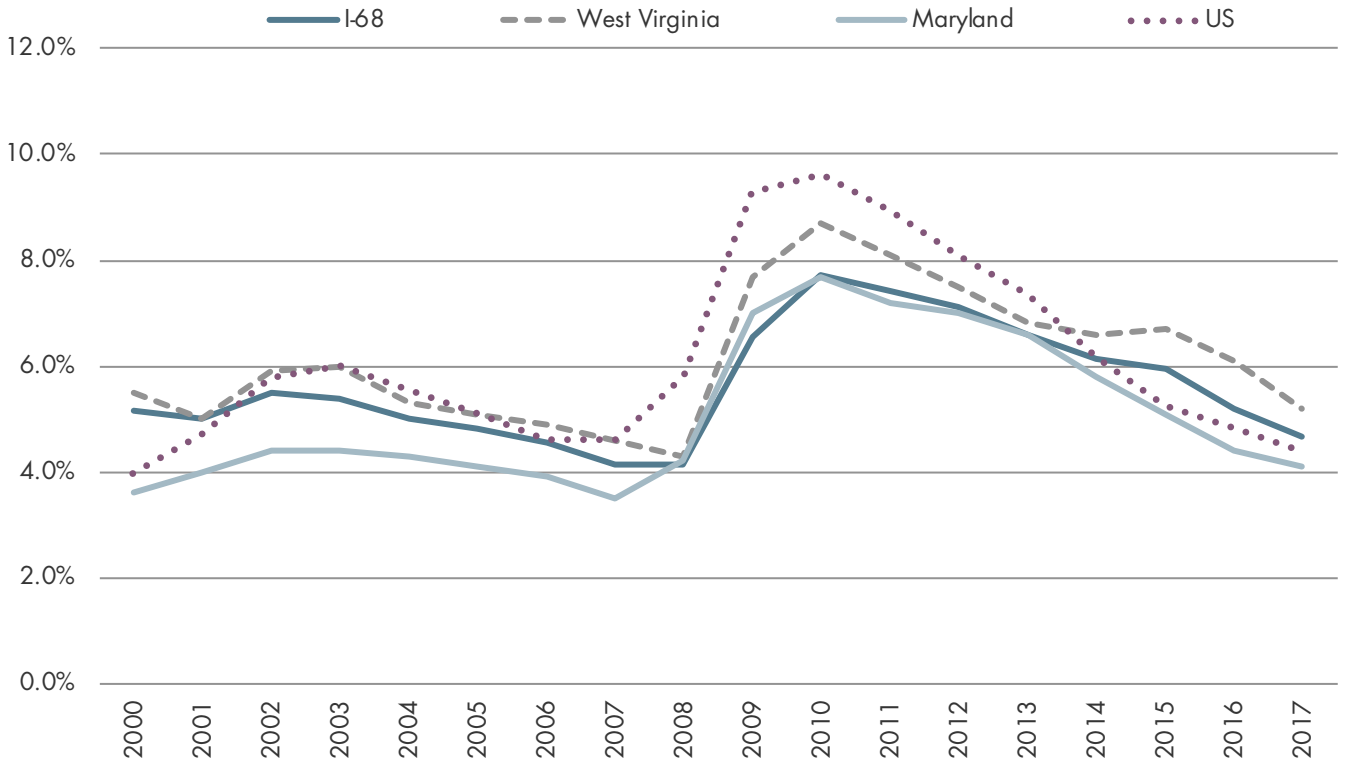
LABOR MARKET INFORMATION

In 2017, the I-68 region had a civilian labor force of 127,000 workers and an annual unemployment rate of 4.7 percent, which was slightly higher than the national average of 4.4 percent. The unemployment trends for the states, the region, and the US, however, follow a similar pattern from 2000 to 2017, as shown in Figure 35.

FIGURE 34. LABOR MARKET OVERVIEW, 2017*

GEOGRAPHY	CIVILIAN LABOR FORCE	EMPLOYED	UNEMPLOYED	UNEMPLOYMENT RATE
I-68	127,000	121,000	6,000	4.7
WV	779,000	738,000	41,000	5.2
MD	3,219,000	3,086,000	133,000	4.1
US	160,320,000	153,337,000	6,983,000	4.4

FIGURE 35. UNEMPLOYMENT TRENDS, 2000–2017

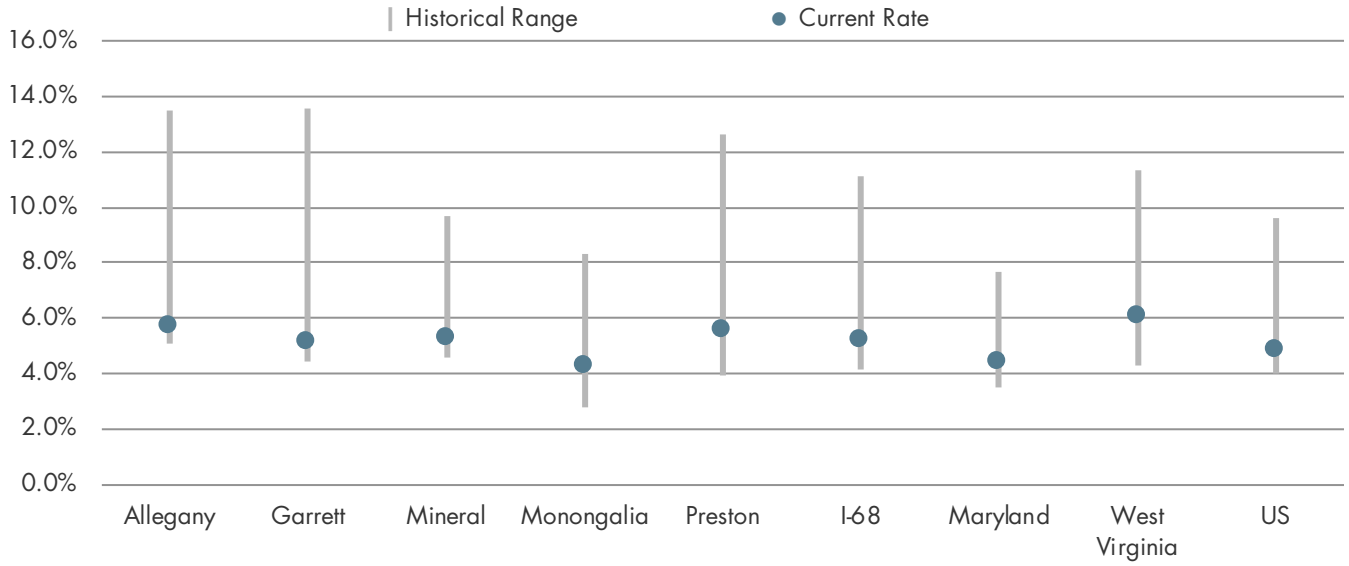


Source: (all figures this page) US Bureau of Labor Statistics, Local Area Unemployment Statistics.
*Data for 2017 are annual averages calculated by TIP Strategies.

In Figure 36, the blue dot represents the current unemployment rate, while the gray bar indicates the unemployment rate's range over the past 25 years.

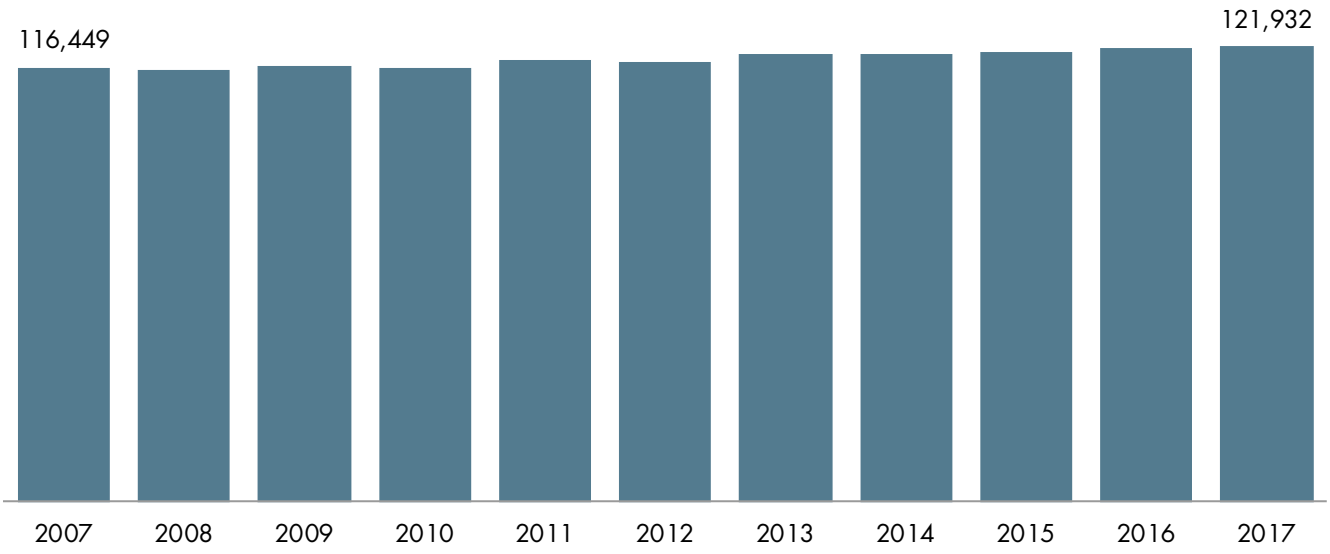
Unemployment rates for counties within the I-68 region currently fall between 4 and 6 percent. Monongalia County currently has the lowest rate, and Allegany County currently has the highest rate.

FIGURE 36. UNEMPLOYMENT RATE, HISTORICAL RANGE



Source: US Census Bureau, American Community Survey, 5-year averages for the period 2012–2016.

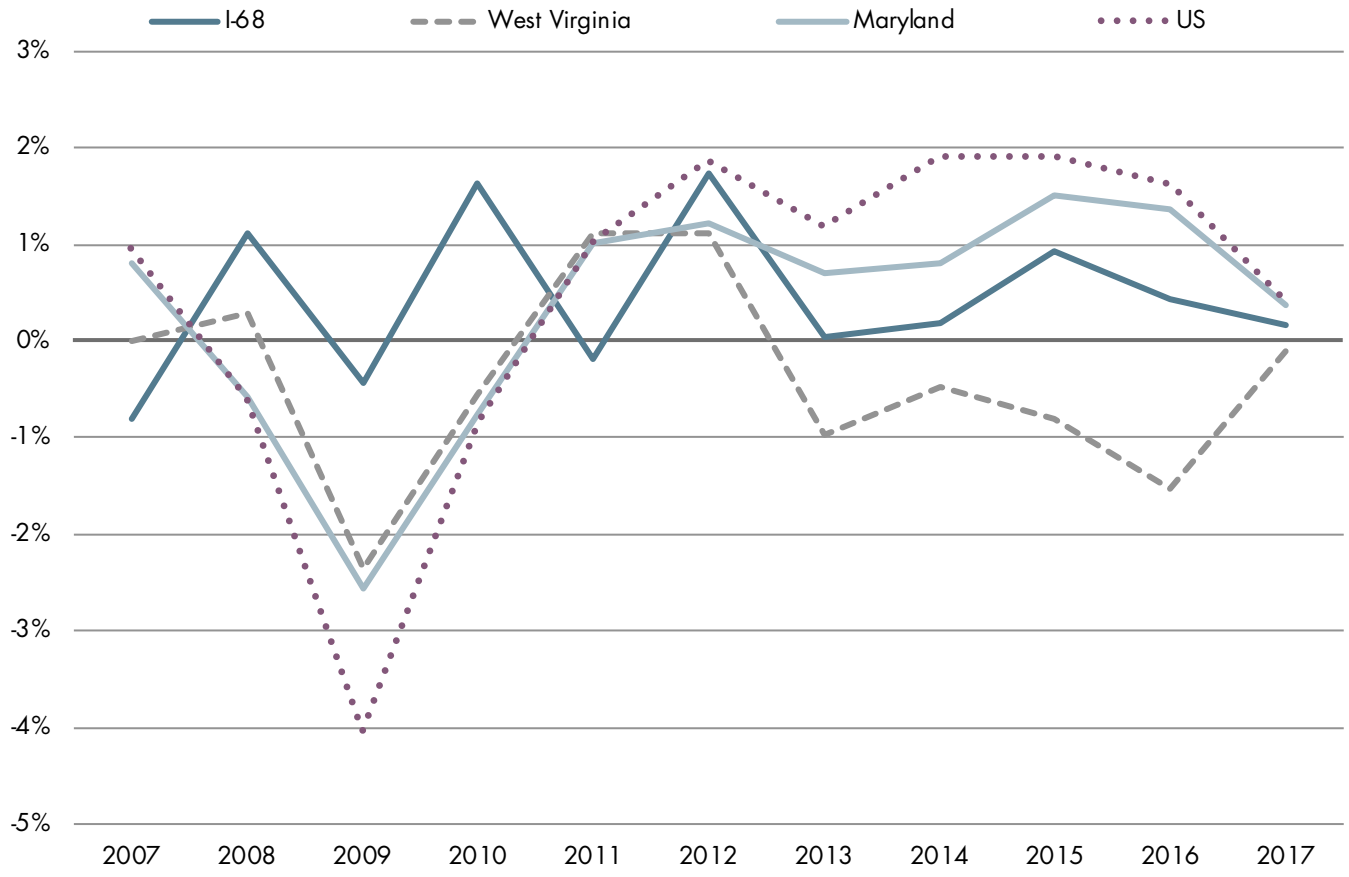
Despite declines in employment figures in 2008, 2010, and 2012, employment numbers trended upward from just over 116,000 in 2007 to just under 122,000 in 2017.



Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.

During the peak of the Great Recession (2009), the region saw less-severe job losses than both states and the nation. However, during the recovery and subsequent years, employment was far more volatile in the region than elsewhere. Recent trends indicate a leveling out, with regional employment levels falling between those of MD and WV.

FIGURE 37. ANNUAL EMPLOYMENT CHANGE (%), 2007–2017



Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.

INDUSTRY

The top three industries in the I-68 region—healthcare and social assistance, education, and retail trade—make up roughly 43 percent of the region's employment base, following state and national trends. However, the I-68 region's share of jobs within these three industries exceeds the nation.

FIGURE 38. INDUSTRY DISTRIBUTION (% OF TOTAL)
COMPARISON OF I-68 WITH SELECTED GEOGRAPHIES AND US

NAICS Code & Description	I-68	West Virginia	Maryland	US
62 Healthcare & social assistance*	**19.9%**	**17.1%**	**13.3%**	**13.4%**
61 Education*	**13.2%**	**9.3%**	**10.3%**	**9.4%**
44-45 Retail trade	**11.5%**	**12.1%**	**10.2%**	**10.5%**
72 Lodging, restaurants, & bars	10.4%	9.0%	8.0%	8.7%
31-33 Manufacturing	8.3%	6.4%	3.6%	8.0%
23 Construction	5.2%	5.1%	6.5%	5.5%
81 Personal & other services	4.1%	4.7%	5.0%	4.9%
54 Professional services	3.7%	3.8%	9.4%	6.5%
56 Administrative & support services	3.6%	5.2%	6.3%	6.3%
48-49 Transportation & warehousing*	3.0%	3.5%	3.5%	3.9%
9039 Local govt.	2.8%	3.9%	3.2%	3.6%
9029 State govt.	2.5%	3.5%	1.9%	1.5%
9011 Federal govt. (civilian)	1.9%	2.7%	5.6%	1.5%
42 Wholesale trade	1.8%	2.9%	3.0%	3.8%
52 Finance & insurance	1.7%	2.6%	3.4%	3.9%
51 Information	1.4%	1.3%	1.4%	1.9%
53 Property sales & leasing	1.4%	1.1%	1.9%	1.7%
71 Arts, entertainment, & recreation	1.2%	1.1%	1.8%	1.7%
55 Corporate & regional offices	1.1%	0.8%	0.9%	1.4%
21 Mining (incl. oil & gas)	0.8%	2.6%	0.0%	0.4%
22 Utilities	0.4%	0.7%	0.3%	0.4%
11 Agriculture & forestry	0.3%	0.5%	0.4%	1.2%

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
*Includes related public-sector employment (e.g., Education includes public schools, colleges, and universities; Healthcare includes public hospitals; and Transportation and warehousing includes US Postal Service workers).
Note: Three largest industries are highlighted.

The I-68 region has a higher-than-average concentration (LQ) of employment in mining, state government, healthcare and social assistance, education, and federal government, compared to the nation (indicated by LQs greater than 1.25). This most closely aligns with WV's comparative advantages, but WV also has a higher-than-average concentration of employment in utilities (LQ=1.97). While MD does share all the I-68's comparative advantages, it does have a higher-than-average concentration of employment in the professional services (LQ=.45).

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.

(local employment in industry x / total local employment—all industries) / (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 39. INDUSTRY CONCENTRATION (LQ)

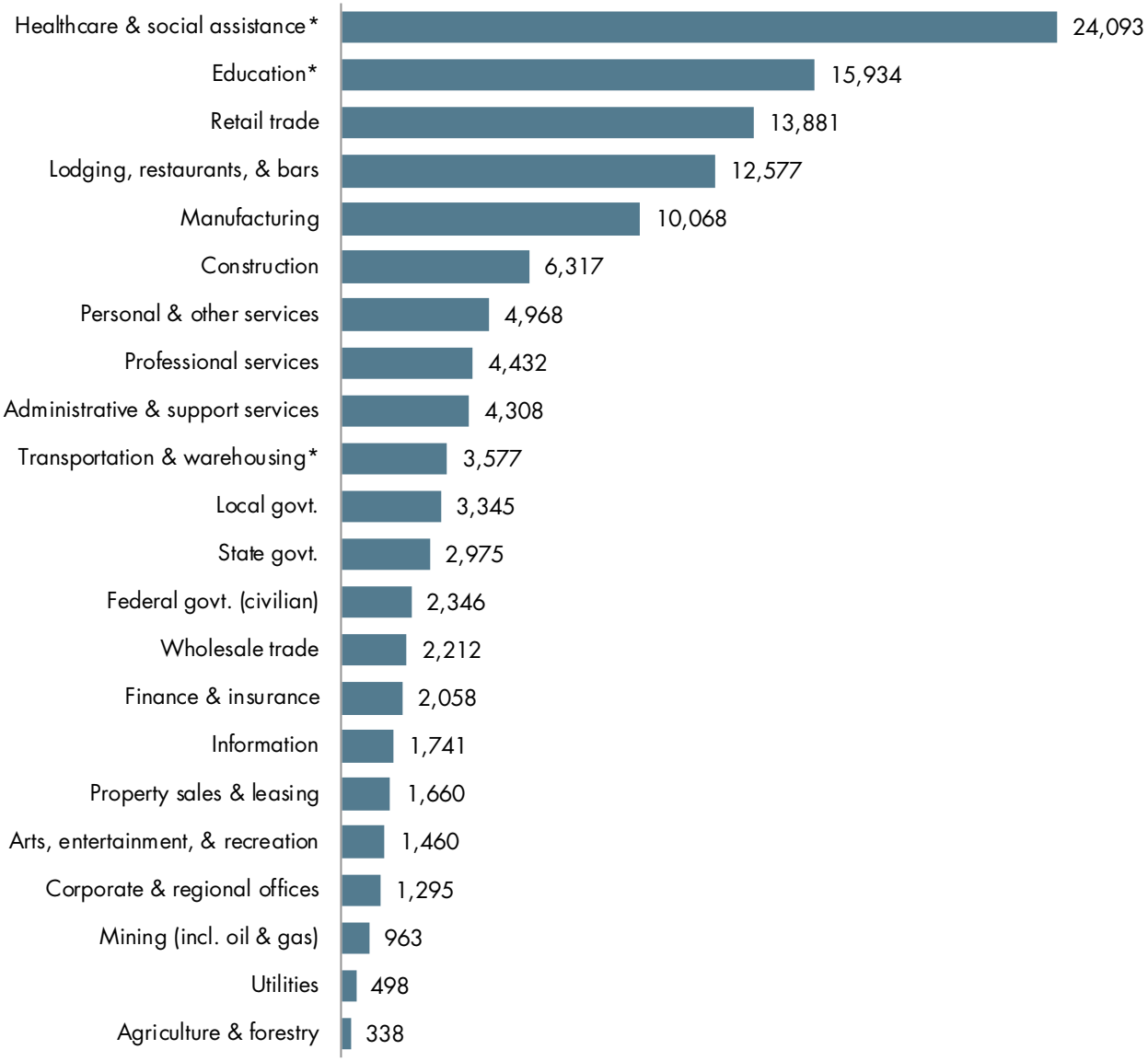
COMPARISON OF I-68 WITH SELECTED GEOGRAPHIES AND US

NAICS	Code & Description	I-68	West Virginia	Maryland	US
21	Mining (incl. oil & gas)	**2.04**	**6.65**	0.10	1.00
9029	State govt.	**1.70**	**2.40**	**1.30**	1.00
62	Healthcare & social assistance*	**1.48**	**1.27**	0.99	1.00
61	Education*	**1.41**	1.00	1.10	1.00
901199	Federal govt. (civilian)	**1.34**	**1.89**	**3.86**	1.00
72	Lodging, restaurants, & bars	1.20	1.05	0.92	1.00
22	Utilities	1.16	**1.97**	0.95	1.00
44-45	Retail trade	1.10	1.16	0.97	1.00
31-33	Manufacturing	1.05	0.80	0.45	1.00
23	Construction	0.96	0.92	1.18	1.00
81	Personal & other services	0.85	0.96	1.03	1.00
53	Property sales & leasing	0.82	0.63	1.13	1.00
9039	Local govt.	0.77	1.09	0.88	1.00
51	Information	0.76	0.69	0.74	1.00
48-49	Transportation & warehousing*	0.76	0.89	0.90	1.00
55	Corporate & regional offices	0.75	0.59	0.62	1.00
71	Arts, entertainment, & recreation	0.70	0.63	1.06	1.00
54	Professional services	0.57	0.59	**1.45**	1.00
56	Administrative & support services	0.57	0.82	0.99	1.00
42	Wholesale trade	0.48	0.76	0.79	1.00
52	Finance & insurance	0.44	0.67	0.86	1.00
11	Agriculture & forestry	0.23	0.42	0.32	1.00

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
*Includes related public-sector employment (e.g., Education includes public schools, colleges, and universities; Healthcare includes public hospitals; and Transportation and warehousing includes US Postal Service workers).
Note: LQs greater than 1.25 are presumed to show competitive advantage and are highlighted.

The largest employment sector in the I-68 region is healthcare and social assistance. Including both public and private hospitals, the sector employs over 24,000 and accounts for 20 percent of overall employment. Education; retail trade; lodging, restaurants, and bars; and manufacturing round out the top five largest industries for employment. Together, these top five industries account for nearly 77,000 jobs in the region, more than all other industries combined.

