



BRISTOL AREA (TN-VA) 2040 TARGET SECTOR ANALYSIS & MARKETING REVIEW

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TARGET SECTOR ANALYSIS

As the Bristol area pursues a collective vision for its future – branded Bristol 2040 – to ensure that population and economic growth create wealth, enhance quality of life, and strengthen its appeal as a destination for companies, visitors, and talent, an important focus area is identifying opportunities to promote the community as a place to launch, grow, and locate a business. **This Target Sector Analysis provides insight into key industry sectors that would gain the most benefit from economic development intervention.**

For individuals and households, standards of living are closely linked with economic opportunity. If more people at a variety of skill levels are able to find jobs that pay good wages and offer possibilities for advancement, levels of prosperity will rise. At the regional level, wealth accumulates through a combination of outside investment into a community and local firms “exporting” goods and services to other markets.

Accordingly, communities around the country seek to grow jobs and investment by identifying and strategically pursuing “target” business sectors as part of a holistic approach to community and economic development. At its core, a targeted approach allows communities to direct finite resources toward areas of their economy that have the best near-term potential for growth. A best-practice approach to targeting further acknowledges that jobs and investment can be achieved in three ways: attracting outside businesses to a community, ensuring that existing businesses can grow and thrive, and supporting new business startups. **These economic development interventions – attraction, retention, and entrepreneurship – are sometimes likened to a “three-legged stool.”**

Central to economic development targeting activity is the idea that community and economic development resources are limited. As a result of this limitation, communities must focus economic development resources on opportunities with the potential to yield the most fruit. Often this results in focusing resources on specific sectors of the economy that reflect a region’s competitive strengths in terms of its existing business, workforce, infrastructure, and asset base.

Market Street identified these business sectors through a dual approach, both from the “ground up” encompassing an extensive “internal” analysis of the community’s workforce, economic, and asset composition and an “external” examination of metropolitan economies of the Texas Triangle and trade flows between these larger metropolitan areas. **This Target Sector Analysis outlines a recommended set of targets for Bristol area public and private leaders to pursue in order to make the community a more prosperous and successful place.**

TARGETED ECONOMIC DEVELOPMENT: A PRIMER

CLUSTERS: Agglomerations – or “clusters” – represent groups of interrelated businesses that choose to co-locate. Clustering can occur among competing or cooperative firms for a variety of different reasons. A group of suppliers may choose to locate in proximity to a major manufacturer for research and development efficiencies and reduced transportation costs. Other firms may co-locate in a specific area in order to take advantage of a specialized labor pool or to be in close proximity to specific infrastructure.

While the factors that have led to clustering vary tremendously by region and sector, such agglomerations occur over time because a location has an asset base that affords the sector and the companies that operate within them some form of competitive advantage.

TARGETS: A targeted sector – or simply a “target” – is any type of business activity that is strategically pursued by an economic development organization and its partners for quality growth and development. Targets are typically those segments of an economy where competitive advantages exist, prospects for future growth are greatest, and return on investment is likely highest. At its core, targeting is an intentional practice of aligning resources with the needs, vision, and underlying competitive advantages of the community.

TRADED AND NON-TRADED SECTORS: Businesses that can sell a product or service to a consumer or end user outside of the Bristol area, whether abroad or elsewhere in the U.S., bring new wealth into the community. This wealth then recirculates in the local economy, creating even more jobs and wealth – a so-called “multiplier” effect. Economists refer to jobs in the export-oriented sectors as “traded” or “basic” employment. By contrast, non-traded or non-basic sectors sell to markets within the region and typically expand as a result of population growth. Their potential to bring in significant wealth from outside the community is limited. Location quotients above 1.0 typically indicate that the sector has expanded beyond just the local market.

UNDERSTANDING AND LEVERAGING YOUR ASSET BASE: Strategic targeting is predicated upon a solid understanding of a community’s strengths, specifically as they relate to the needs of key business sectors and the companies that operate within them. Likewise, an understanding of its deficiencies in terms of such site location factors will help the community identify areas that need further investment if the community wishes to transform such deficiencies into future assets.

A HOLISTIC APPROACH: For decades many communities and their economic development organizations have exclusively associated “economic development” with “business recruitment.” While the recruitment of new companies is an important component of any targeted economic development program, it is only “one leg of the stool.” Any effort to develop target sectors and nurture employment growth within them must focus upon the needs of existing businesses as well as entrepreneurs.

TARGET SECTOR ANALYSIS: APPROACH AND METHODS

Market Street’s approach to target identification is rooted in a complete examination of a community’s strengths and opportunities, including talent – the occupations and types of knowledge that support the region’s business activities. This comprehensive, interrelated process stands in contrast to the traditional “top-down” approach long utilized in target sector identification and analysis. It recognizes the increasing importance of talent and workforce sustainability to the business community. It is complemented by an evaluation of the community’s business climate, networks, infrastructure, research assets, educational programs, and other factors that influence site location decisions.

CLASSIFICATION: Our approach does not define targets strictly based on North American Industry Classification System (NAICS) codes or Standard Occupational Classification (SOC) codes. Though these codes are used to help quantify important trends and activity within each target, they should not be

interpreted as rigid definitions of the composition of economic activity within a given target. Classification systems do not adequately capture certain niche technologies and opportunities that may deserve strategic attention in certain communities.