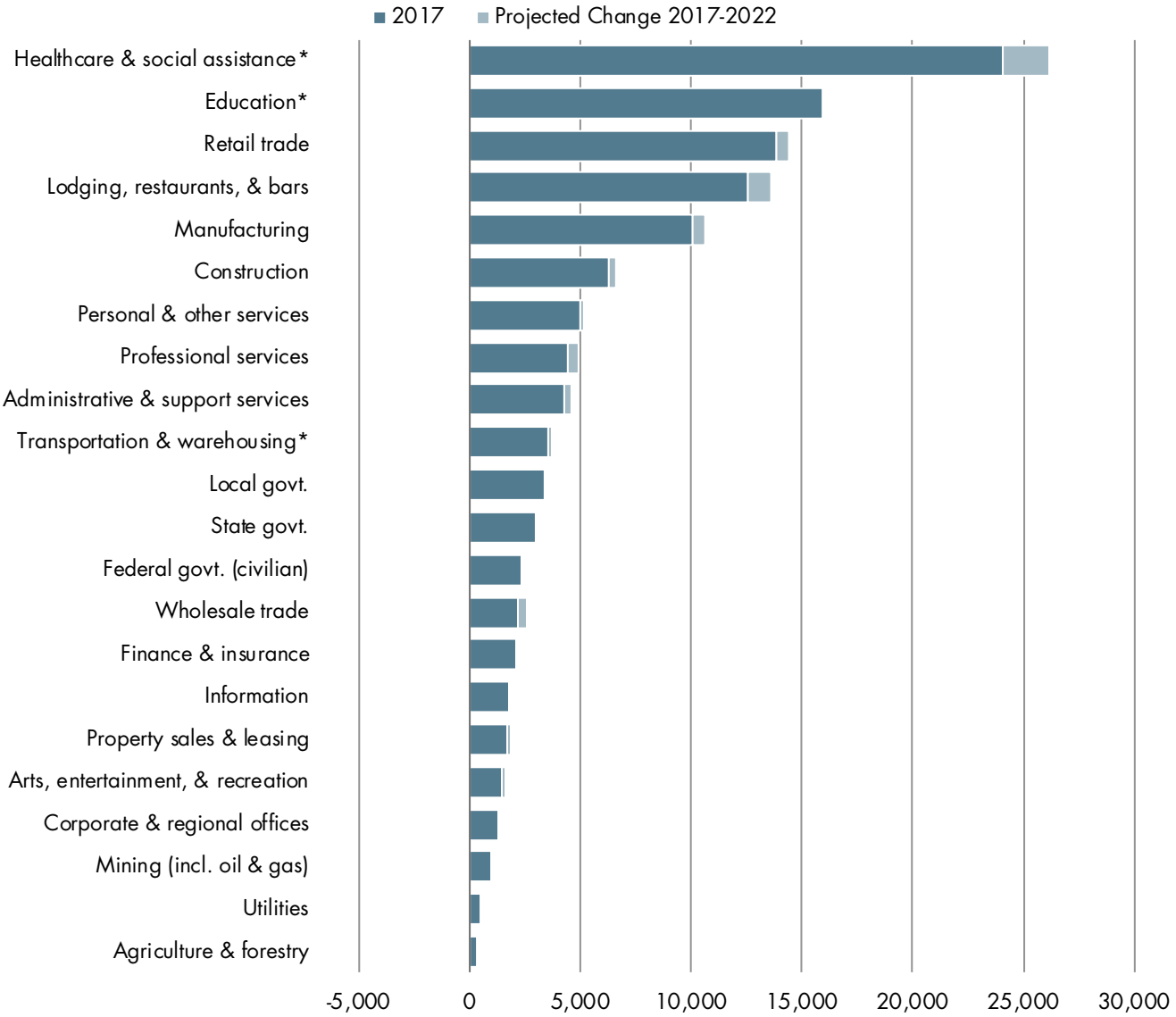
FIGURE 40. I-68 JOB BASE BY INDUSTRY SECTOR, 2017



Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
*Includes related public-sector employment (e.g., Education includes public schools, colleges, and universities; Healthcare includes public hospitals; and Transportation and warehousing includes US Postal Service workers).

Over the next 5 years, the healthcare and social assistance industry is projected to grow by the largest share, adding about 2,000 jobs. Education is expected to remain the same, while retail trade; lodging, restaurants and bars; and manufacturing are also expecting modest increases in employment, adding approximately 2,000 more among the three.

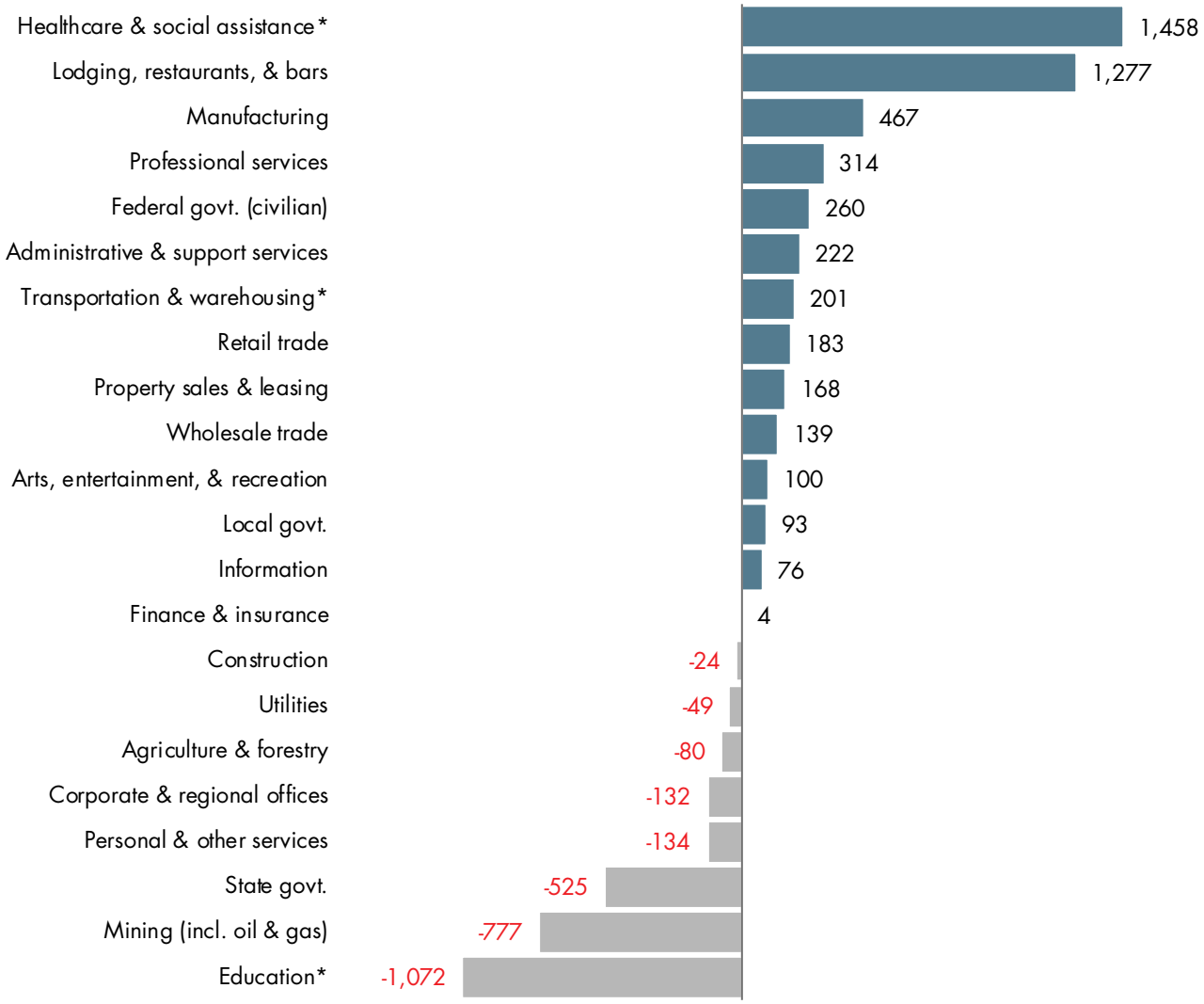
FIGURE 41. I-68 TOTAL EMPLOYMENT BY INDUSTRY
JOB BASE + PROJECTED 5-YEAR CHANGE



Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
*Includes related public-sector employment (e.g., Education includes public schools, colleges, and universities; Healthcare includes public hospitals; and Transportation and warehousing includes US Postal Service workers).

From 2012 to 2107, the healthcare and lodging, restaurants, and bar sectors led regional growth, adding just under 3,000 jobs. The education, mining, and state government sectors lost the largest number of jobs over this period.

FIGURE 42. I-68 NET CHANGE IN JOBS, 2012–2017



Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
*Includes related public-sector employment (e.g., Education includes public schools, colleges, and universities; Healthcare includes public hospitals; and Transportation and warehousing includes US Postal Service workers).

LABORSHED ANALYSIS

The region is a net importer of labor, as seen in Figure 43. Nearly 35,000 workers travel into the region each day, while about 27,500 leave the region for work. The majority of the region's jobs are held by residents, with 72 percent of workers living and working in the region in 2015. Figure 44 and Figure 45 show the net commuting trends over a decade, revealing a decline in both inbound and outbound commuters since 2014. Conversely, the number of jobholders who live and work in the region has risen, indicating that fewer people are leaving the region for work.

REGIONAL COMMUTING PATTERNS

FIGURE 43. INFLOW/OUTFLOW FOR I-68, 2015
FLOW OF WORKERS TO/FROM THE REGION

FIGURE 44. I-68 NET COMMUTERS, 2006–2015

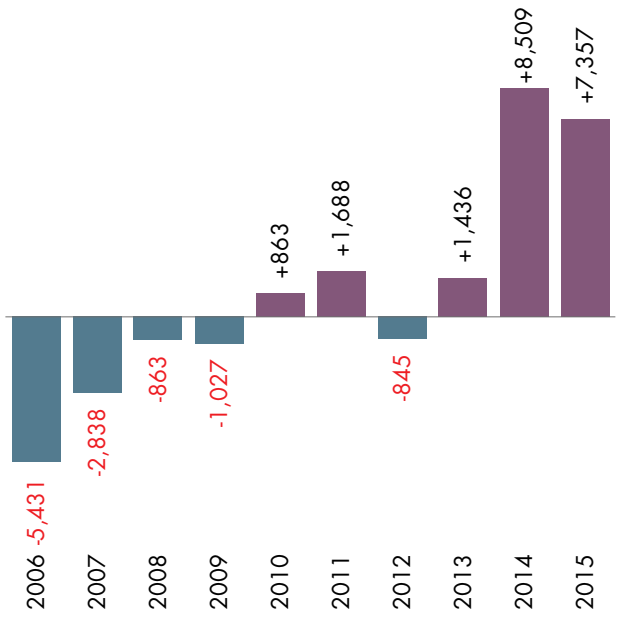
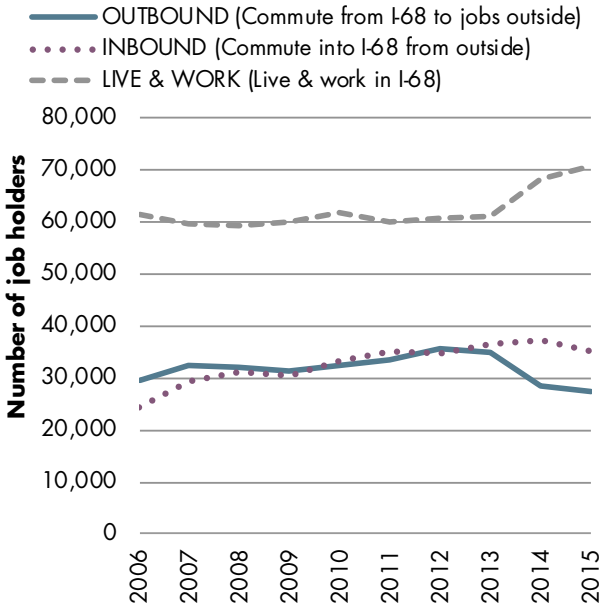


FIGURE 45. COMMUTING FLOWS, 2006–2015

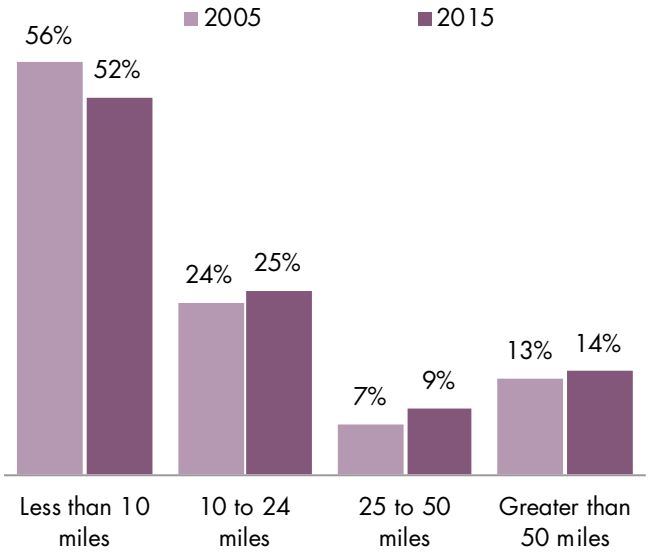


Source: US Census Bureau, Local Employment Dynamics.
Note: (Figure 43) Overlay arrows are for illustrative purposes and do not indicate directionality of worker flow between home and employment locations.

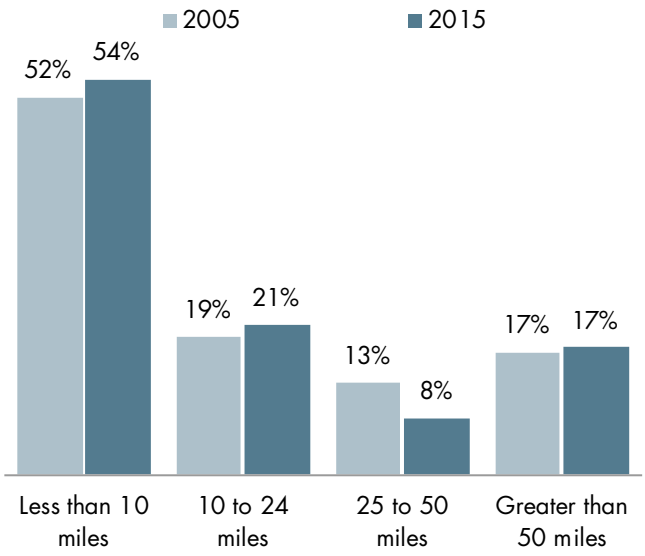
Most jobholders who **work** in the I-68 region commute less than 10 miles. That figure declined between 2005 and 2015. Since 2005, jobholders who work in the I-68 region have traveled greater distances to work. Among jobholders who **live** in the I-68 region, the majority have a commute of less than 10 miles.

FIGURE 46. DISTANCE TRAVELED, 2005 VS. 2015

SHARE OF JOBHOLDERS WHO WORK IN I-68



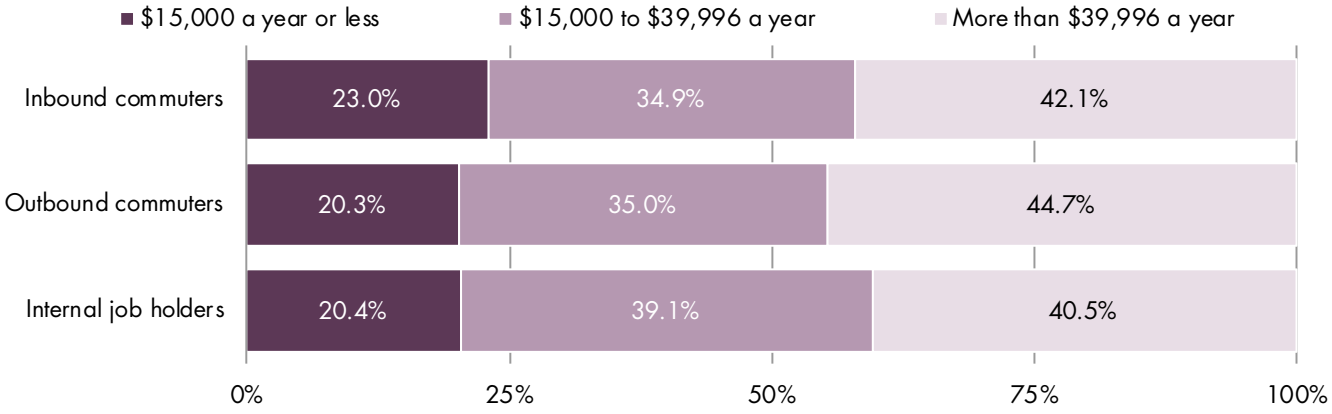
SHARE OF JOBHOLDERS WHO LIVE IN I-68



Inbound and outbound commuters earn roughly the same, with a slightly higher percentage of both earning more than $39,996 annually, compared to internal jobholders.

FIGURE 47. JOBHOLDER EARNINGS, 2015

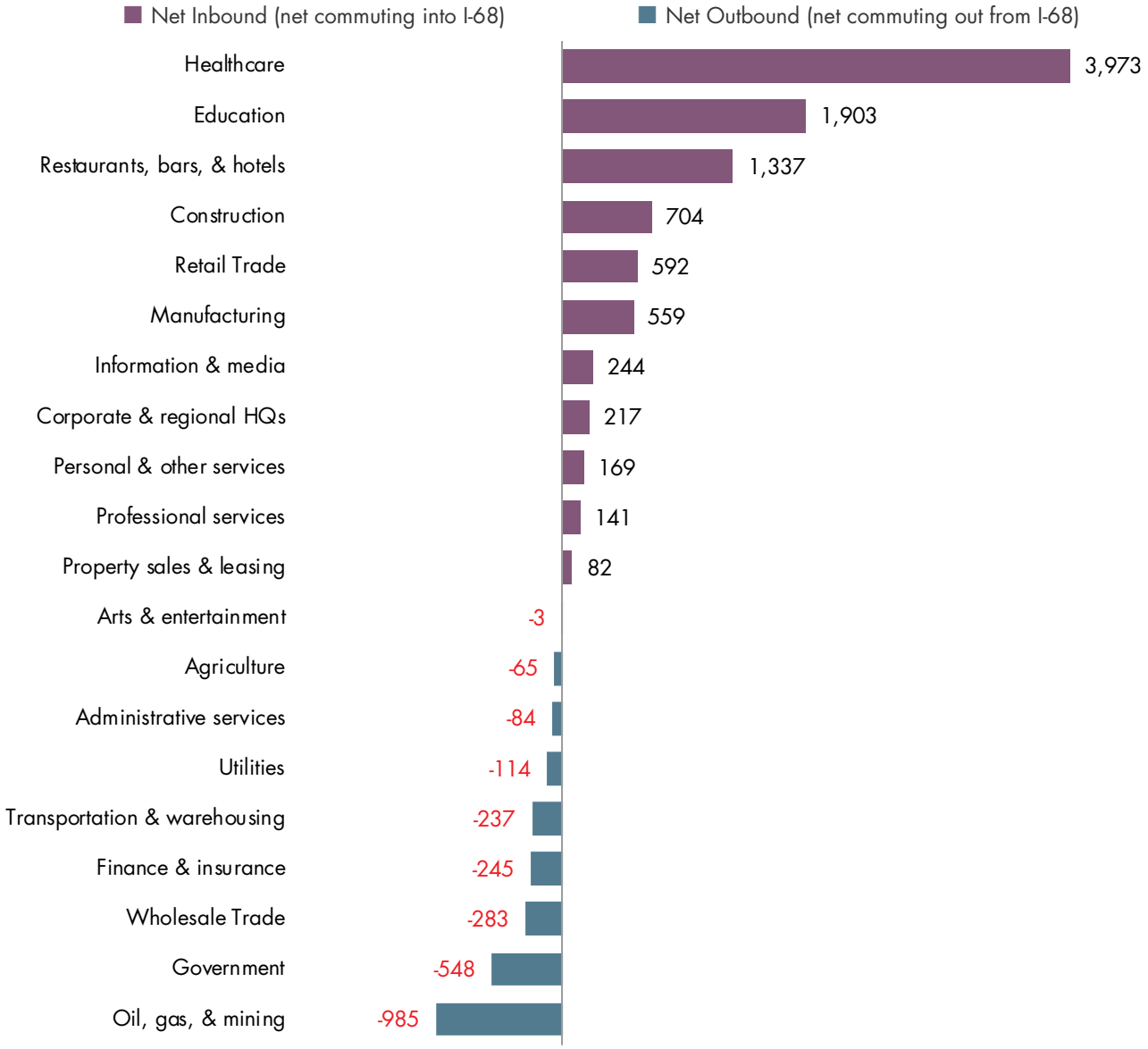
SHARE OF WORKERS BY TYPE OF COMMUTING FLOW (INTERNAL, OUTBOUND, INBOUND)



Source: (all figures this page) US Census Bureau, Local Employment Dynamics.

Healthcare and education are among the largest net commuting flows, with the five-county region drawing in nearly 6,000 more workers in these two sectors than it "exports" outside the region. The largest net outflows in 2015 were seen in in oil, gas, and mining and government.

FIGURE 48. NET COMMUTING FLOWS BY NAICS INDUSTRY SECTOR, 2015
NET FLOWS = INBOUND - OUTBOUND FLOWS



Source: US Census Bureau, Local Employment Dynamics.

Morgantown, WV, and Cumberland, MD, are the most common place of employment for workers in the I-68 region, capturing 17 percent and 9 percent, respectively, of employed residents in the five counties. The two cities also top the list as sources of labor, accounting for nearly 12 percent of the workforce.

FIGURE 49. DESTINATION, 2015

TOP 10 CITIES

Where I-68 workers live

	City (Place)	Count	Share
1	Morgantown city, WV	7,234	6.8%
2	Cumberland city, MD	5,346	5.1%
3	Cheat Lake CDP, WV	3,097	2.9%
4	Brookhaven CDP, WV	1,942	1.8%
5	Frostburg city, MD	1,911	1.8%
6	Fairmont city, WV	1,855	1.8%
7	Westover city, WV	1,358	1.3%
8	Keyser city, WV	1,262	1.2%
9	La Vale CDP, MD	1,130	1.1%
10	Cresaptown CDP, MD	1,015	1.0%
	All Other Locations	79,674	75.3%
	Total	**105,824**	**100.0%**

Where employed I-68 residents work

	City (Place)	Count	Share
1	Morgantown city, WV	17,033	17.3%
2	Cumberland city, MD	8,739	8.9%
3	Oakland town, MD	2,729	2.8%
4	Frostburg city, MD	2,163	2.2%
5	Keyser city, WV	1,865	1.9%
6	La Vale CDP, MD	1,190	1.2%
7	Cresaptown CDP, MD	1,144	1.2%
8	Fairmont city, WV	1,139	1.2%
9	Cheat Lake CDP, WV	1,069	1.1%
10	Kingwood city, WV	1,005	1.0%
	All Other Locations	60,391	61.3%
	Total	**98,467**	**100.0%**

TOP 10 COUNTIES

Where I-68 workers live

	County	Count	Share
1	Monongalia County, WV	29,250	27.6%
2	Allegany County, MD	18,546	17.5%
3	Garrett County, MD	8,566	8.1%
4	Preston County, WV	8,222	7.8%
5	Mineral County, WV	6,306	6.0%
6	Marion County, WV	5,233	4.9%
7	Fayette County, PA	2,936	2.8%
8	Harrison County, WV	2,242	2.1%
9	Greene County, PA	1,615	1.5%
10	Somerset County, PA	1,413	1.3%
	All Other Locations	21,495	20.3%
	Total	**105,824**	**100.0%**

Where employed I-68 residents work

	County	Count	Share
1	Monongalia County, WV	32,388	32.9%
2	Allegany County, MD	20,426	20.7%
3	Garrett County, MD	8,669	8.8%
4	Mineral County, WV	4,889	5.0%
5	Preston County, WV	4,518	4.6%
6	Marion County, WV	2,378	2.4%
7	Harrison County, WV	2,040	2.1%
8	Washington County, MD	1,483	1.5%
9	Greene County, PA	1,263	1.3%
10	Kanawha County, WV	1,214	1.2%
	All Other Locations	19,199	19.5%
	Total	**98,467**	**100.0%**

Source: (all figures this page) US Census Bureau, Local Employment Dynamics.
Note: CDP is a census-designated place, used by the US Census Bureau to define a concentration of population.

LABORSHED DEFINITION

Commuting patterns data indicates that the I-68 region is served by two distinct laborsheds. This sharp divide is likely a reflection of the strong magnetism of Morgantown and Cumberland as population centers, and the influence of geographical and governmental jurisdictions. The region's western counties (Monongalia and Preston) draw heavily from Fayette and Greene Counties in PA and Harrison, Marion, and Taylor Counties in WV (lighter shaded counties shown on the map). In total, nearly four out of five workers employed in Monongalia and Preston Counties (79 percent) live in this seven-county "West I-68" laborshed. In 2017, these seven counties had a civilian labor force (CLF) of nearly 117,000 workers.

On the eastern side, employers in Allegany, Garrett, and Mineral Counties draw workers from Somerset and Bedford Counties in PA, with a relatively small share of the labor force coming from other counties in MD and WV. In total, nearly 82 percent of workers employed in Allegany, Mineral, and Garrett Counties live in this five-county "East I-68" laborshed, which was home to a CLF of nearly 208,000 workers in 2017.

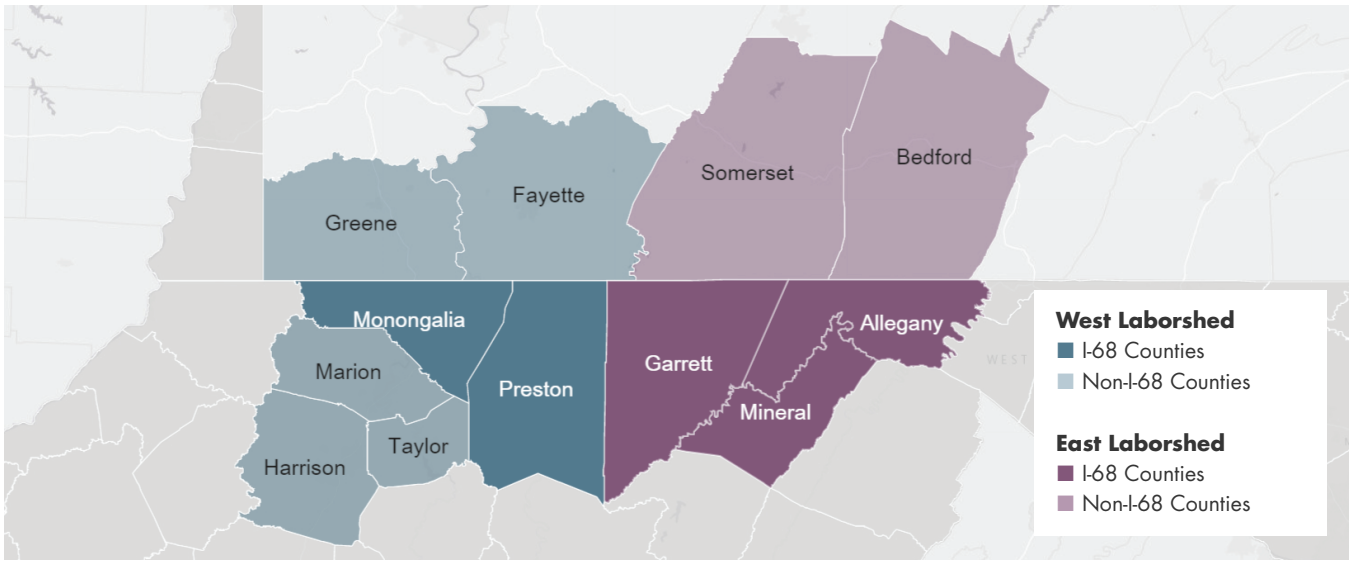


FIGURE 50. WHERE WEST I-68 WORKERS LIVE, 2015

	County	Count	Share
1	**Monongalia Co., WV**	28,983	46.4%
2	**Preston County, WV**	7,402	11.9%
3	**Marion County, WV**	5,182	8.3%
4	**Fayette County, PA**	2,828	4.5%
5	**Harrison County, WV**	2,181	3.5%
6	**Greene County, PA**	1,611	2.6%
7	**Taylor County, WV**	1,154	1.8%
8	Washington County, PA	631	1.0%
9	Ohio County, WV	580	0.9%
10	Kanawha County, WV	534	0.9%
	Laborshed Total	**49,341**	**79.1%**
	All Other Locations	13,066	20.9%
	Total	62,407	100.0%

FIGURE 51. WHERE EAST I-68 WORKERS LIVE, 2015

	County	Count	Share
1	**Allegany County, MD**	18,440	42.5%
2	**Garrett County, MD**	8,319	19.2%
3	**Mineral County, WV**	6,138	14.1%
4	**Somerset County, PA**	1,373	3.2%
5	**Bedford County, PA**	1,172	2.7%
6	Preston County, WV	820	1.9%
7	Hampshire County, WV	555	1.3%
8	Washington County, MD	522	1.2%
9	Berkeley County, WV	483	1.1%
10	Grant County, WV	369	0.8%
	Laborshed Total	**35,442**	**81.6%**
	All Other Locations	7,975	18.4%
	Total	43,417	100.0%

Sources: US Census Bureau, Local Employment Dynamics, and ArcGIS Online (map).

The I-68 region has a higher-than-average concentration of employment in the mining, state government, healthcare and social assistance, education, and federal government industries compared to the nation. The eastern laborshed also has a comparative advantage in mining and state government, but differs in its other industry concentrations of manufacturing and transportation and warehousing. The western laborshed shares the region's advantages in mining, state government, healthcare and social assistance, and the federal government industries but has a unique advantage in utilities.

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.

(local employment in industry x / total local employment—all industries) / (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 52. LABORSHED INDUSTRY CONCENTRATION (LQ)

NAICS	Code & Description	I-68	East Laborshed	West Laborshed	US
21	Mining (incl. oil & gas)	**2.04**	**2.46**	**9.00**	1.00
9029	State govt.	**1.70**	**3.03**	**1.74**	1.00
62	Healthcare & social assistance*	**1.48**	1.19	**1.32**	1.00
61	Education*	**1.41**	0.89	1.16	1.00
901199	Federal govt. (civilian)	**1.34**	0.34	**2.28**	1.00
72	Lodging, restaurants, & bars	1.20	1.22	1.11	1.00
22	Utilities	1.16	0.68	**2.50**	1.00
44-45	Retail trade	1.10	1.16	1.14	1.00
31-33	Manufacturing	1.05	**1.31**	0.77	1.00
23	Construction	0.96	1.07	1.05	1.00
81	Personal & other services	0.85	1.04	0.91	1.00
53	Property sales & leasing	0.82	0.60	0.71	1.00
9039	Local govt.	0.77	0.95	0.92	1.00
51	Information	0.76	0.75	0.56	1.00
48-49	Transportation & warehousing*	0.76	**1.60**	0.89	1.00
55	Corporate & regional offices	0.75	0.46	0.68	1.00
71	Arts, entertainment, & recreation	0.70	0.78	0.67	1.00
54	Professional services	0.57	0.36	0.64	1.00
56	Administrative & support services	0.57	0.51	0.63	1.00
42	Wholesale trade	0.48	0.69	0.60	1.00
52	Finance & insurance	0.44	0.58	0.42	1.00
11	Agriculture & forestry	0.23	0.93	0.14	1.00

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
*Includes related public-sector employment (e.g. Education includes public schools, colleges, and universities; Healthcare includes public hospitals; and Transportation and warehousing includes US Postal Service workers). Excludes military and unclassified employment.
Note: LQs greater than 1.25 are presumed to show competitive advantage and are highlighted.

OCCUPATIONAL STRUCTURE

The I-68 region's most common occupational groups are in line with both states and the nation. Combined, these three occupational groups account for just under 34 percent of the region's total employment, slightly more than the national share (33 percent). As noted previously, the region has a high concentration of employment in mining, state government, healthcare and social assistance, education, and federal government.

FIGURE 53. OCCUPATIONAL DISTRIBUTION (% OF TOTAL)
COMPARISON OF I-68 WITH SELECTED GEOGRAPHIES AND US

SOC Code & Description	I-68	West Virginia	Maryland	US
43 Office & Administrative Support	**14.8%**	**15.3%**	**15.1%**	**15.1%**
35 Food Preparation & Serving Related	**9.9%**	**8.6%**	**7.6%**	**8.5%**
41 Sales & Related	**9.2%**	**9.8%**	**9.6%**	**10.1%**
29 Healthcare Practitioners & Technical	9.0%	8.0%	6.1%	5.6%
25 Education, Training, & Library	7.2%	5.5%	6.1%	5.8%
53 Transportation & Material Moving	5.7%	7.3%	6.0%	6.7%
51 Production	5.3%	5.3%	2.9%	6.0%
49 Installation, Maintenance, & Repair	4.7%	5.1%	3.8%	3.8%
47 Construction & Extraction	4.6%	5.9%	4.7%	4.5%
11 Management	4.5%	4.5%	6.0%	5.5%
39 Personal Care & Service	3.9%	4.4%	3.9%	4.2%
31 Healthcare Support	3.6%	3.1%	2.7%	2.8%
37 Building/Grounds Cleaning & Maint.	3.6%	3.8%	3.7%	3.8%
13 Business & Financial Operations	3.2%	3.4%	6.1%	5.1%
33 Protective Service	2.7%	2.2%	2.6%	2.3%
21 Community & Social Service	1.9%	1.9%	1.9%	1.7%
15 Computer & Mathematical	1.7%	1.6%	4.5%	2.8%
17 Architecture & Engineering	1.4%	1.2%	2.1%	1.7%
27 Arts, Design, Entertainment, & Media	1.0%	1.0%	1.7%	1.8%
19 Life, Physical, & Social Science	1.0%	0.8%	1.5%	0.8%
23 Legal	0.7%	0.8%	1.0%	0.8%
45 Farming, Fishing, & Forestry	0.3%	0.3%	0.3%	0.8%

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
Notes: Excludes military and unclassified employment. Three largest occupations are highlighted.

The region has a higher concentration of healthcare practitioners, healthcare support, and educational providers than the nation. This is evidenced by the large number of medical facilities in the region.

FIGURE 54. OCCUPATIONAL CONCENTRATION (LQ)
COMPARISON OF I-68 WITH SELECTED GEOGRAPHIES AND US

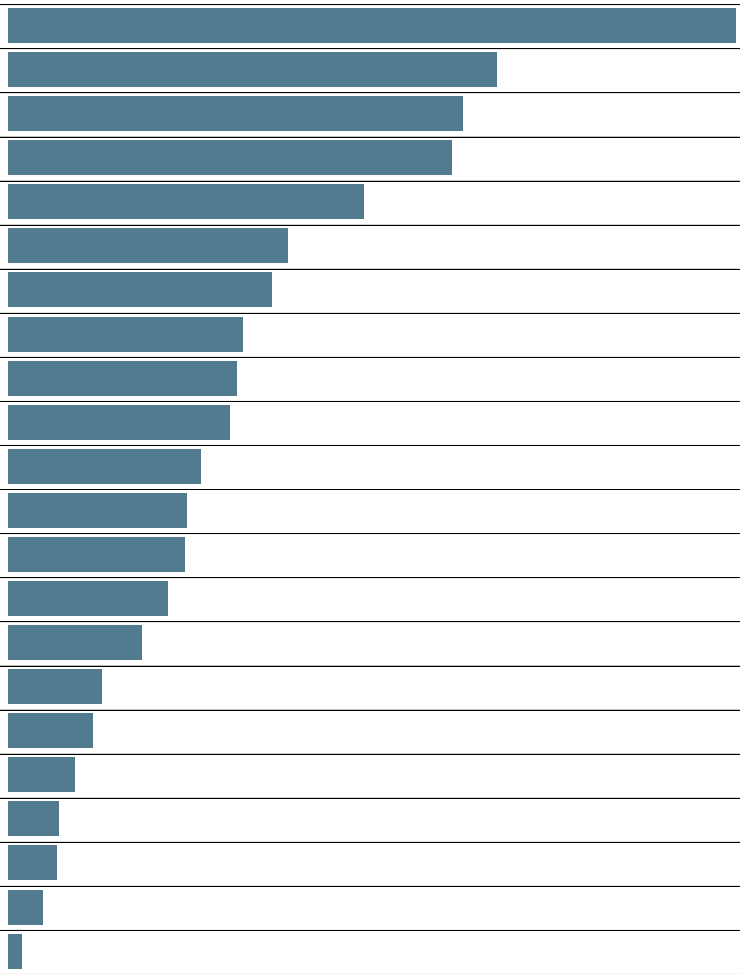
SOC Code & Description	I-68	West Virginia	Maryland	US
29 Healthcare Practitioners & Technical	**1.62**	**1.43**	1.10	1.00
31 Healthcare Support	**1.30**	1.13	0.98	1.00
25 Education, Training, & Library	**1.25**	0.95	1.05	1.00
49 Installation, Maintenance, & Repair	1.24	**1.33**	0.99	1.00
19 Life, Physical, & Social Science	1.22	1.02	**1.89**	1.00
33 Protective Service	1.20	0.99	1.17	1.00
35 Food Preparation & Serving Related	1.17	1.02	0.90	1.00
21 Community & Social Service	1.15	1.15	1.12	1.00
47 Construction & Extraction	1.03	**1.30**	1.04	1.00
43 Office & Administrative Support	0.98	1.02	1.00	1.00
37 Building/Grounds Cleaning & Maint.	0.94	1.00	0.98	1.00
39 Personal Care & Service	0.94	1.04	0.95	1.00
41 Sales & Related	0.91	0.97	0.96	1.00
51 Production	0.90	0.88	0.49	1.00
53 Transportation & Material Moving	0.85	1.09	0.90	1.00
23 Legal	0.83	1.01	1.22	1.00
11 Management	0.82	0.82	1.09	1.00
17 Architecture & Engineering	0.81	0.74	**1.26**	1.00
13 Business & Financial Operations	0.63	0.67	1.19	1.00
15 Computer & Mathematical	0.61	0.57	**1.56**	1.00
27 Arts, Design, Entertainment, & Media	0.56	0.57	0.92	1.00
45 Farming, Fishing, & Forestry	0.35	0.46	0.35	1.00

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
Note: Excludes military and unclassified employment. LQs greater than 1.25 are presumed to show competitive advantage and are highlighted.

Most workers in the I-68 region are employed as office and administrative support staff. Combined with food preparation and serving related, sales and related, and healthcare practitioners and technical, these four occupations account for 43 percent of workers in the region.

FIGURE 55. I-68 EMPLOYMENT BY OCCUPATION

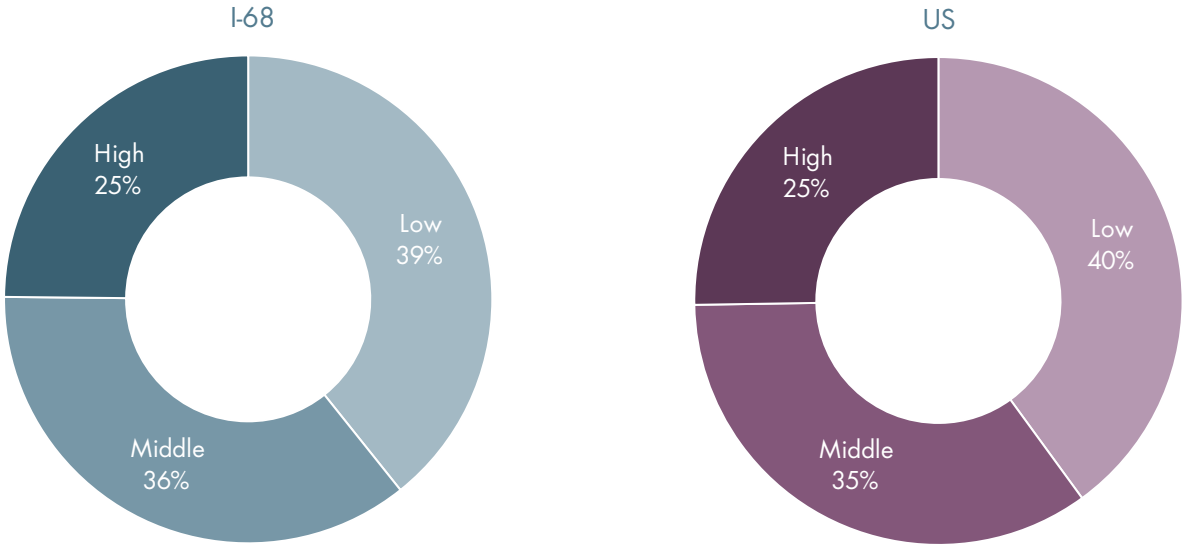
SOC Code & Description	I-68
43 Office & Administrative Support	17,866
35 Food Preparation & Serving Related	11,990
41 Sales & Related	11,158
29 Healthcare Practitioners & Technical	10,901
25 Education, Training, & Library	8,738
53 Transportation & Material Moving	6,874
51 Production	6,468
49 Installation, Maintenance, & Repair	5,750
47 Construction & Extraction	5,614
11 Management	5,442
39 Personal Care & Service	4,732
31 Healthcare Support	4,395
37 Building/Grounds Cleaning & Maint.	4,327
13 Business & Financial Operations	3,908
33 Protective Service	3,282
21 Community & Social Service	2,305
15 Computer & Mathematical	2,088
17 Architecture & Engineering	1,637
27 Arts, Design, Entertainment, & Media	1,243
19 Life, Physical, & Social Science	1,198
23 Legal	837
45 Farming, Fishing, & Forestry	324



Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
Note: Excludes military and unclassified occupations.

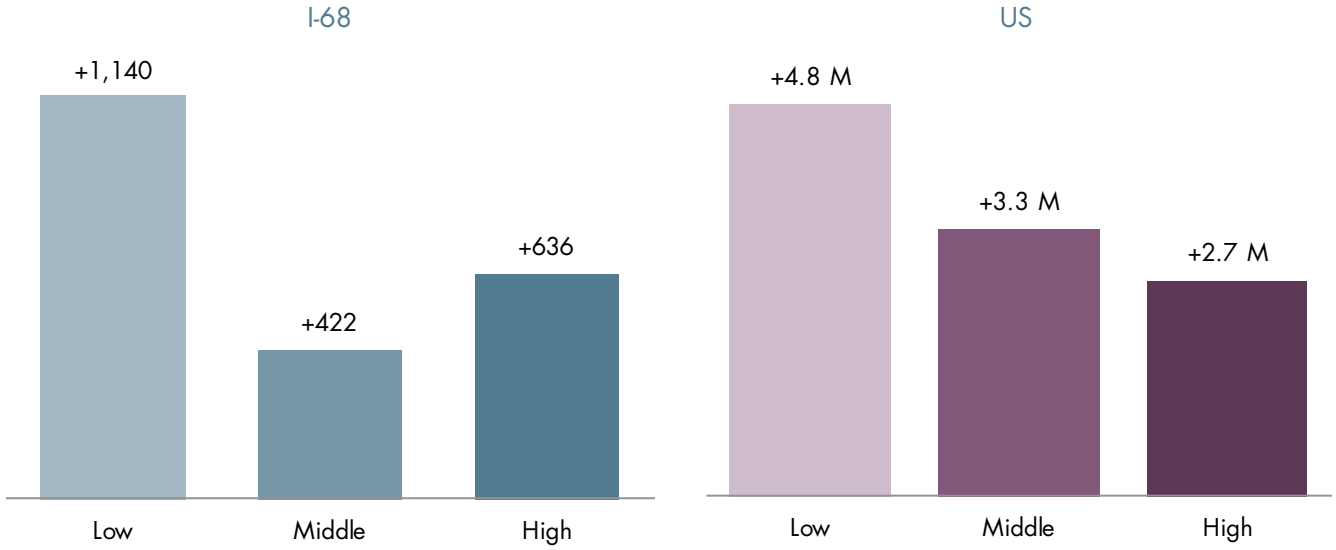
The skill level of occupations in the I-68 region are only marginally different than the national level. There is a 1 percent difference between the low-skill and middle-skill levels.

FIGURE 56. OCCUPATIONS BY SKILL LEVEL, 2017



Despite similar proportions of skill levels between the I-68 region and the US, over the past 5 years, middle-skill occupations in the region have not grown proportionally to those of the US. Middle-skill occupations grew slower than both low-skill and high-skill occupations in the region.

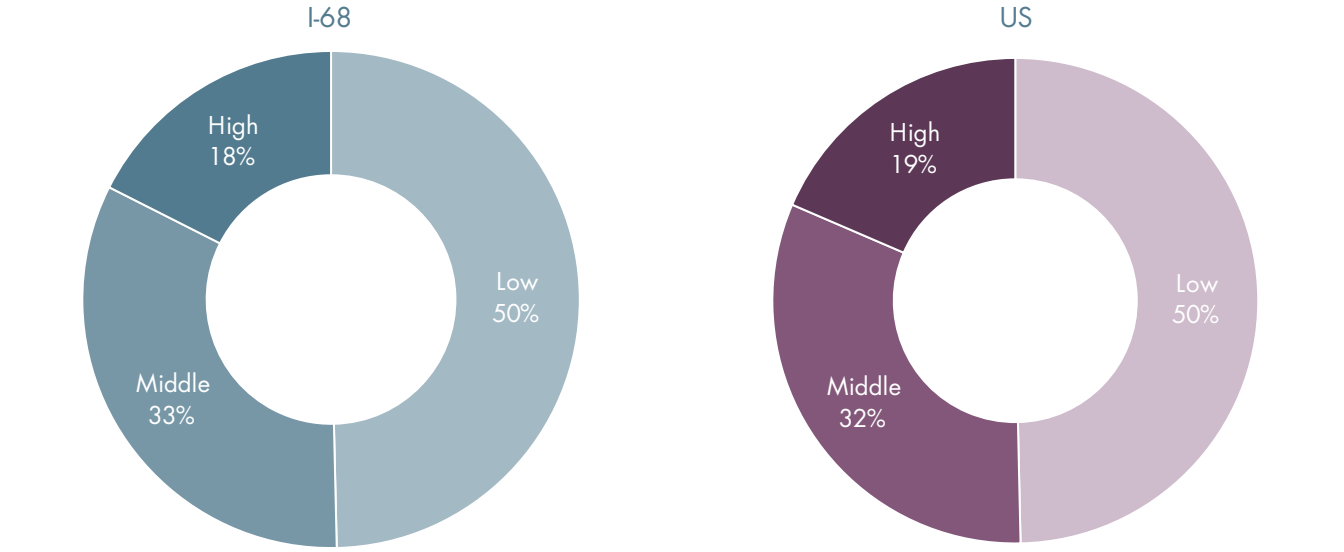
FIGURE 57. OCCUPATIONAL CHANGES BY SKILL LEVEL, 2012–2017



Source: (all figures this page) Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.

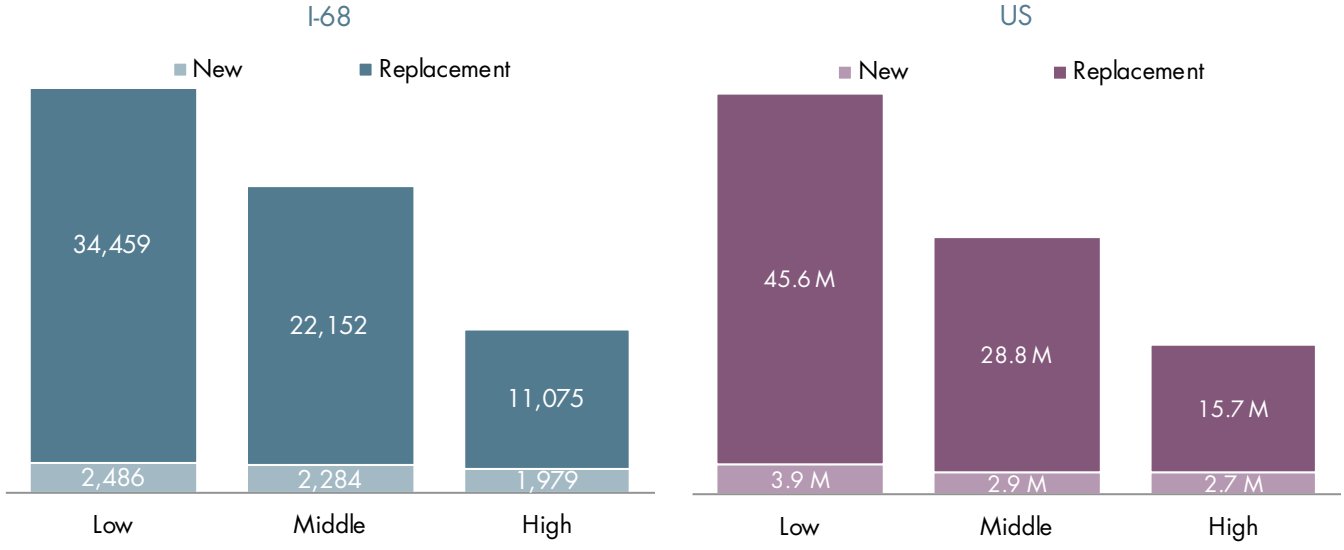
Over the next 5 years, the proportion of low-skill, middle-skill, and high-skill jobs is expected to remain close to the national average. However, compared to its current breakout, the percentage of low-skill work will increase (11 percentage points) while the availability of high-skill work will decrease (7 percentage points); middle-skill work will only decrease marginally (3 percentage points). This trend is also reflected nationally.

FIGURE 58. EXPECTED OCCUPATIONAL CHANGES BY SKILL LEVEL, ANNUAL OPENINGS 2017–2022



Over the next 5 years, jobs in each occupational skill level are projected to increase. However, most of this growth will occur in replacement positions for all skill levels. This mirrors national trends.

FIGURE 59. EXPECTED OCCUPATIONAL CHANGES BY SKILL LEVEL, OPENINGS 2017–2022

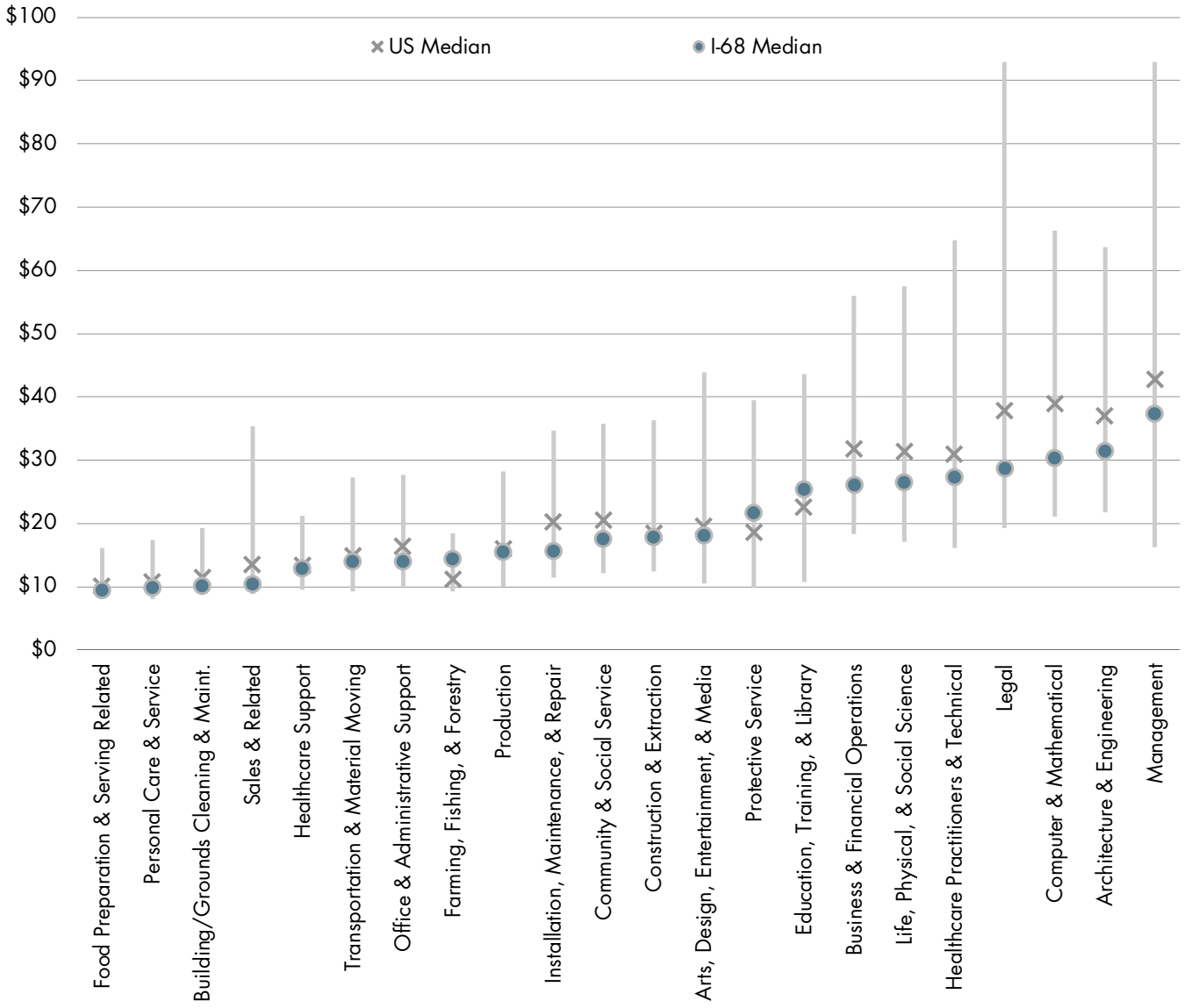


Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.

The I-68 region has similar wages as the US low-skill and middle-skill occupations (the left two-thirds of the occupational groups shown in Figure 60); however, as it gets to high-skill occupations (the right third of the occupational groups), such as legal and architecture and engineering, the region's wages are lower than the US averages. The only three groups where the region's wages are above the national average are farming, fishing, and forestry; protective service; and education, training, and library.

FIGURE 60. I-68 WAGES IN THE CONTEXT OF THE NATIONAL WAGE RATES
BY MAJOR OCCUPATIONAL GROUPS

Line = US wage range from the 10th to the 90th percentile.

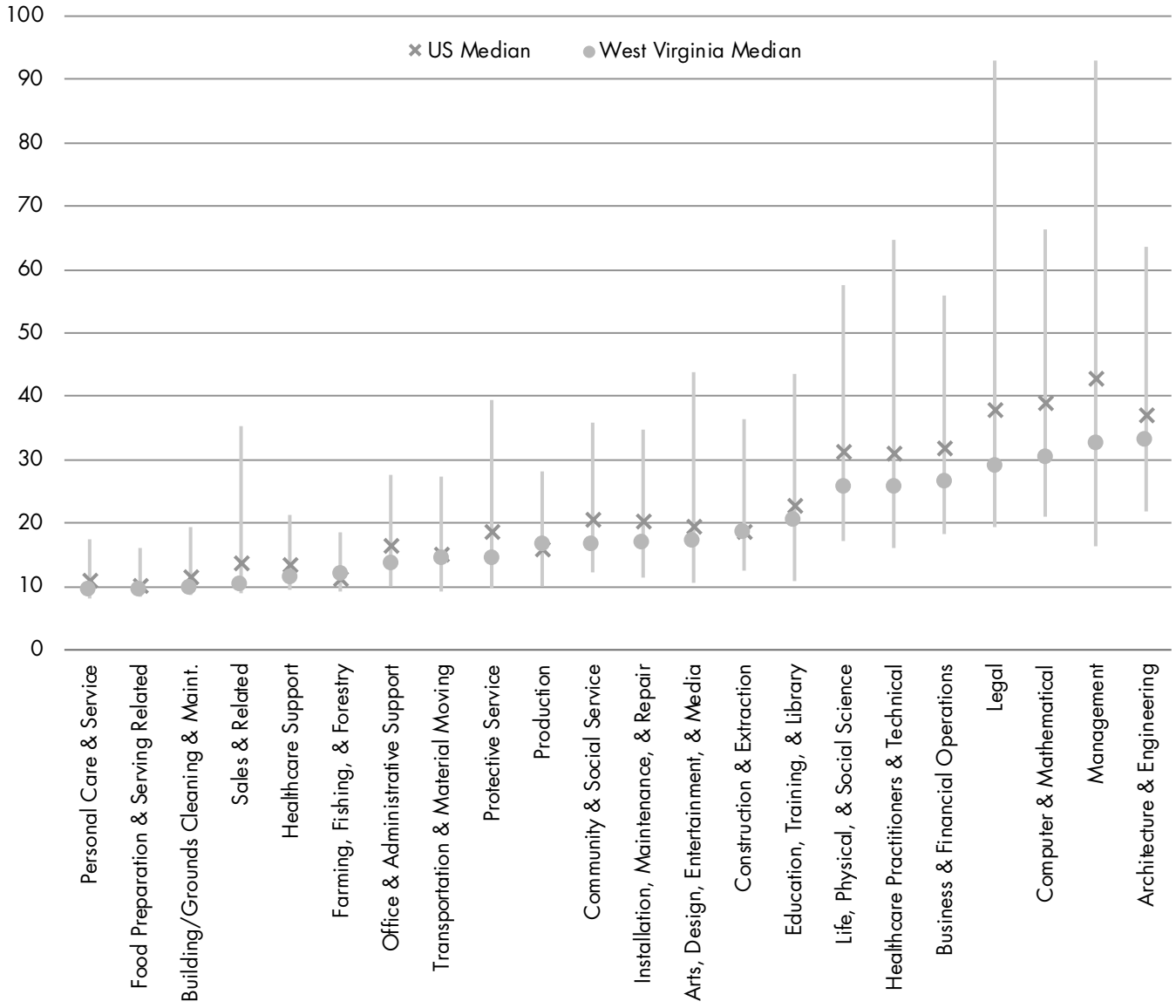


Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
Note: Figures exclude military occupations.

Similar to the I-68 regional comparison, WV's wages are fairly aligned with national averages for lower-skill and middle-skill occupations (the left two-thirds of the occupational groups shown in Figure 61), with national wage averages surpassing those of WV for high-skill occupations (the right third of the occupational groups).

FIGURE 61. WV WAGES IN THE CONTEXT OF THE NATIONAL WAGE RATES
BY MAJOR OCCUPATIONAL GROUPS

Line = US wage range from the 10th to the 90th percentile.

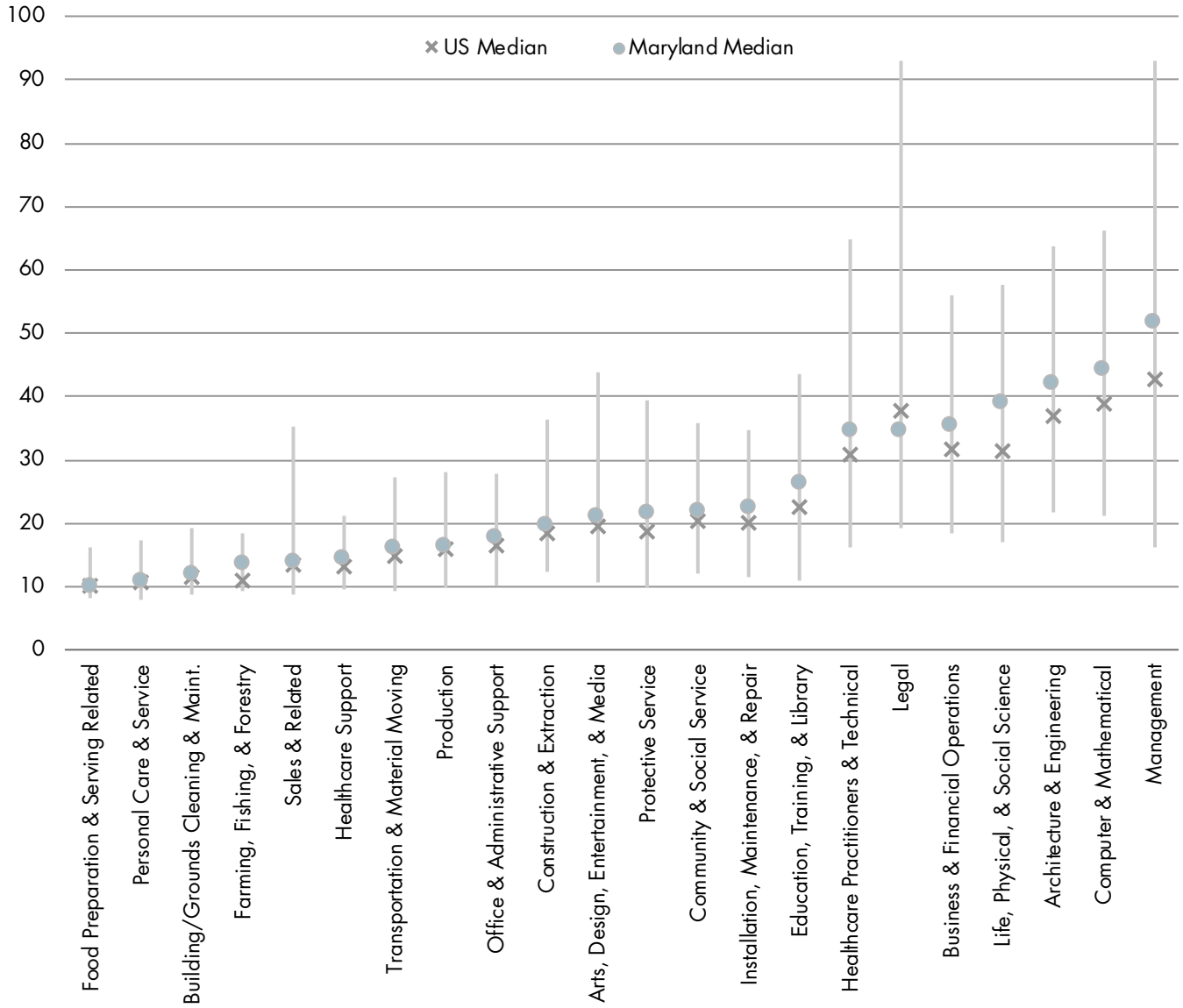


Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
Note: Figures exclude military occupations.

Unlike the I-68 region and WV, MD's average wage rates meet or exceed the national median for nearly all occupations. The only exception is the legal group, where MD's wage rate is slightly lower than the national average.

FIGURE 62. MD WAGES IN THE CONTEXT OF THE NATIONAL WAGE RATES
BY MAJOR OCCUPATIONAL GROUPS

Line = US wage range from the 10th to the 90th percentile.



Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
Note: Figures exclude military occupations.

Of the low-skill occupations in Figure 63, cashiers; combined food preparation and servers; and retail salespersons were projected to have the most annual openings between 2017 and 2022. Cooks, nursing assistants, and maintenance and repair workers were projected to have the highest number of annual openings among middle-skill jobs. Among the high-skill occupations listed on the following page, registered nurses were projected to have the most annual openings between 2017 and 2022. Many of the healthcare-related occupations, such as registered nurses, physician assistants, and nurse practitioners, had a high percentage of annual openings as a result of new jobs rather than replacements.

FIGURE 63. I-68 DEMAND FACTORS BY SKILL LEVEL
PROJECTED ANNUAL OPENINGS WITH NET CHANGE AND REPLACEMENT DEMAND

SOC CODE	DESCRIPTION	2017 Jobs	DEMAND FACTORS: Projected Annual Openings (2017-2022)	DEMAND FACTORS: New jobs	DEMAND FACTORS: Replacement	Wage Premium over US	DEMOGRAPHICS: % 55-64 Years	DEMOGRAPHICS: % 65+ Years
LOW-SKILL *(High school or less)*								
41-2011	Cashiers	3,628	708	2%	98%	0.96	11%	5%
35-3021	Combined Food Prep. & Servers, Incl. Fast Food	3,020	604	5%	95%	0.98	6%	3%
41-2031	Retail Salespersons	3,240	508	5%	95%	0.88	15%	8%
35-3031	Waiters & Waitresses	2,426	503	4%	96%	0.97	4%	1%
43-9061	Office Clerks, General	3,011	374	3%	97%	0.88	18%	7%
39-9021	Personal Care Aides	1,814	314	10%	90%	0.90	18%	9%
43-6014	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	2,476	280	3%	97%	0.89	25% ◀	9%
43-4051	Customer Service Representatives	1,967	280	6%	94%	0.77	12%	3%
53-7062	Laborers/Freight, Stock, & Material Movers, Hand	1,724	267	6%	94%	0.80	13%	3%
37-2011	Janitors & Cleaners, Exc. Maids & Housekeepers	1,623	240	8%	92%	0.87	22% ◀	10% ◀
35-3011	Bartenders	849	158	5%	95%	0.92	6%	3%
43-4171	Receptionists & Information Clerks	713	109	9%	91%	0.87	15%	7%
31-1011	Home Health Aides	556	87	16%	84%	0.86	15%	5%
53-3033	Light Truck or Delivery Services Drivers	607	79	11%	89%	0.87	18%	9%
33-9032	Security Guards	498	69	-	100%	0.89	17%	11% ◀
53-3022	Bus Drivers, School or Special Client	474	58	1%	99%	0.86	26% ◀	22% ◀
39-3011	Gaming Dealers	185	48	23%	77%	1.30	13%	-
53-3041	Taxi Drivers & Chauffeurs	167	22	14%	86%	1.11	26% ◀	23% ◀
33-9091	Crossing Guards	49	9	2%	98%	1.15	22% ◀	37% ◀

continued, next page

FIGURE 63. I-68 DEMAND FACTORS BY SKILL LEVEL (CONTINUED)

PROJECTED ANNUAL OPENINGS WITH NET CHANGE AND REPLACEMENT DEMAND

SOC CODE	DESCRIPTION	2017 Jobs	DEMAND FACTORS: Projected Annual Openings (2017-2022)	DEMAND FACTORS: New jobs	DEMAND FACTORS: Replacement	Wage Premium over US	DEMOGRAPHICS: % 55-64 Years	DEMOGRAPHICS: % 65+ Years
MIDDLE-SKILL *(More than high school, less than four years)*								
35-2014	Cooks, Restaurant	1,327	224	10%	90%	0.88	7%	2%
31-1014	Nursing Assistants	1,661	215	8%	92%	1.00	14%	4%
49-9071	Maintenance & Repair Workers, General	2,017	215	5%	95%	0.73	23% ◀	6%
43-1011	First-Line Supvsr., Office & Admin. Support	1,621	180	7%	93%	0.85	20% ◀	4%
53-3032	Heavy & Tractor-Trailer Truck Drivers	1,562	174	1%	99%	0.96	22% ◀	7%
35-1012	First-Line Supvsr., Food Prep. & Servers	983	157	6%	94%	0.95	8%	2%
41-1011	First-Line Supvsr., Retail Sales Workers	1,333	155	6%	94%	0.87	16%	4%
43-3031	Bookkeeping, Accounting, & Auditing Clerks	1,120	128	-	100%	0.85	24% ◀	9%
51-9111	Packaging & Filling Machine Workers	779	104	6%	94%	0.94	16%	5%
31-9092	Medical Assistants	728	95	12%	88%	0.88	9%	2%
25-9041	Teacher Assistants	711	77	4%	96%	0.92	19%	6%
47-2111	Electricians	493	74	12%	88%	0.98	16%	3%
47-2073	Operating Eng. & Other Constr. Equip. Operators	637	72	-	100%	0.98	22% ◀	5%
43-6013	Medical Secretaries	520	68	11%	89%	0.85	25% ◀	6%
47-1011	First-Line Supvsr., Constr. Trades & Extraction	590	64	6%	94%	1.04	21% ◀	4%
41-4012	Sales Reps., Whls. & Mfg., Exc. Tech. & Scientific	486	62	13%	87%	0.84	21% ◀	5%
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	412	57	7%	93%	1.11	21% ◀	4%
27-2042	Musicians & Singers	91	10	6%	94%	1.12	20%	19% ◀
HIGH SKILL *(Four-year degree or above)*								
29-1141	Registered Nurses	4,450	297	16%	84%	0.88	21% ◀	3%
25-1099	Teachers, Postsecondary	3,259	258	3%	97%	1.01	19%	12% ◀
11-1021	General & Operations Managers	1,445	145	12%	88%	0.78	19%	4%
13-2011	Accountants & Auditors	697	79	14%	86%	0.89	20%	6%
25-2021	Teachers, Elementary (Except Special Ed.)	951	72	1%	99%	0.94	20% ◀	5%
25-9031	Instructional Coordinators	642	57	-	100%	0.88	23% ◀	8%
25-3098	Substitute Teachers	292	33	3%	97%	1.16	20%	11% ◀
29-1069	Physicians & Surgeons, All Other	343	15	26%	74%	1.28	21% ◀	11% ◀
11-1031	Legislators	50	4	1%	99%	1.45	30% ◀	24% ◀

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.

Note: Highlights = ***Wage premium:*** *wages 10 percent or more above US are highlighted.* ***Demographics:*** *flags indicate aging workforce (20 percent or more age 55–64; 10 percent or more age 65+)*

Relative to the US, the I-68 region shows skills concentrations in agriculture, healthcare, government, and education occupations. In most occupations, the wages are below or in line with the US average. However, the median hourly earnings for gaming dealers is 30 percent higher than the median hourly earnings for gaming dealers across the US (shown in red).

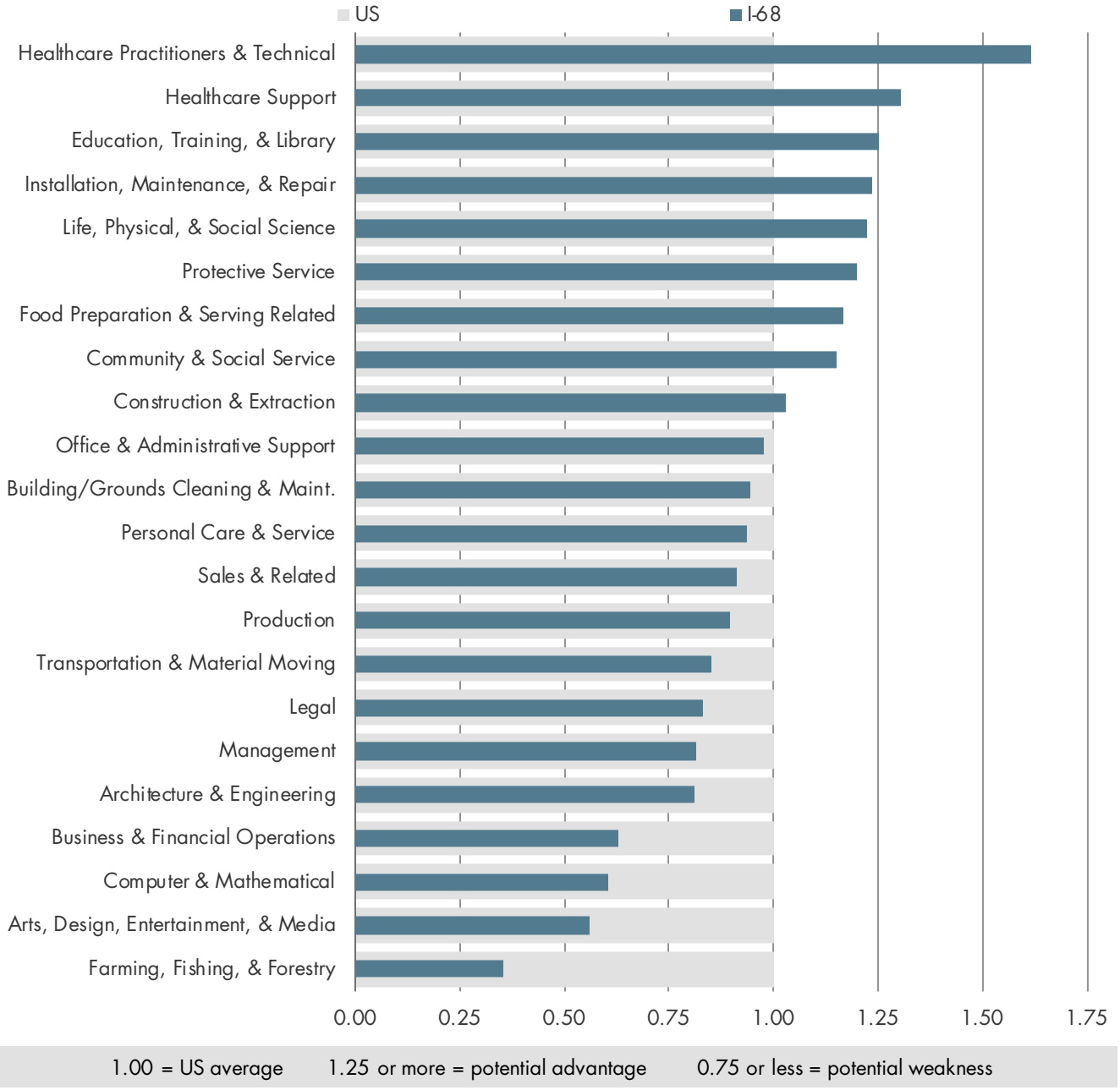
FIGURE 64. OCCUPATIONAL STRENGTHS, 2017
TOP LQS

		I-68				US			
SOC CODE	DESCRIPTION	2017 Jobs	2017 LQ	Median Hourly Earnings	Wage Premium over US Avg.	2017 Jobs	2017 LQ	Median Hourly Earnings	Wage Premium over US Avg
25-9021	Farm & Home Management Advisors	111	13.76	$25.64	1.07	10,557	1.00	$24.01	1.00
19-4061	Social Science Research Assistants	199	8.05	$22.41	1.07	32,225	1.00	$21.01	1.00
29-2054	Respiratory Therapy Technicians	52	6.36	$22.74	0.95	10,701	1.00	$23.95	1.00
11-9033	Education Administrators, Postsecondary	581	5.53	$44.96	1.04	136,936	1.00	$43.11	1.00
25-9031	Instructional Coordinators	642	5.44	$26.50	0.88	153,824	1.00	$30.09	1.00
23-1023	Judges, Magistrate Judges, & Magistrates	90	4.24	$49.79	0.82	27,737	1.00	$60.52	1.00
53-4011	Locomotive Engineers	144	4.04	$29.09	1.05	46,325	1.00	$27.73	1.00
51-2011	Aircraft Systems Assemblers	125	3.96	$21.75	0.90	41,091	1.00	$24.06	1.00
31-2021	Physical Therapist Assistants	257	3.83	$24.28	0.89	87,472	1.00	$27.21	1.00
33-3012	Correctional Officers & Jailers	1,291	3.82	$22.17	1.08	440,404	1.00	$20.59	1.00
53-4021	Railroad Brake, Signal, & Switch Operators	66	3.80	$23.83	0.88	22,602	1.00	$27.20	1.00
53-4031	Railroad Conductors & Yardmasters	147	3.79	$28.20	1.02	50,440	1.00	$27.64	1.00
31-2011	Occupational Therapy Assistants	98	3.21	$30.22	1.07	39,753	1.00	$28.37	1.00
41-2012	Gaming Change Persons & Booth Cashiers	58	3.18	$10.04	0.88	23,751	1.00	$11.46	1.00
29-2053	Psychiatric Technicians	158	3.16	$13.05	0.88	64,978	1.00	$14.90	1.00
13-2071	Credit Counselors	85	3.15	$14.94	0.70	35,150	1.00	$21.31	1.00
51-9023	Mixing & Blending Machine Workers	311	3.07	$17.73	1.03	131,882	1.00	$17.16	1.00
39-1011	Gaming Supervisors	51	2.90	$18.63	0.78	23,164	1.00	$24.03	1.00
25-1099	Teachers, Postsecondary	3,259	2.83	$33.56	1.01	1,501,704	1.00	$33.39	1.00
29-2031	Cardiovascular Technologists & Techs.	116	2.74	$18.03	0.67	55,422	1.00	$26.78	1.00
51-7011	Cabinetmakers & Bench Carpenters	228	2.71	$14.88	0.94	109,363	1.00	$15.83	1.00
51-8091	Chemical Plant & System Operators	68	2.70	$29.86	1.04	32,972	1.00	$28.81	1.00
51-8013	Power Plant Operators	72	2.68	$31.72	0.88	35,156	1.00	$35.91	1.00
31-1013	Psychiatric Aides	145	2.66	$10.00	0.78	71,067	1.00	$12.85	1.00
29-2055	Surgical Technologists	222	2.66	$17.89	0.82	108,710	1.00	$21.74	1.00
33-1011	First-Line Supvsr., Correctional Officers	89	2.62	$24.98	0.86	44,272	1.00	$29.12	1.00
53-7032	Excavating/Loading & Dragline Operators	109	2.59	$20.06	1.07	54,784	1.00	$18.83	1.00
51-9111	Packaging & Filling Machine Workers	779	2.59	$12.78	0.94	392,660	1.00	$13.60	1.00
39-3011	Gaming Dealers	185	2.40	$12.06	1.30	100,303	1.00	$9.30	1.00
17-1022	Surveyors	82	2.36	$22.17	0.80	45,470	1.00	$27.76	1.00

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
Note: Occupations with at least 50 jobs.

Compared to the national average, the I-68 region has a potential advantage in the healthcare practitioners and technical and healthcare support occupations. Potential weaknesses include business and financial operations; computer and mathematical; art, design, entertainment and media; and farming, fishing, and forestry occupations.

FIGURE 65. OCCUPATIONAL GROUP CONCENTRATIONS, 2017



Source: Emsi 2016.1—QCEW Employees, Non-QCEW Employees, and Self-Employed.
Note: Excludes military and unclassified employment.

The largest occupation, registered nurses, is also projected to be the fastest growing. With a median hourly wage of $29, it is also one of the highest paying of the fastest growing, just below general and operations managers.

FIGURE 66. I-68 TOP 10 OCCUPATIONS, 2017
BASED ON VARIOUS INDICATORS

Employment in 2017	◂LARGEST	Median hourly earnings
4,450	Registered Nurses	$29.00
3,628	Cashiers	$9.32
3,259	Teachers, Postsecondary	$33.56
3,240	Retail Salespersons	$9.66
3,020	Combined Food Prep. & Servers, Incl. Fast Food	$9.12
3,011	Office Clerks, General	$13.01
2,476	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	$14.89
2,426	Waiters & Waitresses	$9.36
2,017	Maintenance & Repair Workers, General	$13.04
1,967	Customer Service Representatives	$12.06

Employment in 2017	HIGHEST-PAYING ($) ▸	Median hourly earnings
343	Physicians & Surgeons, All Other	$123.53
56	Family & General Practitioners	$78.15
84	Dentists, General	$65.25
169	Chief Executives	$64.63
71	Architectural & Engineering Mgrs.	$56.54
152	Computer & Info. Systems Managers	$56.09
437	Pharmacists	$54.23
55	Natural Sciences Managers	$52.67
159	Engineers, All Other	$51.91
90	Judges, Magistrate Judges, & Magistrates	$49.79

Net change	◂FASTEST-GROWING, 2016-21 (#)	Median hourly earnings
+335	Registered Nurses	$29.00
+223	Personal Care Aides	$9.47
+194	Combined Food Prep. & Servers, Incl. Fast Food	$9.12
+167	Retail Salespersons	$9.66
+165	Waiters & Waitresses	$9.36
+150	Cooks, Restaurant	$10.21
+124	Laborers/Freight, Stock, & Material Movers, Hand	$10.12
+124	Customer Service Representatives	$12.06
+123	Janitors & Cleaners, Exc. Maids & Housekeepers	$10.21
+123	General & Operations Managers	$36.84

continued, next page

Gaming dealers are projected to be the fastest-growing occupation between 2016 and 2021 and also make a premium over the US average wage.

FIGURE 68. I-68 TOP 10 OCCUPATIONS, 2017
BASED ON VARIOUS INDICATORS (CONTINUED)

% change	◂FASTEST-GROWING, 2016-21 (%)	Median hourly earnings
+42%	Gaming Dealers	$12.06
+38%	Sales Reps., Whls. & Mfg., Tech. & Scientific	$34.24
+36%	Gaming Supervisors	$18.63
+28%	Cabinetmakers & Bench Carpenters	$14.88
+24%	Software Developers, Applications	$37.83
+21%	Operations Research Analysts	$25.42
+21%	Team Assemblers	$11.70
+21%	Web Developers	$21.68
+20%	Software Developers, Systems Software	$43.35
+20%	Market Research Analysts & Mktng. Specialists	$23.41

Net change	◂FASTEST-DECLINING, 2016-21 (#)	Median hourly earnings
-42	Telemarketers	$9.83
-36	Postal Service Mail Carriers	$24.50
-27	Correctional Officers & Jailers	$22.17
-20	Lawyers	$37.11
-18	Farmers, Ranchers, & Other Agricultural Mgrs.	$9.35
-14	Switchboard Operators, Incl. Answering Service	$11.55
-13	Operating Eng. & Other Constr. Equip. Operators	$21.27
-13	Tellers	$12.22
-9	Paper Goods Machine Workers	$17.32
-9	Mobile Heavy Equip. Mechanics, Except Engines	$19.16

% change	◂FASTEST-DECLINING, 2016-21 (%)	Median hourly earnings
-23%	Farmers, Ranchers, & Other Agricultural Mgrs.	$9.35
-17%	Switchboard Operators, Incl. Answering Service	$11.55
-14%	Postal Service Clerks	$21.80
-14%	Telemarketers	$9.83
-13%	Logging Equipment Operators	$14.73
-13%	Postal Service Mail Carriers	$24.50
-8%	Molding, Coremaking, & Casting, Metal/Plastic	$18.21
-7%	Paper Goods Machine Workers	$17.32
-7%	Legal Secretaries	$15.38
-6%	Respiratory Therapy Technicians	$22.74

Source: Emsi 2017.4—QCEW Employees, Non-QCEW Employees, and Self-Employed.
Notes: Excludes military. Includes only those occupations with greater than 50 jobs.

REGIONAL COMPLETIONS ANALYSIS

According to the National Center for Education Statistics, completions include the number of degrees and other formal awards (certificates) conferred. These data are reported by degree level, or by length of program (where a nondegree certificate was earned). The region had 8,142 completions at public, 4-year schools. West Virginia University (WVU) saw the most completions (graduating students) in 2016 at 6,656 (81 percent of all 4-year degrees). At public schools with programs of at least 2 years, but less than 4 years, the region had 843 completions. At public schools with less than two years, the region had 68 completions. At private, for-profit institutions, the region had 336 completions. At private, nonprofit institutions, the region had 33 completions.

FIGURE 67. DISTRIBUTION OF FOR-CREDIT COMPLETIONS BY AWARD LEVEL, 2016

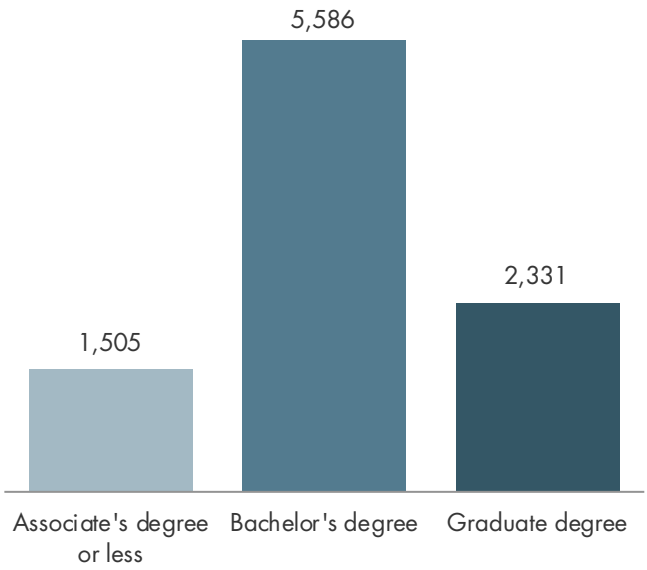


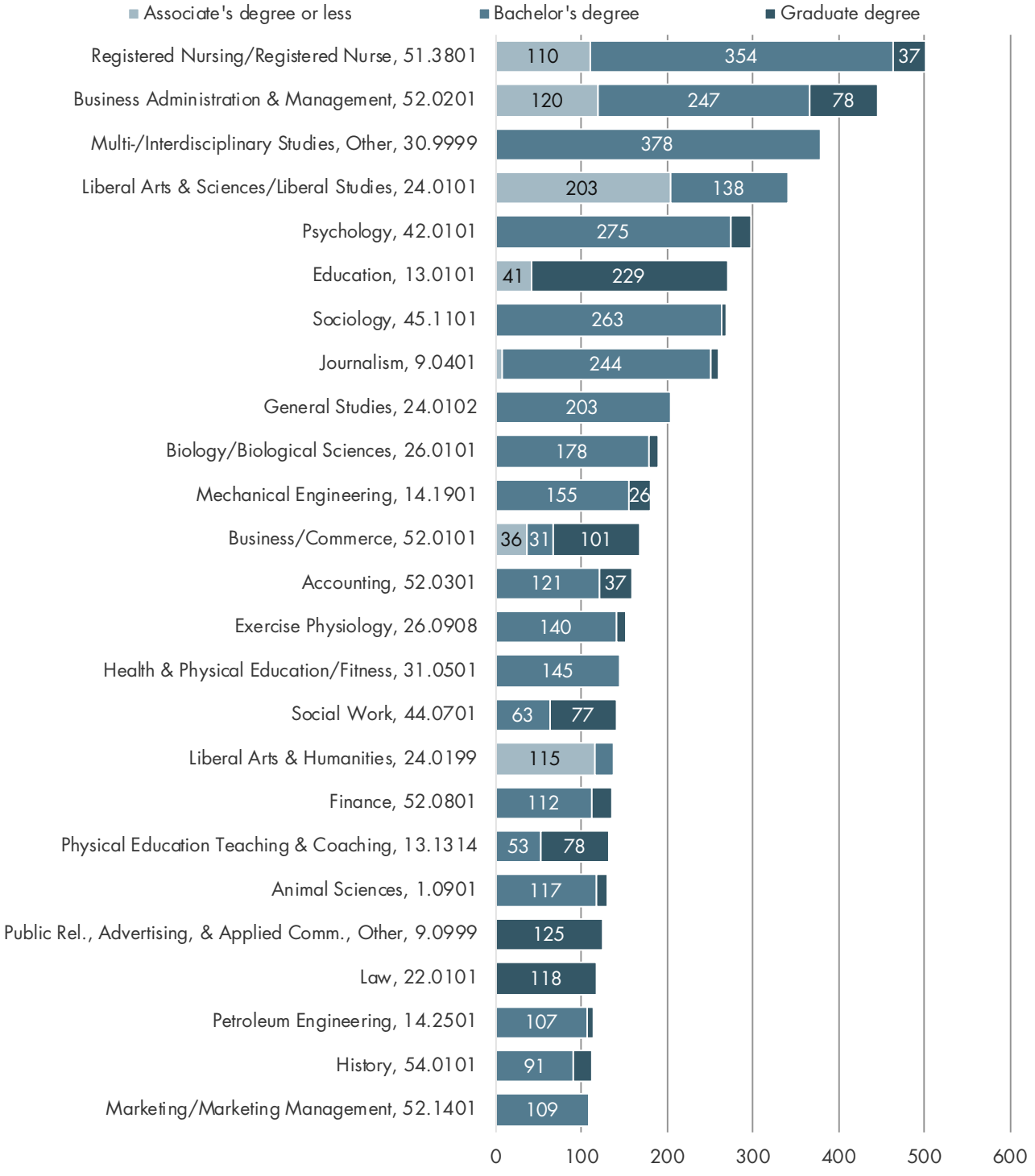
FIGURE 68. REGIONAL INSTITUTIONS BY COMPLETIONS, 2016

INSTITUTION NAME	CITY	TYPE	2016 COMPLETIONS
West Virginia University (WVU)	Morgantown	Public, 4+ yrs.	6,656
Frostburg State University	Frostburg	Public, 4+ yrs.	1,233
Allegany College of Maryland	Cumberland	Public, ≥2 but <4 yrs.	692
Potomac State College of West Virginia University	Keyser	Public, 4+ yrs.	253
West Virginia Junior College-Morgantown	Morgantown	Private for-profit, ≥2 but <4 yrs.	212
Garrett College	McHenry	Public, ≥2 but <4 yrs.	151
Ross Medical Education Center-Morgantown	Morgantown	Private for-profit, <2 yrs.*	80
Monongalia County Technical Education Center	Morgantown	Public, <2 yrs.*	49
Morgantown Beauty College Inc.	Morgantown	Private for-profit, ≥2 but <4 yrs.	44
WVU Hospital Departments of Rad Tech & Nutrition	Morgantown	Private nonprofit, 4+ yrs.	33
Mineral County Technical Center	Keyser	Public, <2 yrs.*	19

Source: (all figures this page) National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS).
* Indicates that these institutions offer education levels below an associate's degree.

In 2016, registered nursing had the most completions in the region, followed by business administration and management. This correlates with the demand for healthcare workers in the region. This is in line with the projected demand for related occupations.

FIGURE 69. LARGEST FIELDS OF STUDY RANKED BY COMPLETIONS (ALL AWARD LEVELS), 2016



Source: National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS).
Note: Data labels for values below 25 have been omitted to improve readability.

APPENDIX B. SUPPLY CHAIN ANALYSIS

Data from Emsi's input-output model was used to examine purchasing patterns of industries in the five-county region. The objective of this analysis was to document the typical inputs for these activities and to highlight any potential opportunities for business attraction or expansion efforts. Industries were chosen for analysis based on their contribution to the region's gross regional product, the share of the region's demand for the industry that is currently met by imports, and the industry's relationship to the target sectors identified in this analysis.

GROSS REGIONAL PRODUCT

Gross regional product (GRP) measures the final market value of all goods and services produced in a region. Also known as "value added," this figure represents the sum of earnings, property income, and taxes on production. Pharmaceutical manufacturing is the largest contributor to GRP, with total goods and services valued at nearly $1.2 billion, or 10 percent of the regional economy. Privately owned and operated hospitals are a close second, adding an estimated $0.9 billion to the five-county's estimated $12 billion GRP.

FIGURE 70. TOP 20 INDUSTRIES BASED ON CONTRIBUTION TO I-68 REGION GRP

NAICS CODE	INDUSTRY	INDUSTRY CONTRIBUTION TO GRP	
		IN MILLIONS	% OF TOTAL
3254	Pharmaceutical and Medicine Manufacturing	$1,198	9.9%
6221	General Medical and Surgical Hospitals	$947	7.9%
9026	Education and Hospitals (State Government)	$674	5.6%
9011	Federal Government, Civilian	$397	3.3%
9036	Education and Hospitals (Local Government)	$352	2.9%
4242	Drugs and Druggists' Sundries Merchant Wholesalers	$255	2.1%
9029	State Government, Excluding Education and Hospitals	$250	2.1%
7225	Restaurants and Other Eating Places	$244	2.0%
2211	Electric Power Generation, Transmission and Distribution	$236	2.0%
6211	Offices of Physicians	$211	1.7%
9039	Local Government, Excluding Education and Hospitals	$190	1.6%
5221	Depository Credit Intermediation	$166	1.4%
3221	Pulp, Paper, and Paperboard Mills	$164	1.4%
5511	Management of Companies and Enterprises	$158	1.3%
2382	Building Equipment Contractors	$136	1.1%
3364	Aerospace Product and Parts Manufacturing	$135	1.1%
5311	Lessors of Real Estate	$131	1.1%
2121	Coal Mining	$130	1.1%
4821	Rail Transportation	$123	1.0%
2362	Nonresidential Building Construction	$114	0.9%
	TOTAL GRP FOR FIVE-COUNTY REGION*	**$12,047**	**100.0%**

Sources: Emsi 2017 Input-Output Model and TIP Strategies.
*Total GRP includes income-generating activities from nonindustry sources, primarily consisting of income generated by owner-occupied dwellings and certain government enterprises.

REQUIREMENT TABLES

The remainder of this analysis draws on two "requirement tables" that underpin Emsi's input-output model and which can suggest potential "gaps" in the regional supply chain. Two types of requirement tables are presented: *regional* requirements (which reflect the requirements for goods and services from an individual industry due to the combined demand from all industries in the I-68 region) and *industry* requirements (which show the purchases of goods and services that individual industries in the I-68 region make from all other industries). An illustration of the conceptual difference between these two tables is provided in Figure 71.

- *Regional requirements.* The regional requirement table calculates the total regional demand for goods and services by industry, along with an estimate of the share of this demand that is met within the region versus the share that is "imported" from outside firms. These data were used to identify private sector industries with at least $100 million in demand and for which at least 10 percent of demand was met in the region (and, conversely, no more than 90 percent of demand was fulfilled by imports). The threshold for imports was set to eliminate industries that were not likely to be a fit (for example, petroleum refining) or that currently have little or no regional presence (requiring the industry base to essentially be built from scratch).

  The results shown in Figure 72 are a mix of industries for which demand is almost exclusively met locally, such as hospitals and restaurants, and those for which goods and services are largely imported from outside the region, such as insurance carriers and telecommunications firms. While high levels of imports do not necessarily make an industry a suitable recruitment target, the analysis does reveal some industries that align with the proposed targets—such as computer systems design and related services (NAICS 5415)—or that support a broad range of industries—such as employment services (NAICS 5613).

- *Industry requirements.* While the regional requirements table considers the collective purchasing patterns (demand) of all the region's industries, the industry requirements table looks at purchasing patterns from the perspective of each individual industry. In other words, the industry requirements table reflects purchases that a given industry makes from other industries—what is traditionally thought of as the industry's supply chain. These data form the basis of the supply chain maps presented in the remainder of this section.

FIGURE 71. SIMPLIFIED ILLUSTRATION OF REQUIREMENT TABLES

	Industry A	Industry B	Industry C	Industry D	Industry E	Industry F	Industry G	Industry H	.....	Total Industry Requirement
Industry A	$	$	$	$	$	$	$	$	$	$
Industry B	$	$	$	$	$	$	$	$	$	$
Industry C	$	$	$	$	$	$	$	$	$	$
Industry D	$	$	$	$	$	$	$	$	$	$
Industry E	$	$	$	$	$	$	$	$	$	$
Industry F	$	$	$	$	$	$	$	$	$	$
Industry G	$	$	$	$	$	$	$	$	$	$
Industry H	$	$	$	$	$	$	$	$	$	$
.....	$	$	$	$	$	$	$	$	$	$
Total Regional Requirement	$	$	$	$	$	$	$	$	$	$

Value of purchases made from all industries by Industry D

Regional demand for goods and services from Industry D

FIGURE 72. I-68 REGION DEMAND FOR SELECTED GOODS AND SERVICES
PRIVATE-SECTOR INDUSTRIES WITH REGIONAL DEMAND OF AT LEAST $100 MILLION AND FOR WHICH AT LEAST 10% OF DEMAND IS MET IN THE REGION

NAICS CODE	REGIONAL DEMAND FOR	TOTAL DEMAND (IN MILLIONS)	% OF TOTAL DEMAND MET IN-REGION	% OF TOTAL DEMAND MET BY IMPORTS
6221	General Medical and Surgical Hospitals	$532	95%	5%
5241	Insurance Carriers	$468	15%	85%
7225	Restaurants and Other Eating Places	$439	87%	13%
5173	Wired and Wireless Telecommunications Carriers	$390	21%	79%
5311	Lessors of Real Estate	$345	77%	23%
2382	Building Equipment Contractors	$317	65%	35%
6211	Offices of Physicians	$310	84%	16%
5221	Depository Credit Intermediation	$287	57%	43%
5415	Computer Systems Design and Related Services	$259	34%	66%
3254	Pharmaceutical and Medicine Manufacturing	$229	22%	78%
5411	Legal Services	$228	53%	47%
5313	Activities Related to Real Estate	$216	64%	36%
5239	Other Financial Investment Activities	$194	21%	79%
4251	Wholesale Electronic Markets and Agents and Brokers	$188	19%	81%
5413	Architectural, Engineering, and Related Services	$183	45%	55%
2211	Electric Power Generation, Transmission and Distribution	$180	49%	51%
5417	Scientific Research and Development Services	$170	35%	65%
5416	Management, Scientific, and Technical Consulting Services	$168	41%	59%
5613	Employment Services	$160	16%	84%
2362	Nonresidential Building Construction	$146	75%	25%
7211	Traveler Accommodation	$143	64%	36%
5312	Offices of Real Estate Agents and Brokers	$142	36%	64%
4411	Automobile Dealers	$140	23%	77%
3364	Aerospace Product and Parts Manufacturing	$138	17%	83%
4841	General Freight Trucking	$137	38%	62%
4451	Grocery Stores	$131	21%	79%
2383	Building Finishing Contractors	$131	35%	65%
2361	Residential Building Construction	$130	68%	32%
5617	Services to Buildings and Dwellings	$121	68%	32%
2381	Foundation, Structure, and Building Exterior Contractors	$120	36%	64%
2389	Other Specialty Trade Contractors	$113	66%	34%
6214	Outpatient Care Centers	$110	40%	60%
4523	Gen. Merchandise Stores, incl. Warehouse Clubs/Supercenters	$100	39%	61%
	TOTAL DEMAND IN FIVE-COUNTY REGION	**$22,154**	**33%**	**67%**

Sources: Emsi 2017 Input-Output Model and TIP Strategies.

SUPPLY CHAIN "MAPS"

The remainder of this section provides one-page, supply chain "maps" for selected industries. These analyses show the purchasing patterns of activities that are key economic drivers in the five-county, I-68 region and/or that represent important niches within the identified targets. Industries analyzed include drug manufacturing, hospitals, computer-related services, and forestry.

In addition to showing industry inputs, the figures provide an estimate of the share of goods and services that are produced in the region and the share that is imported from outside firms (suggesting an opportunity for the recruitment of companies or the expansion of existing firms). Figure 73 provides guidance for reading the maps.

The industries and related targets are shown below.

Hospitality and Tourism

- Traveler accommodation (NAICS 7211)
- Restaurants and other eating places (NAICS 7225)

Healthcare

- General medical and surgical hospitals (NAICS 6221)
- Offices of physicians (NAICS 6211)

Manufacturing

- Pharmaceutical and medicine manufacturing (NAICS 3254)
- Aerospace product and parts manufacturing (NAICS 3364)

Technology

- Data processing, hosting, and related services (NAICS 5182)
- Computer systems design and related services (NAICS 5415)

Natural Resources

- Electric power generation, transmission and distribution (NAICS 2211)
- Logging (NAICS 1133)
- Animal production and aquaculture (NAICS 112)

FIGURE 73. HOW TO READ THE SUPPLY CHAIN MAPS

I-68 REGIONAL ECONOMIC PARTNERSHIP

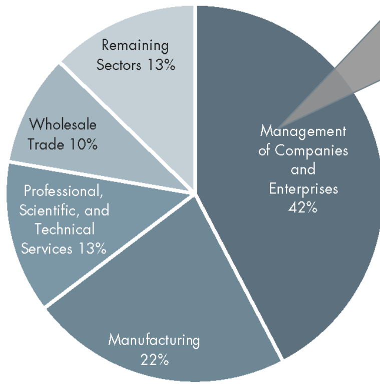
DRAFT

NAICS 3254: PHARMACEUTICAL AND MEDICINE MANUFACTURING

- Four sectors comprise 87 percent of the industry's total purchases, with one sector (Management of Companies and Enterprises) accounting for roughly 2 out of every 5 dollars spent.
- [illegible] the largest share of inputs for production come from the industry itself. At nearly $70.5 million, the Pharmaceutical and Medicine Manufacturing industry (NAICS 3254) represents nearly 13 percent of all purchases and more than one-half (58 percent) of purchases made within the manufacturing sector.
- A significant share of the inputs for this industry come from outside the five-county I-68 region. Of the four primary sectors, purchases from industries in the Professional, Scientific, and Technical Services sector are most likely to be made in-region.

The title indicates the name of the industry for which the supply chain is being mapped (analyzed), along with its four-digit NAICS code.

FIGURE 21. DISTRIBUTION OF INDUSTRY PURCHASES BY SECTOR: NAICS 3254



The pie chart shows how purchases made by the analyzed industry are distributed across major industry sectors (i.e., two-digit NAICS code level). The percentages represent each sector's share of total purchases made by the industry.

FIGURE 22. INDUSTRY PURCHASES FOR SELECTED SECTORS & INDUSTRIES: NAICS 3254

NAICS CODE & DESCRIPTION		TOTAL PURCHASES MADE (WITH INDUSTRY SHARE OF SECTOR)		IN	OUT
55	**Management of Companies and Enterprises**	**$231,628,852**		**10%**	**90%**
5511	Management of Companies and Enterprises	$231,628,852	100%	10%	90%
31	**Manufacturing**	**$122,336,719**		**3%**	**97%**
3254	Pharmaceutical and Medicine Manufacturing	$70,484,588	58%	2%	98%
3251	Basic Chemical Manufacturing	$17,258,939	14%	7%	93%
3116	Animal Slaughtering and Processing	$9,036,485	7%	0%	100%
3261	Plastics Product Manufacturing	$5,889,184	5%	0%	100%
3231	Printing and Related Support Activities	$3,590,163	3%	5%	95%
42	**Wholesale Trade**	**$52,384,429**		**17%**	**83%**
4251	Wholesale Electronic Markets and Agents and Brokers	$10,382,279	20%	28%	72%
4234	Prof./Commercial Equipment and Supplies Wholesalers	$6,907,480	13%	2%	98%
4238	Machinery, Equipment, and Supplies Wholesalers	$5,161,709	10%	34%	66%
4244	Grocery and Related Products Wholesalers	$5,004,345	10%	12%	88%
4236	Household Appliances and Electrical/Electronic Goods Whlsrs.	$3,216,788	6%	1%	99%
54	**Professional, Scientific, and Technical Services**	**$71,524,538**		**60%**	**40%**
5411	Legal Services	$27,743,519	39%	74%	26%
5416	Management, Scientific, and Technical Consulting Services	$22,632,592	32%	43%	57%
5418	Advertising, Public Relations, and Related Services	$6,333,701	9%	46%	54%
5413	Architectural, Engineering, and Related Services	$5,662,359	8%	67%	33%
5419	Other Professional, Scientific, and Technical Services	$4,125,616	6%	57%	43%

Sources: Emsi 2017 Input-Output Model; TIP Strategies   Note: IN = % of purchases in the region; OUT = % of purchases outside the region.

TARGET INDUSTRY STUDY   PAGE | 43

Purchases for each of the major sectors are detailed in the table, including the dollar value of purchases made from the top four-digit level industries within the sector. In this figure, the percentages reflect the industry's share of the sector in which they are classified. For example, the manufacturing sector represents 22 percent of total purchases made by the analyzed industry. At the four-digit NAICS level, basic chemical manufacturing accounts for 14 percent of total purchases of manufactured goods.

Finally, the figure shows the share of industry purchases that are satisfied within the five-county region and, correspondingly, the share of purchases estimated to be made outside the region. These purchasing patterns can be used to suggest "gaps" that could potentially be filled by local firms or through the recruitment of new businesses capable of meeting that need. For example, the industry shown spends roughly $5.9 million on plastics product manufacturing, however, none of those purchases are made locally.

NAICS 7211: TRAVELER ACCOMMODATION

- The region's travel accommodations industry (NAICS 7211)—a category that includes a range of lodging types, except RV parks, camp facilities, and boarding houses—purchases inputs from a broad range of sectors. The largest inputs are manufactured goods and corporate services, with the two sectors accounting for roughly one-third (34 percent) of the industry's $53.7 million purchases.
- While the top manufacturing inputs are largely purchased outside the area, purchases of services are more likely to be made within the I-68 region. Accounting and bookkeeping services have the highest in-region purchase rate, with an estimated 61 percent of purchase by the travel accommodations industry made in the five-county region.
- Outside of management of companies and enterprises (NAICS 5511), lessors of real estate (NAICS 5311) is the largest individual industry input, with estimated purchases of nearly $2.5 million.

FIGURE 74. DISTRIBUTION OF INDUSTRY PURCHASES BY SECTOR: NAICS 7211

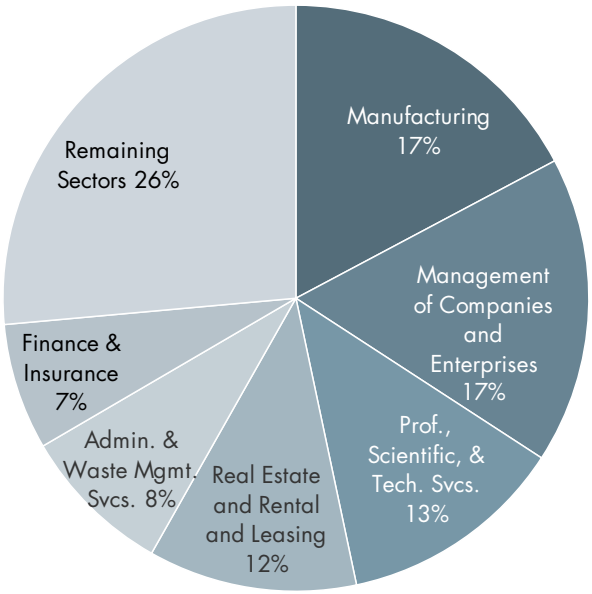


FIGURE 75. INDUSTRY PURCHASES FOR SELECTED SECTORS AND INDUSTRIES: NAICS 7211

NAICS CODE	DESCRIPTION	TOTAL PURCHASES MADE (WITH INDUSTRY SHARE OF SECTOR)		IN	OUT
—	**ALL SECTORS**	**$53,729,236**		—	—
31	**Manufacturing**	**$9,260,281**		**9%**	**91%**
3121	Beverage Manufacturing	$1,252,914	14%	32%	68%
3116	Animal Slaughtering and Processing	$1,099,380	12%	1%	99%
3115	Dairy Product Manufacturing	$1,012,826	11%	1%	99%
3112	Grain and Oilseed Milling	$1,004,305	11%	0%	100%
3222	Converted Paper Product Manufacturing	$658,299	7%	1%	99%
55	**Management of Companies and Enterprises**	**$9,100,132**		**6%**	**94%**
5511	Management of Companies and Enterprises	$9,100,132	100%	6%	94%
54	**Professional, Scientific, & Technical Services**	**$6,720,150**		**39%**	**61%**
5418	Advertising, Public Relations, and Related Services	$2,180,461	32%	27%	73%
5411	Legal Services	$1,598,650	24%	44%	56%
5416	Management, Scientific, and Technical Consulting Services	$1,389,177	21%	40%	60%
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Svcs.	$902,420	13%	61%	39%
5415	Computer Systems Design and Related Services	$262,761	4%	32%	68%
53	**Real Estate and Rental and Leasing**	**$6,191,382**		**54%**	**46%**
5311	Lessors of Real Estate	$2,478,867	40%	79%	21%
5313	Activities Related to Real Estate	$1,555,208	25%	58%	42%
5312	Offices of Real Estate Agents and Brokers	$1,022,840	17%	31%	69%
5331	Lessors of Nonfinancial Intangible Assets (exc. Copyrighted)	$881,079	14%	2%	98%
5324	Commercial/Ind. Machinery and Equip. Rental and Leasing	$150,525	2%	57%	43%

Sources: Emsi 2017 Input-Output Model and TIP Strategies.
Note: IN = percent of purchases in the region; OUT = percent of purchases outside the region.

NAICS 7225: RESTAURANTS AND OTHER EATING PLACES

- Food products and packaging are among the largest purchases of manufactured goods made by the restaurant and other eating places industry (NAICS 7225). The meat processing and dairy industries account for more than $25 million or 11 percent of total purchases made by I-68 region firms in this industry (NAICS 7225). The manufacturing sector as a whole represents roughly one-third (31 percent) of purchases.
- Like traveler accommodations, the restaurant industry purchases a range of services. After costs associated with corporate management (which accounted for 16 percent of total purchases), industries associated with real estate, rental, and leasing represented the highest costs. This sector accounted for more than $35 million of purchases by the restaurants and other eating places industry, or 15 percent of the total.

FIGURE 76. DISTRIBUTION OF INDUSTRY PURCHASES BY SECTOR: NAICS 7225

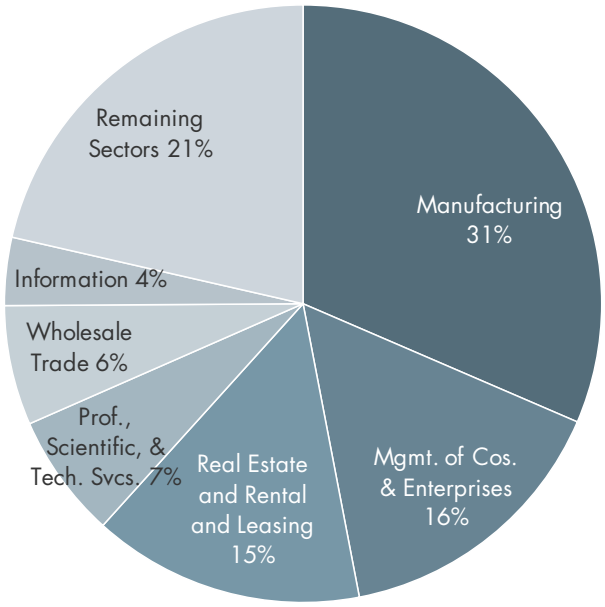


FIGURE 77. INDUSTRY PURCHASES FOR SELECTED SECTORS AND INDUSTRIES: NAICS 7225

NAICS CODE	DESCRIPTION	TOTAL PURCHASES MADE (WITH INDUSTRY SHARE OF SECTOR)		IN	OUT
—	**ALL SECTORS**	**$238,448,009**		—	—
31	**Manufacturing**	**$75,044,075**		**9%**	**91%**
3116	Animal Slaughtering and Processing	$13,254,201	18%	1%	99%
3115	Dairy Product Manufacturing	$11,926,373	16%	1%	99%
3121	Beverage Manufacturing	$9,526,720	13%	37%	63%
3119	Other Food Manufacturing	$6,935,635	9%	2%	98%
3261	Plastics Product Manufacturing	$4,141,682	6%	1%	99%
55	**Management of Companies and Enterprises**	**$36,978,275**		**7%**	**93%**
5511	Management of Companies and Enterprises	$36,978,275	100%	7%	93%
53	**Real Estate and Rental and Leasing**	**$35,082,969**		**57%**	**43%**
5311	Lessors of Real Estate	$14,767,269	42%	78%	22%
5313	Activities Related to Real Estate	$9,261,157	26%	64%	36%
5312	Offices of Real Estate Agents and Brokers	$6,090,662	17%	36%	64%
5331	Lessors of Nonfinancial Intangible Assets (exc. Copyrighted)	$4,402,366	13%	1%	99%
5324	Commercial/Ind. Machinery and Equip. Rental and Leasing	$343,519	1%	59%	41%
54	**Professional, Scientific, & Technical Services**	**$16,047,179**		**44%**	**56%**
5418	Advertising, Public Relations, and Related Services	$5,517,596	34%	31%	69%
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	$3,670,914	23%	60%	40%
5416	Management, Scientific, and Technical Consulting Services	$2,565,560	16%	42%	58%
5411	Legal Services	$1,916,243	12%	51%	49%
5415	Computer Systems Design and Related Services	$1,259,995	8%	42%	58%

Sources: Emsi 2017 Input-Output Model and TIP Strategies.
Note: IN = percent of purchases in the region; OUT = percent of purchases outside the region.

NAICS 6221: GENERAL MEDICAL AND SURGICAL HOSPITALS

- Financial services and insurance account for roughly $1 out of every $5 spent by the region's hospitals. This translates to purchases of nearly $170 million for the sector, however, with the exception of depository credit intermediation (NAICS 5221), an industry that includes banks, credit unions, and other similar institutions, much of this activity is located outside the region.
- The next largest share of purchases made by the general medical and surgical hospitals industry is for manufactured goods, which account for 14 percent of the industry's nearly $890 million purchases. Within the manufacturing sector, food products are among the highest dollar value of goods purchased, including meat, dairy, and seafood.
- A variety of service industries are utilized by the hospital industry, many of which tend to be filled locally, including law firms, accounting and bookkeeping, and computer and IT-related services.

FIGURE 78. DISTRIBUTION OF INDUSTRY PURCHASES BY SECTOR: NAICS 6221

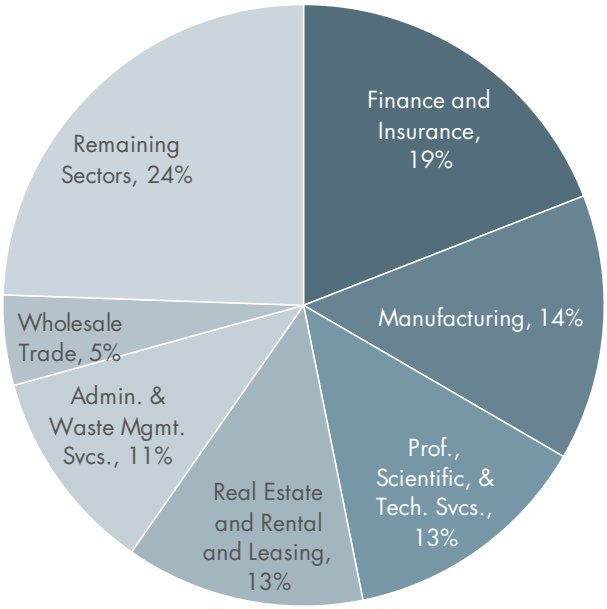


FIGURE 79. INDUSTRY PURCHASES FOR SELECTED SECTORS AND INDUSTRIES: NAICS 6221

NAICS	CODE & DESCRIPTION	TOTAL PURCHASES MADE (WITH INDUSTRY SHARE OF SECTOR)		IN	OUT
—	**ALL SECTORS**	**$887,490,510**		—	—
52	**Finance and Insurance**	**$169,325,868**		**17%**	**83%**
5241	Insurance Carriers	$118,276,879	70%	12%	88%
5239	Other Financial Investment Activities	$28,058,031	17%	27%	73%
5221	Depository Credit Intermediation	$7,694,116	5%	64%	36%
5231	Securities and Commodity Contracts	$7,589,077	4%	17%	83%
31	**Manufacturing**	**$126,949,842**		**8%**	**92%**
3116	Animal Slaughtering and Processing	$9,571,732	8%	0%	100%
3115	Dairy Product Manufacturing	$6,129,678	5%	1%	99%
3119	Other Food Manufacturing	$3,004,172	2%	2%	98%
3117	Seafood Product Preparation and Packaging	$2,414,836	2%	25%	75%
54	**Professional, Scientific, & Technical Services**	**$119,340,577**		**55%**	**45%**
5416	Management, Scientific, and Technical Consulting Services	$39,201,813	33%	42%	58%
5411	Legal Services	$37,670,477	32%	64%	36%
5415	Computer Systems Design and Related Services	$15,946,861	13%	55%	45%
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Svcs.	$12,237,229	10%	62%	38%
53	**Real Estate and Rental and Leasing**	**$114,196,207**		**64%**	**36%**
5311	Lessors of Real Estate	$43,312,979	38%	80%	20%
5313	Activities Related to Real Estate	$27,157,858	24%	68%	32%
5312	Offices of Real Estate Agents and Brokers	$17,871,490	16%	33%	67%
5324	Commercial/Ind. Machinery and Equip. Rental and Leasing	$17,238,968	15%	65%	35%

Sources: Emsi 2017 Input-Output Model and TIP Strategies.
Note: IN = percent of purchases in the region; OUT = percent of purchases outside the region.

NAICS 6211: OFFICES OF PHYSICIANS

- Like hospitals, financial services represent the largest share of purchasing made by doctors' offices in the I-68 region, accounting for 19 percent of roughly $98 million in spending. The insurance industry is by far the largest component, representing 80 percent of the total purchases made within the finance and insurance sector.
- Industries in the real estate and rental and leasing sector represent the next largest share of purchases at 16 percent. Activities associated with the rental of real estate and equipment are the most prominent, with four such industries accounting for 93 percent of the sector's total. However, the category also includes purchases associated with patents and other intellectual property—lessors of nonfinancial intangible assets (except copyrighted works), (NAICS 5331).
- Administrative services, including building management and maintenance, security, and temporary personnel, account for more than $12 million in purchases.

FIGURE 80. DISTRIBUTION OF INDUSTRY PURCHASES BY SECTOR: NAICS 6211

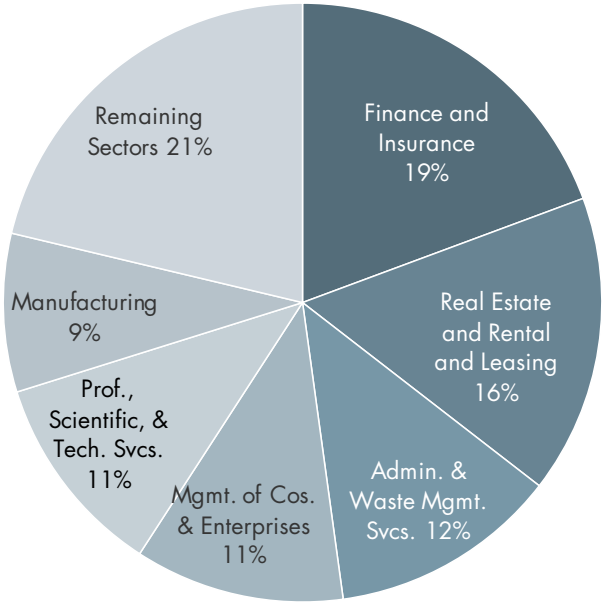


FIGURE 81. INDUSTRY PURCHASES FOR SELECTED SECTORS AND INDUSTRIES: NAICS 6211

NAICS CODE	DESCRIPTION	TOTAL PURCHASES MADE (WITH INDUSTRY SHARE OF SECTOR)		IN	OUT
—	**ALL SECTORS**	**$97,888,026**		—	—
52	**Finance and Insurance**	**$18,938,286**		**21%**	**79%**
5241	Insurance Carriers	$15,126,293	80%	16%	84%
5221	Depository Credit Intermediation	$2,281,616	12%	58%	42%
5222	Nondepository Credit Intermediation	$548,112	3%	16%	84%
5239	Other Financial Investment Activities	$347,990	2%	18%	82%
5231	Securities and Commodity Contracts	$278,476	1%	20%	80%
53	**Real Estate and Rental and Leasing**	**$15,790,989**		**62%**	**38%**
5311	Lessors of Real Estate	$6,645,419	42%	79%	21%
5313	Activities Related to Real Estate	$4,171,735	26%	64%	36%
5312	Offices of Real Estate Agents and Brokers	$2,743,780	17%	35%	65%
5324	Commercial/Ind. Machinery and Equip. Rental and Leasing	$1,117,756	7%	60%	40%
5331	Lessors of Nonfinancial Intangible Assets (exc. Copyrighted)	$618,966	4%	1%	99%
56	**Admin. & Waste Mgmt. Svcs.**	**$12,089,234**		**37%**	**63%**
5613	Employment Services	$4,733,529	39%	16%	84%
5614	Business Support Services	$2,027,065	17%	55%	45%
5611	Office Administrative Services	$1,963,666	16%	77%	23%
5616	Investigation and Security Services	$818,511	7%	21%	79%
5617	Services to Buildings and Dwellings	$645,058	5%	68%	32%
55	**Mgmt. of Cos. & Enterprises**	**$11,091,963**		**7%**	**93%**
5511	Management of Companies and Enterprises	$11,091,963	100%	7%	93%

Sources: Emsi 2017 Input-Output Model and TIP Strategies.
Note: IN = percent of purchases in the region; OUT = percent of purchases outside the region.

NAICS 3254: PHARMACEUTICAL AND MEDICINE MANUFACTURING

- The I-68 region's pharmaceutical and medicine manufacturing industry purchases more than one-half billion dollars in goods and services annually ($547.5 million). Four sectors comprise 87 percent of the industry's total purchases, with one sector (management of companies and enterprises) accounting for roughly $2 out of every $5 spent.
- Like many manufacturing processes, the largest share of inputs for production comes from the industry itself. At nearly $70.5 million, the pharmaceutical and medicine manufacturing industry represents nearly 13 percent of all purchases and more than half (58 percent) of purchases made within the manufacturing sector.
- A significant share of the inputs for this industry come from outside the five-county, I-68 region. Of the four primary sectors, purchases from industries in the professional, scientific, and technical services sector are most likely to be made in the region.

FIGURE 82. DISTRIBUTION OF INDUSTRY PURCHASES BY SECTOR: NAICS 3254

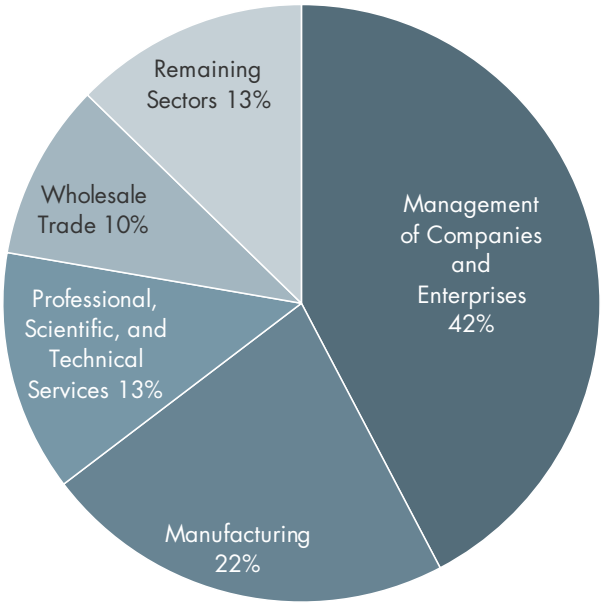


FIGURE 83. INDUSTRY PURCHASES FOR SELECTED SECTORS AND INDUSTRIES: NAICS 3254

NAICS CODE	DESCRIPTION	TOTAL PURCHASES MADE (WITH INDUSTRY SHARE OF SECTOR)		IN	OUT
—	**ALL SECTORS**	**$547,482,556**		—	—
55	**Management of Companies and Enterprises**	**$231,628,852**		**10%**	**90%**
5511	Management of Companies and Enterprises	$231,628,852	100%	10%	90%
31	**Manufacturing**	**$122,336,719**		**3%**	**97%**
3254	Pharmaceutical and Medicine Manufacturing	$70,484,588	58%	2%	98%
3251	Basic Chemical Manufacturing	$17,258,939	14%	7%	93%
3116	Animal Slaughtering and Processing	$9,036,485	7%	0%	100%
3261	Plastics Product Manufacturing	$5,889,184	5%	0%	100%
3231	Printing and Related Support Activities	$3,590,163	3%	5%	95%
54	**Professional, Scientific, and Technical Services**	**$71,524,538**		**60%**	**40%**
5411	Legal Services	$27,743,519	39%	74%	26%
5416	Management, Scientific, and Technical Consulting Services	$22,632,592	32%	43%	57%
5418	Advertising, Public Relations, and Related Services	$6,333,701	9%	46%	54%
5413	Architectural, Engineering, and Related Services	$5,662,359	8%	67%	33%
5419	Other Professional, Scientific, and Technical Services	$4,125,616	6%	57%	43%
42	**Wholesale Trade**	**$52,384,429**		**17%**	**83%**
4251	Wholesale Electronic Markets and Agents and Brokers	$10,382,279	20%	28%	72%
4234	Prof./Commercial Equipment and Supplies Wholesalers	$6,907,480	13%	2%	98%
4238	Machinery, Equipment, and Supplies Wholesalers	$5,161,709	10%	34%	66%
4244	Grocery and Related Products Wholesalers	$5,004,345	10%	12%	88%
4236	Household Appliances and Electrical/Electronic Goods Whlsrs.	$3,216,788	6%	1%	99%

Sources: Emsi 2017 Input-Output Model and TIP Strategies.
Note: IN = percent of purchases in the region; OUT = percent of purchases outside the region.

NAICS 3364: AEROSPACE PRODUCT AND PARTS MANUFACTURING

- Purchases by aerospace and related products firms in the I-68 region exceed $147 million according to Emsi's estimates. Manufactured goods are by far the largest input, accounting for $4 out of every $5 spent (80 percent of the total).
- Within the manufacturing sector, the aerospace product and parts manufacturing industry (NAICS 3364) purchased roughly $95 million worth of other aerospace-related parts and products. This industry encompasses manufactured goods (including the manufacture of complete aircraft or missiles and parts, such as propulsion units and auxiliary equipment) and a range of services performed on aircraft and parts (including prototyping, conversions, and overhaul and rebuilding).
- Corporate management services are the next largest sector. This industry encompasses activities that are centralized at headquarters or regional offices, including strategic planning, decision-making, and other back-office functions.

FIGURE 84. DISTRIBUTION OF INDUSTRY PURCHASES BY SECTOR: NAICS 3364

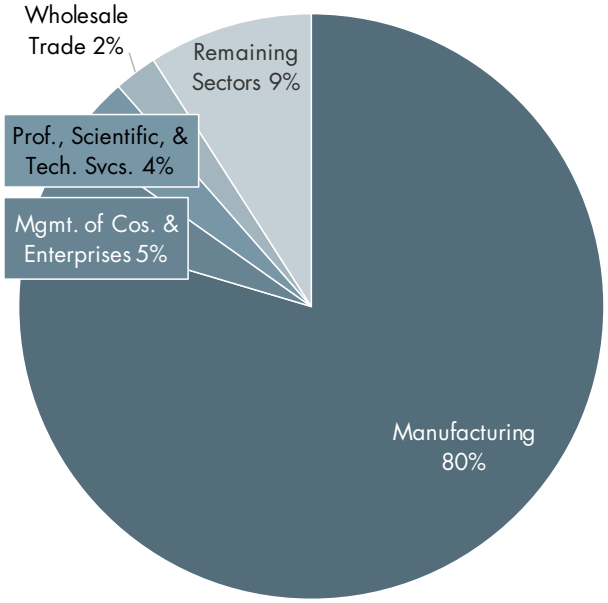


FIGURE 85. INDUSTRY PURCHASES FOR SELECTED SECTORS AND INDUSTRIES: NAICS 3364

NAICS CODE	DESCRIPTION	TOTAL PURCHASES MADE (WITH INDUSTRY SHARE OF SECTOR)		IN	OUT
—	**ALL SECTORS**	**$147,041,223**		—	—
31	**Manufacturing**	**$117,029,130**		**20%**	**80%**
3364	Aerospace Product and Parts Manufacturing	$94,914,178	81%	24%	76%
3342	Communications Equipment Manufacturing	$5,841,951	5%	0%	100%
3345	Navigational, Measuring, Electromedical, and Control Instrument	$3,930,985	3%	0%	100%
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Mfg	$1,657,553	1%	2%	98%
3251	Basic Chemical Manufacturing	$1,488,304	1%	0%	100%
55	**Management of Companies and Enterprises**	**$7,665,224**		**2%**	**98%**
5511	Management of Companies and Enterprises	$7,665,224	100%	2%	98%
54	**Professional, Scientific, & Technical Services**	**$5,504,237**		**24%**	**76%**
5416	Management, Scientific, and Technical Consulting Services	$1,637,044	30%	19%	81%
5413	Architectural, Engineering, and Related Services	$709,087	13%	56%	44%
5415	Computer Systems Design and Related Services	$656,843	12%	14%	86%
5419	Other Professional, Scientific, and Technical Services	$402,841	7%	33%	67%
5414	Specialized Design Services	$239,219	4%	18%	82%
42	**Wholesale Trade**	**$3,504,240**		**12%**	**88%**
4251	Wholesale Electronic Markets and Agents and Brokers	$840,240	24%	16%	84%
4234	Prof./Commercial Equipment and Supplies Wholesalers	$503,367	14%	0%	100%
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	$383,393	11%	33%	67%
4244	Grocery and Related Product Merchant Wholesalers	$306,549	9%	10%	90%
4236	HH Appliances and Electrical/Electronic Goods Wholesalers	$249,113	7%	1%	99%

Sources: Emsi 2017 Input-Output Model and TIP Strategies.
Note: IN = percent of purchases in the region; OUT = percent of purchases outside the region.

NAICS 5182: DATA PROCESSING, HOSTING, AND RELATED SERVICES

- Three sectors account for roughly half of the $63 million in purchases made by firms providing data processing and hosting services in the I-68 region: real estate and rental and leasing (18 percent); professional, scientific, and technical services (17 percent); and manufacturing (17 percent).
- Cement and concrete products represent the largest share of the industry's purchase of manufactured goods. The use of heavily reinforced concrete flooring is a standard for data centers and might explain this spending pattern. Similar spending on architectural and structural metals manufacturing (NAICS 3323), which includes the production of concrete reinforcing bars, supports this idea.
- Real estate and rental and leasing was the largest sector. However, unlike some other industries profiled in this section, purchases of services associated with patents and other intellectual property (see NAICS 5331) represented the largest dollar value for the region's data processing and hosting firms.

FIGURE 86. DISTRIBUTION OF INDUSTRY PURCHASES BY SECTOR: NAICS 5182

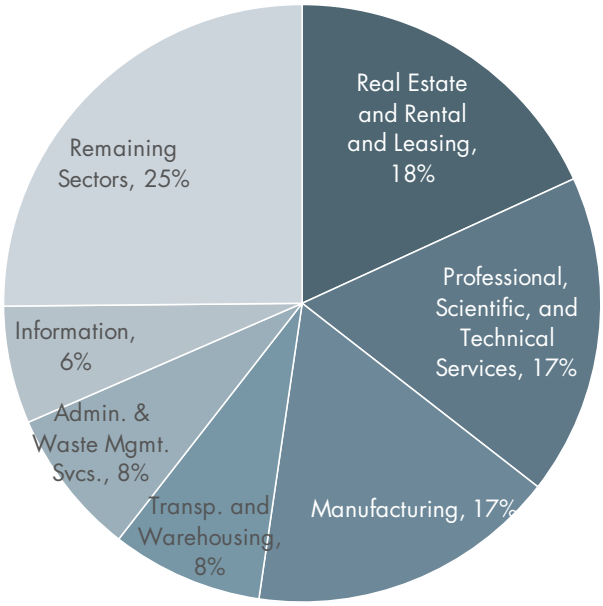


FIGURE 87. INDUSTRY PURCHASES FOR SELECTED SECTORS AND INDUSTRIES: NAICS 5182

NAICS CODE	DESCRIPTION	TOTAL PURCHASES MADE (WITH INDUSTRY SHARE OF SECTOR)		IN	OUT
—	**ALL SECTORS**	**$62,989,794**		—	—
53	**Real Estate and Rental and Leasing**	**$11,442,010**		**25%**	**75%**
5331	Lessors of Nonfinancial Intangible Assets (exc. Copyrighted)	$4,990,849	44%	1%	99%
5311	Lessors of Real Estate	$2,905,658	25%	50%	50%
5313	Activities Related to Real Estate	$1,822,373	16%	44%	56%
5312	Offices of Real Estate Agents and Brokers	$1,198,919	10%	35%	65%
54	**Professional, Scientific, and Technical Services**	**$10,934,305**		**26%**	**74%**
5415	Computer Systems Design and Related Services	$4,209,433	38%	22%	78%
5416	Management, Scientific, and Technical Consulting Services	$3,704,721	34%	25%	75%
5418	Advertising, Public Relations, and Related Services	$886,420	8%	24%	76%
5411	Legal Services	$779,716	7%	27%	73%
31	**Manufacturing**	**$10,577,362**		**6%**	**94%**
3273	Cement and Concrete Product Manufacturing	$1,158,108	11%	17%	83%
3344	Semiconductor and Other Electronic Component Manufacturing	$1,049,651	10%	0%	100%
3342	Communications Equipment Manufacturing	$1,030,920	10%	0%	100%
3323	Architectural and Structural Metals Manufacturing	$1,019,556	10%	1%	99%
48	**Transportation and Warehousing**	**$5,172,940**		**16%**	**84%**
4921	Couriers and Express Delivery Services	$1,155,033	22%	10%	90%
4811	Scheduled Air Transportation	$1,150,237	22%	1%	99%
4931	Warehousing and Storage	$446,471	9%	4%	96%
4841	General Freight Trucking	$429,982	8%	60%	40%

Sources: Emsi 2017 Input-Output Model and TIP Strategies.
Note: IN = percent of purchases in the region; OUT = percent of purchases outside the region.

NAICS 5415: COMPUTER SYSTEMS DESIGN AND RELATED SERVICES

- Services comprise virtually all the purchases made by the computer systems design and related services industry (NAICS 5415). On a sector basis, professional, scientific, and technical services account for the largest share of spending among firms in the region, with roughly $1 out of every $4 dollars spent on industries in this sector. However, employment services (NAICS 5613) represents the largest expenditure on an industry basis, suggesting a strong reliance on temporary personnel.
- Among the services purchased by the region's IT firms, a relatively large share is typically purchased locally. For example, an estimated 93 percent of the $1.1 million in purchases of office administrative services (NAICS 5611) are made within the region. This industry includes a variety of services that support the day-to-day operation of firms, including billing and personnel.

FIGURE 88. DISTRIBUTION OF INDUSTRY PURCHASES BY SECTOR: NAICS 5415

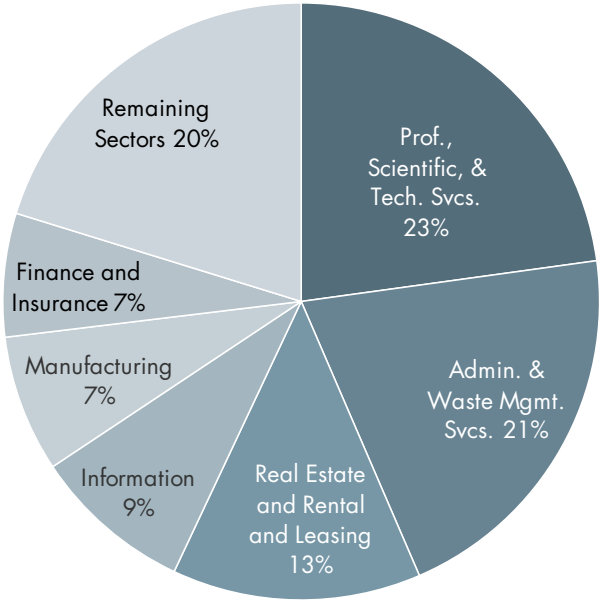


FIGURE 89. INDUSTRY PURCHASES FOR SELECTED SECTORS AND INDUSTRIES: NAICS 5415

NAICS CODE	DESCRIPTION	TOTAL PURCHASES MADE (WITH INDUSTRY SHARE OF SECTOR)		IN	OUT
—	**ALL SECTORS**	**$29,373,424**		—	—
54	**Prof., Scientific, & Tech. Svcs.**	**$6,702,323**		**57%**	**43%**
5413	Architectural, Engineering, and Related Services	$1,876,776	28%	65%	35%
5416	Management, Scientific, and Technical Consulting Services	$1,203,367	18%	44%	56%
5411	Legal Services	$982,059	15%	67%	33%
5415	Computer Systems Design and Related Services	$910,811	14%	55%	45%
56	**Admin. & Waste Mgmt. Svcs.**	**$6,080,113**		**36%**	**64%**
5613	Employment Services	$3,395,044	56%	17%	83%
5611	Office Administrative Services	$1,113,096	18%	93%	7%
5614	Business Support Services	$362,108	6%	56%	44%
5612	Facilities Support Services	$314,448	5%	10%	90%
53	**Real Estate and Rental and Leasing**	**$3,960,968**		**55%**	**45%**
5311	Lessors of Real Estate	$1,511,362	38%	79%	21%
5313	Activities Related to Real Estate	$948,533	24%	72%	28%
5331	Lessors of Nonfinancial Intangible Assets (exc. Copyrighted)	$784,384	20%	0%	100%
5312	Offices of Real Estate Agents and Brokers	$623,976	16%	37%	63%
51	**Information**	**$2,544,538**		**22%**	**78%**
5173	Wired and Wireless Telecommunications Carriers	$1,040,436	41%	19%	81%
5191	Other Information Services	$450,482	18%	2%	98%
5151	Radio and Television Broadcasting	$287,189	11%	19%	81%
5182	Data Processing, Hosting, and Related Services	$235,263	9%	55%	45%

Sources: Emsi 2017 Input-Output Model and TIP Strategies.
Note: IN = percent of purchases in the region; OUT = percent of purchases outside the region.

NAICS 2211: ELECTRIC POWER GENERATION, TRANSMISSION AND DISTRIBUTION

- Although the mining, quarrying, and oil and gas extraction sector is not the largest source of purchasing for the region's electric power industry, it encompasses two industries that represent the highest dollar value of expenditures: coal mining and oil and gas. Together these two industries represent just under $10 million in spending, 16 percent of the total.
- The transportation of fuels via a variety of modes, including pipeline and rail, drives the electric power industry's transactions with firms in the transportation and warehousing sector. Spending on this sector accounted for nearly $1 out of every $5 of purchases made.
- The largest single industry for purchases made by firms involved in the generation and transmission of electric power is petroleum and coal products manufacturing (NAICS 3241). This industry includes petroleum refineries and accounts for more than $7 million in purchases.

FIGURE 90. DISTRIBUTION OF INDUSTRY PURCHASES BY SECTOR: NAICS 2211

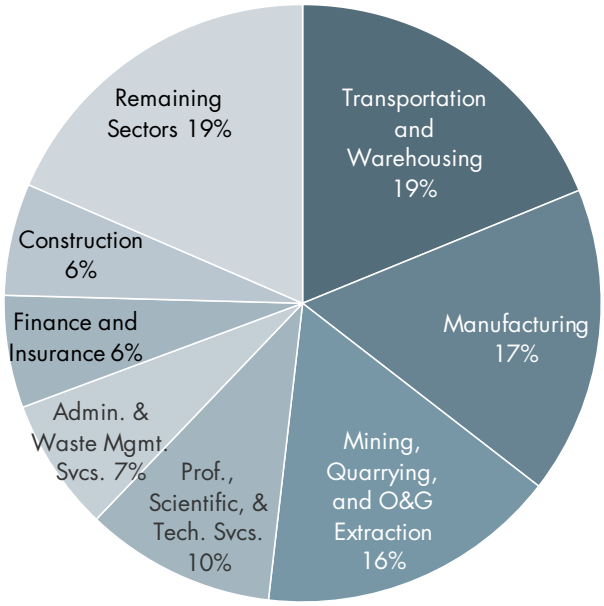


FIGURE 91. INDUSTRY PURCHASES FOR SELECTED SECTORS AND INDUSTRIES: NAICS 2211

	NAICS CODE & DESCRIPTION	TOTAL PURCHASES MADE (WITH INDUSTRY SHARE OF SECTOR)		IN	OUT
—	**ALL SECTORS**	**$61,137,407**		—	—
48	**Transportation and Warehousing**	**$11,513,729**		**22%**	**78%**
4862	Pipeline Transportation of Natural Gas	$1,966,786	17%	38%	62%
4885	Freight Transportation Arrangement	$1,830,044	16%	4%	96%
4821	Rail Transportation	$1,686,939	15%	46%	54%
4881	Support Activities for Air Transportation	$1,209,801	11%	7%	93%
31	**Manufacturing**	**$10,180,547**		**1%**	**99%**
3241	Petroleum and Coal Products Manufacturing	$7,114,502	70%	0%	100%
3251	Basic Chemical Manufacturing	$1,196,916	12%	3%	97%
3336	Engine, Turbine, and Power Transmission Equipment Mfg.	$770,252	8%	0%	100%
3345	Navigational, Meas., Electromedical, and Control Instruments	$116,841	1%	1%	99%
21	**Mining, Quarrying, and O&G Extraction**	**$9,991,767**		**87%**	**13%**
2121	Coal Mining	$4,990,301	50%	90%	10%
2111	Oil and Gas Extraction	$4,816,644	48%	86%	14%
2123	Nonmetallic Mineral Mining and Quarrying	$153,382	2%	39%	61%
2131	Support Activities for Mining	$31,439	0%	79%	21%
54	**Professional, Scientific, & Technical Services**	**$6,302,820**		**55%**	**45%**
5411	Legal Services	$2,289,434	36%	62%	38%
5419	Other Professional, Scientific, and Technical Services	$2,168,575	34%	51%	49%
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Svcs.	$479,627	8%	62%	38%
5415	Computer Systems Design and Related Services	$441,303	7%	47%	53%

Sources: Emsi 2017 Input-Output Model and TIP Strategies.
Note: IN = percent of purchases in the region; OUT = percent of purchases outside the region.

NAICS 1133: LOGGING

- Support activities for crop production (NAICS 1151) represents more than half the expenditures by the region's logging industry, according to Emsi. The NAICS 1151 industry classification typically encompasses firms that provide a wide variety of services, including soil preparation, planting, harvesting, and aerial spraying. When these activities are performed in the support of forestry products, they are typically classified under support activities for forestry (NAICS 1153), suggesting that this spending might be misclassified in the model.
- Outside of various agriculture-related support activities, the largest single expenditures by the region's logging establishments is made with firms in the sawmills and wood preservation industry (NAICS 3211). The majority of the roughly $222,000 in expenditures on this industry (38 percent of the manufacturing sector's total) is estimated to be made within the region.

FIGURE 92. DISTRIBUTION OF INDUSTRY PURCHASES BY SECTOR: NAICS 1133

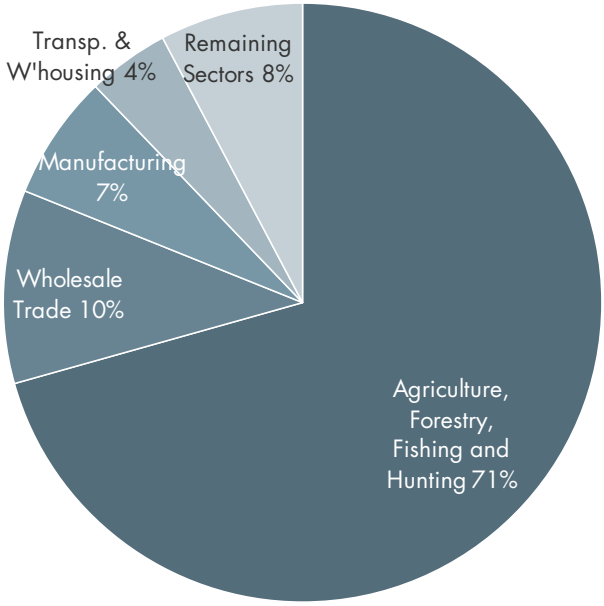


FIGURE 93. INDUSTRY PURCHASES FOR SELECTED SECTORS AND INDUSTRIES: NAICS 1133

NAICS CODE & DESCRIPTION		TOTAL PURCHASES MADE (WITH INDUSTRY SHARE OF SECTOR)		IN	OUT
—	**ALL SECTORS**	**$8,689,912**		—	—
11	**Agriculture, Forestry, Fishing and Hunting**	**$6,138,690**		**20%**	**80%**
1151	Support Activities for Crop Production	$4,531,402	74%	11%	89%
1152	Support Activities for Animal Production	$696,571	11%	34%	66%
1153	Support Activities for Forestry	$321,685	5%	86%	14%
1110	Crop Production	$278,527	5%	39%	61%
42	**Wholesale Trade**	**$907,365**		**15%**	**85%**
4251	Wholesale Electronic Markets and Agents and Brokers	$152,507	17%	17%	83%
4234	Professional and Commercial Equipment and Supplies Merchant	$111,401	12%	1%	99%
4244	Grocery and Related Product Merchant Wholesalers	$91,876	10%	10%	90%
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	$87,214	10%	21%	79%
31	**Manufacturing**	**$586,691**		**34%**	**66%**
3211	Sawmills and Wood Preservation	$222,442	38%	81%	19%
3331	Agriculture, Construction, and Mining Machinery Mfg.	$97,863	17%	0%	100%
3241	Petroleum and Coal Products Manufacturing	$88,716	15%	0%	100%
3111	Animal Food Manufacturing	$34,294	6%	2%	98%
48	**Transportation and Warehousing**	**$384,317**		**51%**	**49%**
4841	General Freight Trucking	$266,366	69%	47%	53%
4842	Specialized Freight Trucking	$97,024	25%	61%	39%
4821	Rail Transportation	$14,046	4%	81%	19%
4931	Warehousing and Storage	$2,217	1%	6%	94%

Sources: Emsi 2017 Input-Output Model and TIP Strategies.
Note: IN = percent of purchases in the region; OUT = percent of purchases outside the region.

NAICS 112: ANIMAL PRODUCTION AND AQUACULTURE

- The animal production and aquaculture industry (NAICS 112) consists of firms involved in raising a range of animals for market, including cattle raised for meat and dairy, hogs, poultry and egg production, and feedlots. The largest inputs for the industry come from two sectors: agriculture, forestry, fishing, and hunting ($44.9 million) and manufacturing ($36.2 million).
- Within each of these sectors, a single industry accounts for roughly three-quarters of the purchases. In the case of the agriculture, forestry, fishing, and hunting sector, 73 percent of purchases are driven by the purchase of additional services related to animal production. For manufacturing, the production of animal feed represents a similar share of purchasing made by the region's ranches, farms, and feedlots.
- Although the transportation and warehousing sector represents a relatively small share of expenditures, these purchases are more likely to be made in the region.

FIGURE 94. DISTRIBUTION OF INDUSTRY PURCHASES BY SECTOR: NAICS 112

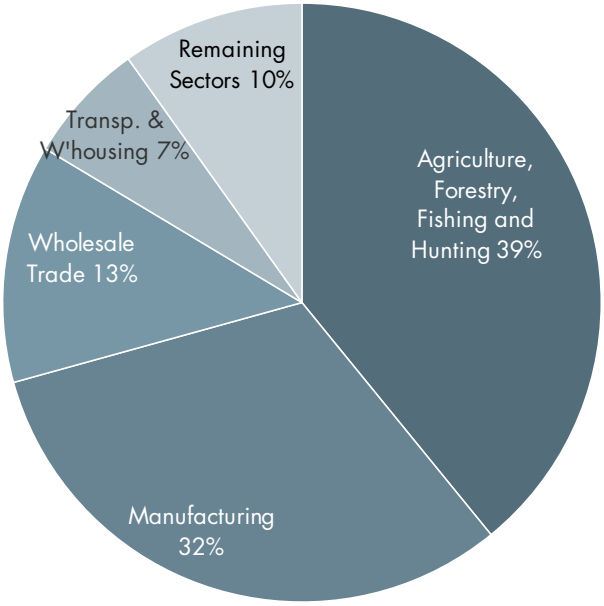


FIGURE 95. INDUSTRY PURCHASES FOR SELECTED SECTORS AND INDUSTRIES: NAICS 112

NAICS	CODE & DESCRIPTION	TOTAL PURCHASES MADE (WITH INDUSTRY SHARE OF SECTOR)		IN	OUT
—	**ALL SECTORS**	**$114,681,906**		—	—
11	**Agriculture, Forestry, Fishing and Hunting**	**$44,856,658**		**24%**	**76%**
1120	Animal Production	$32,645,407	73%	27%	73%
1110	Crop Production	$9,374,156	21%	14%	86%
1151	Support Activities for Crop Production	$2,317,653	5%	12%	88%
1152	Support Activities for Animal Production	$355,525	1%	40%	60%
31	**Manufacturing**	**$36,225,527**		**2%**	**98%**
3111	Animal Food Manufacturing	$26,333,135	73%	1%	99%
3241	Petroleum and Coal Products Manufacturing	$3,127,034	9%	0%	100%
3326	Spring and Wire Product Manufacturing	$1,348,114	4%	0%	100%
3112	Grain and Oilseed Milling	$1,219,518	3%	5%	95%
42	**Wholesale Trade**	**$14,781,157**		**13%**	**87%**
4251	Wholesale Electronic Markets and Agents and Brokers	$2,928,406	20%	14%	86%
4234	Prof./Commercial Equipment and Supplies Wholesalers	$1,952,899	13%	1%	99%
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	$1,459,925	10%	25%	75%
4244	Grocery and Related Product Merchant Wholesalers	$1,410,447	10%	8%	92%
48	**Transportation and Warehousing**	**$7,512,998**		**44%**	**56%**
4841	General Freight Trucking	$3,758,654	50%	47%	53%
4842	Specialized Freight Trucking	$1,279,184	17%	49%	51%
4821	Rail Transportation	$1,199,847	16%	74%	26%
4931	Warehousing and Storage	$367,953	5%	5%	95%

Sources: Emsi 2017 Input-Output Model and TIP Strategies.
Note: IN = percent of purchases in the region; OUT = percent of purchases outside the region.

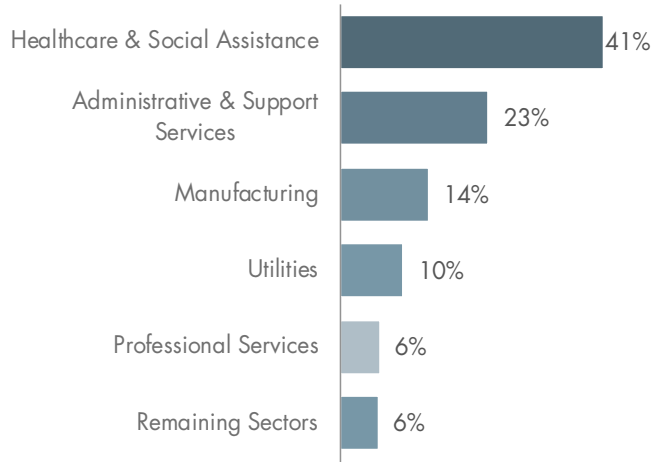
FEDERAL BUREAU OF PRISONS

The I-68 region is home to a number of federal correctional facilities. Emsi's input-output model does not provide purchasing patterns for public sector activities at the same level of detail as is available for private sector industries. To illustrate the supply chain for this key industry segment, TIP Strategies' analysis included a review of federal contracts awarded by the US Department of Justice Bureau of Prisons (BOP) in the most recent fiscal year available (FY 2016–2017).

Healthcare was the largest single category of contracts awarded by BOP during the period analyzed, accounting for 41 percent of the money obligated, or roughly $2 out of every $5. Administrative services, manufactured goods, utilities, and professional services round out the top five.

Within healthcare, hospitals and residential care facilities were the most significant obligations, representing more than $968 million combined (Figure 97). Facilities support services topped the list at nearly $550 million. This industry is comprised of establishments providing a variety of services supporting the day-to-day operations of client facilities.

FIGURE 96. FEDERAL BUREAU OF PRISONS
DISTRIBUTION OF CONTRACTS BY BROAD (TWO-DIGIT) SECTOR, FY 2016–2017



Source: TIP Strategies' analysis of US spending data for contracts awarded FY 2016–2017 and FY 2015–2016 by the US Department of Justice Bureau of Prisons.

FIGURE 97. BOP CONTRACTS AWARDED BY INDUSTRY (FOUR-DIGIT LEVEL), FY 2016–2017
RANKED BY DOLLAR VALUE OF FEDERAL OBLIGATION, IN MILLIONS (CONTINUED, NEXT PAGE)

NAICS CODE	DESCRIPTION	AMOUNT OBLIGATED IN MILLIONS
5612	Facilities Support Services	$549.3
6239	Other Residential Care Facilities	$542.3
6221	General Medical and Surgical Hospitals	$426.0
2211	Electric Power Generation, Transmission and Distribution	$127.8
3254	Pharmaceutical and Medicine Manufacturing	$110.3
2213	Water, Sewage and Other Systems	$89.2
5413	Architectural, Engineering, and Related Services	$88.3
3119	Other Food Manufacturing	$81.6
5415	Computer Systems Design and Related Services	$50.5
6214	Outpatient Care Centers	$42.0
2212	Natural Gas Distribution	$37.0
3399	Other Miscellaneous Manufacturing	$21.7
5616	Investigation and Security Services	$20.6

NAICS CODE	DESCRIPTION	AMOUNT OBLIGATED IN MILLIONS
5613	Employment Services	$20.4
2382	Building Equipment Contractors	$18.3
3342	Communications Equipment Manufacturing	$16.3
6211	Offices of Physicians	$15.9
6213	Offices of Other Health Practitioners	$15.0
5419	Other Professional, Scientific, and Technical Services	$14.6
6215	Medical and Diagnostic Laboratories	$13.8
2362	Nonresidential Building Construction	$13.4
3116	Animal Slaughtering and Processing	$13.2
3391	Medical Equipment and Supplies Manufacturing	$13.0
5312	Offices of Real Estate Agents and Brokers	$12.9
3115	Dairy Product Manufacturing	$12.2
2381	Foundation, Structure, and Building Exterior Contractors	$9.5
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	$9.4
5242	Agencies, Brokerages, and Other Insurance Related Activities	$9.1
2371	Utility System Construction	$8.4
6219	Other Ambulatory Health Care Services	$8.1
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	$8.1
3333	Commercial and Service Industry Machinery Manufacturing	$6.8
4242	Drugs and Druggists' Sundries Merchant Wholesalers	$6.7
2373	Highway, Street, and Bridge Construction	$6.6
3159	Apparel Accessories and Other Apparel Manufacturing	$6.0
4812	Nonscheduled Air Transportation	$5.8
3118	Bakeries and Tortilla Manufacturing	$5.4
5416	Management, Scientific, and Technical Consulting Services	$5.2
3259	Other Chemical Product and Preparation Manufacturing	$4.9
3329	Other Fabricated Metal Product Manufacturing	$4.4
5621	Waste Collection	$4.2
5112	Software Publishers	$4.1
3341	Computer and Peripheral Equipment Manufacturing	$3.5
3222	Converted Paper Product Manufacturing	$3.3
3241	Petroleum and Coal Products Manufacturing	$3.3
2383	Building Finishing Contractors	$3.2
5171	Wired Telecommunications Carriers	$3.2
5617	Services to Buildings and Dwellings	$3.1
8112	Electronic and Precision Equipment Repair and Maintenance	$3.1
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	$3.0

Source: TIP Strategies' analysis of US spending data for contracts awarded FY 2016–2017 and FY 2015–2016 by the US Department of Justice Bureau of Prisons.

APPENDIX C. SITES AND BUILDINGS

The presence of shovel-ready sites and available buildings can be an important factor in the recruitment of new industries and supporting the expansion plans of existing firms. The following information was compiled from the department of commerce websites for each state.

FIGURE 98. AVAILABLE SITES AND BUILDINGS IN THE I-68 REGION (CONTINUED, NEXT TWO PAGES)

			AVAILABLE SIZE		TOTAL SIZE			PROPERTY TYPE					DISTANCE TO	
SITE/BUILDING NAME	CITY	COUNTY	MIN	MAX	ACRES	BUILDING (SQ. FT.)	VACANT LAND	IND./MFG.	WHSE./DISTR.	FLEX	OFFICE	RETAIL	COMMERCIAL AIRPORT	NEAREST INTERSTATE
BUILDINGS			IN SQ. FT.											
Barton Business Park Shell Building	Cumberland	Allegany	40,000	80,000				■						
AN-3 Space at Mountaineer Mall	Morgantown	Monongalia	70,470	70,470		70,470					■			2.3
Anchor Glass Facility	Keyser	Mineral	1,000	46,703		281,703		■					85.7	20
Old Poland Furniture Store	Fort Ashby	Mineral	36,600	36,600	2.32	36,600		■	■		■		82.4	12
1311 Pineview Drive Building	Morgantown	Monongalia	1,800	35,597	1.93	56,158					■			3.9
Mineral County Multi-Tenant Building	Fort Ashby	Mineral	27,000	27,000	4.54	27,000		■					88.6	16.5
733 Lazelle Union Road Building	Maidsville	Monongalia	21,000	21,000	2.00	21,000		■	■				7.4	2.7
D&H Warehouse	Keyser	Mineral	18,000	18,000		18,000		■	■				84.4	19.3
Upper Potomac Ind. Pk., Schwab Building	Cumberland	Allegany	10,000	10,000		65,000						■	115	1.25
FS-4 Space at Mountaineer Mall	Morgantown	Monongalia	10,000	10,000		10,000					■			2.3
Thomas Property #2	Friendsville	Garrett	6,772	6,772	0.16	6,772						■	93	0.5
Myers Property	McHenry	Garrett	6,624	6,624	0.63	6,624					■	■	101	8
Tabor Property	Friendsville	Garrett	4,016	4,016	0.14	4,016			■		■	■	93	0.5
Swift Property	Oakland	Garrett	3,600	3,600	0.92	3,600				■	■	■	113	26
Dry Dock Plaza—Suite 1	Oakland	Garrett	3,022	3,022	2.53	3,022					■	■	106	17
KFC Building	Oakland	Garrett	2,660	2,660	1.27	2,660						■	112	25

SITE/BUILDING NAME	CITY	COUNTY	AVAILABLE SIZE		TOTAL SIZE		PROPERTY TYPE						DISTANCE TO	
			MIN	MAX	ACRES	BUILDING (SQ. FT.)	VACANT LAND	IND./MFG.	WHSE./DISTR.	FLEX	OFFICE	RETAIL	COMMERCIAL AIRPORT	NEAREST INTERSTATE
SITES			**IN ACRES**											
Barton Business Park	Cumberland	Allegany	100	100			■						112	6.7
Valley Industrial Park	Reedsville	Preston	2	85	129.00		■	■					15.4	12
Pres-Mon Site	Hazelton	Preston	78	78	78.68		■						22	0.25
TAZ Industrial Site	Hazelton	Preston	70	70	70.00		■						23	1.2
Fort Ashby Business and Technology Park	Fort Ashby	Mineral	3	58	70.00			■					88.6	16.5
Maidsville Landing Site	Maidsville	Monongalia	58	58	58.49		■						9	7.8
Former TAZ Hardwoods Co., Inc., Ind. Site	Hazelton	Preston	41	41	41.82		■						23	1.2
Allegany Business Center	Frostburg	Allegany	40	40			■						0	
Allegany Business Center at FSU	Frostburg	Allegany	38	38			■						130	0.3
Frostburg Business Park	Frostburg	Allegany	37	37			■						100	0.5
Carpenter Property	Grantsville	Garrett	25	25	25.31	2,838	■						100	1.5
Northpointe Business & Industry Park	Hazelton	Preston	4	22	64.07			■					24	0.57
North Branch Industrial Park	Cumberland	Allegany	21	21			■						125	5.5
Morgantown Industrial Park	Morgantown	Monongalia	0	17	450.00			■					5	2.2
Keyser Industrial Park	Keyser	Mineral	5	15	211.00			■					85.7	20
Bakers Ridge Park	Morgantown	Monongalia	1	13	30.52			■					4	4
Chaplin Hill Business Park	Morgantown	Monongalia	11	11	75.00			■					6	1.5
Northpointe Bus. & Ind. Park (Lots 2 & 3)	Bruceton Mills	Preston	10	10	10.72		■	■					24	0.75
Mountainside Properties	McHenry	Garrett	7	7	7.01		■						101	8
MUG, LLC Property	Oakland	Garrett	7	7	7.71		■						101	8
Riverside Commercial and Industrial Park	Westover	Monongalia	7	7	7.77			■					5	3

SITE/BUILDING NAME	CITY	COUNTY	AVAILABLE SIZE		TOTAL SIZE		PROPERTY TYPE						DISTANCE TO	
			MIN	MAX	ACRES	BUILDING (SQ. FT.)	VACANT LAND	IND./MFG.	WHSE./DISTR.	FLEX	OFFICE	RETAIL	COMMERCIAL AIRPORT	NEAREST INTERSTATE
Riverside Industrial Park—Bldgs. 27 & 42	Cumberland	Allegany	6	6			■						0	
Public Works Complex—Lot #3	Mt. Lake Park	Garrett	3	3	3.83		■						139	27
Ridgeview Business Park	Morgantown	Monongalia	1	2	21.00			■					3	3.5
Lowe's Complex—Lot #1	Oakland	Garrett	1	1	1.60		■						112	25
Adrian Enterprises Property #1	McHenry	Garrett	1	1	1.54		■						101	8
Shaffer Building	Hazelton	Preston	6,784	6,784	4.4	6,784		■						
Pointe Plaza Commercial Property	Hazelton	Preston	0.5	7	10		■							
Keysers Ridge Business Park	Keysers Ridge	Garrett			255		■	■						0.25
McHenry Business Park	McHenry	Garrett			135		■	■					0.25	

Source: Compiled by TIP Strategies from online building and site databases maintained by each state, (MD: https://open.maryland.gov/resources/buildings-sites/ and WV: http://westvirginia.gov/sites-buildings.html).
Notes: Information is presented as displayed on the indicated websites. No available buildings were listed for Preston County at the time the information was compiled.

APPENDIX D. IMPLEMENTATION MATRIX

	POTENTIAL LEAD PARTNER(S)	TIME FRAME			
		Ongoing	Next 12 mos.	1 to 3 years	3 to 5 years
GOAL 1: MARKETING AND BUSINESS DEVELOPMENT					
Strategy 1.1. Formalize the I-68 partnership as a regional marketing coalition for industry recruitment, retention, and expansion. Utilize a range of traditional and nontraditional marketing tools to promote the I-68 region.					
1.1.1. Create an I-68 brand (logo and positioning statement) that reflects the region's unique personality and value proposition.	The Greater Cumberland Committee (TGCC), Tri-County Council		◆		
1.1.2. Develop an I-68 website.	TGCC, Tri-County Council		◆		
1.1.3. Create an I-68 social media presence and harness current partner social media activity.	TGCC, Tri-County Council		◆		
1.1.4. Utilizing both the quantitative and qualitative findings generated throughout this study, the I-68 region should create customized digital and print marketing content for each of its target industries.	TGCC, Tri-County Council		◆		
Strategy 1.2. Employ a range of strategies to bolster business development efforts.					
1.2.1. Develop an in-depth understanding of the target industries, including industry trends, participants, capital flows, and location trends.	All	◆			
1.2.2. Strengthen relationships with regional employers and work with them to identify leads from their peer networks, including customers and suppliers.	All	◆			
1.2.3. Pursue promising leads through industry research, regional networks, and targeted outreach.	All	◆			
1.2.4. Focus on recruiting firms in target industries with fewer than 50 workers to accommodate the average available building size in the region.	All		◆		
1.2.5. Identify and develop at least two larger (20 to 25 acres) shovel-ready and/or certified sites in the region to accommodate a larger industrial prospect.	All		◆		
1.2.6. Conduct annual I-68 business and/or talent recruitment missions to the three surrounding metro areas (Baltimore, Pittsburgh, and Washington, DC).	TGCC, Tri-County Council	◆			

	POTENTIAL LEAD PARTNER(S)	TIME FRAME			
		Ongoing	Next 12 mos.	1 to 3 years	3 to 5 years
GOAL 2: WORKFORCE					
Strategy 2.1. Strengthen existing partnerships and create new connections among the I-68 region's employers, economic development organizations, workforce development entities, and educational institutions to ensure that the region's business needs are being met and residents are receiving optimal skills training to advance their careers.					
2.1.1. Continue to collect input from employers and share this input widely across the education and training system.	All	◆			
2.1.2. Regularly communicate with the region's higher education institutions to facilitate information sharing.	All	◆			
2.1.3. Utilize the I-68 website to promote job opportunities and openings in the region.	TGCC	◆	◆		
2.1.4. Convene career and technical education programs in the region to ensure they are offering courses that are related to high-demand occupations.	TGCC	◆	◆		
2.1.5. Utilize partnerships with education partners to engage the region's youth, to inspire them to stay in, or return to, the community after graduation, and prepare them for becoming productive members of the region's workforce (including internships and apprenticeship programs).	All	◆	◆		
2.1.6. Support regional efforts to increase K–12 and postsecondary student achievement and the educational attainment of regional citizens and ensure they are prepared for the future workforce.	All	◆			
2.1.7. Catalog the innovative programs in public schools that strengthen their academic offerings or workforce training capacity.	TGCC	◆	◆		
Strategy 2.2. Promote the integration of soft skills and basic employability skills into regional educational curricula.					
2.2.1. Define which specific skills are valued by employers in the I-68 region and create soft-skill standards for entry-level positions across industries.	TGCC, Tri-County Council	◆	◆		
2.2.2. Share the soft-skill standards with education and training providers in the region and facilitate a discussion about how best to teach these skills.	TGCC, Tri-County Council	◆	◆		

	POTENTIAL LEAD PARTNER(S)	TIME FRAME			
		Ongoing	Next 12 mos.	1 to 3 years	3 to 5 years
2.2.3. Encourage the use of work-based learning as a means of developing soft skills by creating a database of work-based learning opportunities and sharing this across the region's education and training network so that more students have access to the opportunities.	All	◆			
2.2.4. Support additional initiatives to teach soft skills by identifying funding opportunities and collaborating on the initiatives to optimize the return on investment of any funding secured.	All	◆			
Strategy 2.3. Cultivate an active community alumni network that can serve as a larger talent pool beyond the region boundaries.					
2.3.1. Partner with local high school and college alumni networks to contact former residents and promote career opportunities in the region.	All	◆	◆		
2.3.2. Consider leveraging an existing ambassador group to implement a social media campaign such as #ComeHomeToI-68 or #10ReasonsToReturn. In the posts, highlight such items as new employers, new employment opportunities, and new quality of life amenities.	TGCC	◆		◆	
2.3.3. Facilitate the development of summer internship, apprenticeship, and/or mentorship programs so that college students returning home for the summer can connect with local employers.	TGCC, workforce development organizations	◆			◆
Strategy 2.4. Utilize tourism as a talent attraction strategy. Work with various tourism destinations to capture visitor contact information and promote employment opportunities to those individuals.	TGCC, tourism organizations	◆	◆		
GOAL 3: SMALL BUSINESS AND ENTREPRENEURSHIP					
Strategy 3.1. Position and promote I-68 as a "front door" of entry to regional entrepreneurship and small business programs and services.	TGCC, Tri-County Council	◆		◆	
Strategy 3.2. Bolster entrepreneurial support resources in the region. Create a regional resource guide and promote it on the I-68 website.	TGCC, Tri-County Council, higher education institutions				◆
Strategy 3.3. Consider developing a coworking space that can be utilized by regional partners. This facility will help expand networking channels and relationship development among regional businesses to foster solidarity, learning, and collaboration.	TGCC				◆

	POTENTIAL LEAD PARTNER(S)	TIME FRAME			
		Ongoing	Next 12 mos.	1 to 3 years	3 to 5 years
Strategy 3.4. Encourage all the region's higher education institutions to expand their focus on entrepreneurship curriculum as a way to enhance economic growth and retain graduates in the region.	All	◆			
Strategy 3.5. Encourage "grassroots" innovation among K–12 students and young adults throughout the community by facilitating the creation of programs at local educational institutions that emphasize innovation, technology commercialization, and business development.	All	◆			
Strategy 3.6. Consider developing a "reverse-pitch" program in partnership among the region's businesses, small businesses, and entrepreneurs. Catalog business needs and invite the region's current and prospective small businesses and entrepreneurs to make a "pitch" to them.	TGCC, Tri-County Council				◆
Strategy 3.7. Explore the establishment of an innovation center to solve opportunities and problems faced by regional industries.					
3.7.1. Support this initiative with teams from target industries in the region.	TGCC, major employer				◆
3.7.2. Explore the potential for spin-off companies and technologies from existing companies in the region.	All				◆
3.7.3. Expand efforts to conduct research and development (R&D) in the region to encourage commercialization and the development of clusters.	All	◆			
3.7.4. Connect research activities and technological innovation occurring at West Virginia University and Frostburg State University to the private sector. Ensure their discoveries are translated into jobs, investments, or other benefits.	All	◆			
3.7.5. Work with the region's major employers and medical complexes to attract R&D spending from the region's universities.	All	◆			
3.7.6. Align research, education, and entrepreneurial resources with target industries.	All	◆			
3.7.7. Engage officials at I-68 higher education institutions to learn how to potentially replicate commercialization programs that have been successful.	TGCC, Tri-County Council	◆			