GEOGRAPHY: The research related to business sector and occupational composition within this report is based on analysis of trends observed in the Bristol area, defined as Bristol, TN-VA, Sullivan County, Tennessee, and Washington County, Virginia, consistent with the Community Assessment. To understand the community's competitive dynamics, this report also considers the cities of Bristol, TN-VA, represented by an aggregation of ZIP code data covering 24201, 24202, 24203, 24209, 37620, 37621, and 37625 as well as the Tri-Cities consolidated statistical area (CSA) inclusive of the Kingsport-Bristol-Bristol, TN-VA and Johnson City, TN MSAs.

LOCATION QUOTIENTS: Location quotients (LQs) are used to measure the relative concentration of local employment in a given business sector or occupation. When applied to business sector employment, they measure the ratio of a business sector's share of total local employment to that business sector's share of total national employment. A business sector with LQ of 1.0 is exactly the same share of total local employment as that business sector's share of national employment. When a local business sector has a location quotient greater than 1.0, it signals that the business sector is more heavily concentrated in the metro than it is nationwide. Those business sectors with relatively high LQs are often assumed to benefit from one or more sources of competitive advantage derived from locating in the area being examined. Location quotients can also be applied to occupational employment in the same manner that they are applied to business sector employment, helping to determine which occupations and corresponding skill sets—irrespective of the business sectors that employ them—are highly concentrated in the local workforce.

DATA SOURCES: Unless otherwise noted, all quantitative data contained in this report is sourced from Economic Modeling Specialists International (EMSI), an industry-leading provider of proprietary data, aggregated from public sources such as the U.S. Census Bureau, the U.S. Bureau of Labor Statistics, the U.S. Bureau of Economic Analysis, the National Center for Education Statistics, CareerBuilder, and many others.

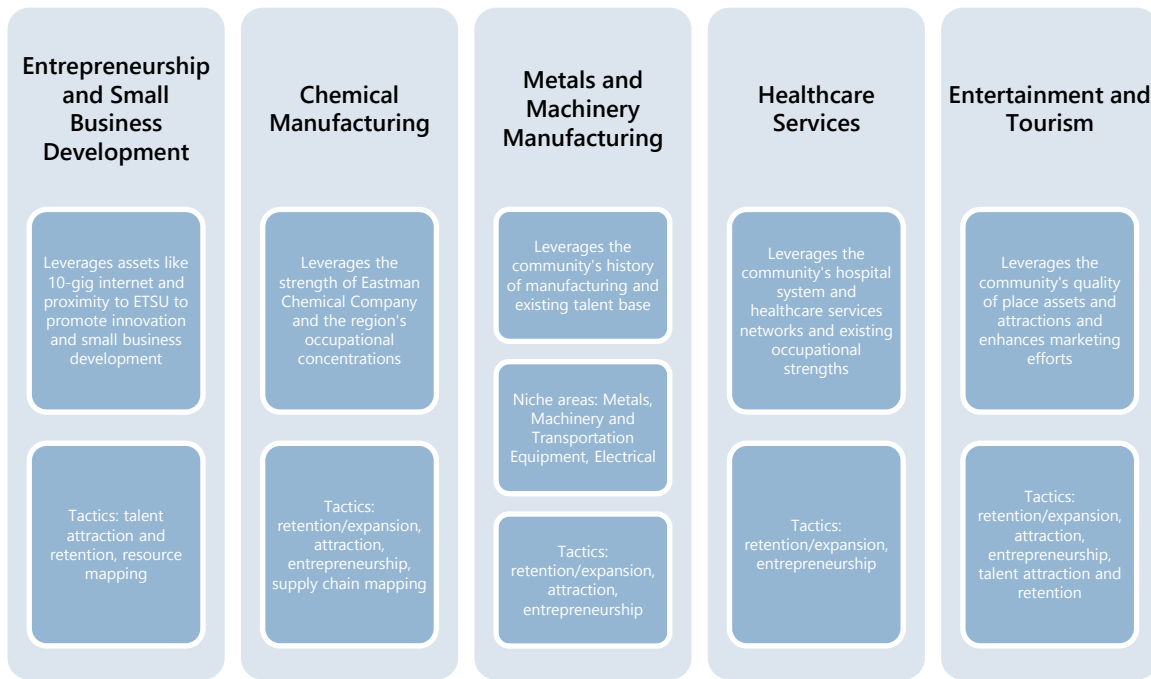
Target Sector Framework

Based on an extensive analysis of the Bristol area's economic composition and assets, Market Street recommends the following target sectors for the community to pursue over the next five years:

- Chemical Manufacturing
- Metals and Machinery Manufacturing
- Healthcare Services
- Entertainment and Tourism

A fifth category, **Entrepreneurship and Small Business Development**, is proposed to be developed in an equally targeted manner but irrespective of industry sector.

The following graphic provides highlights each of these targeted priorities.



Each section of this report provides detailed information regarding local and national employment and occupational trends, key employers, training programs, other assets, and strategic considerations.

Entrepreneurship and Small Business Development

Every new small business, start-up enterprise or entrepreneurial endeavor can one day grow to become an area's largest employer. Therefore, it is incumbent upon communities to support entrepreneurs, innovators, researchers, and fledgling small business people as robustly as possible in all facets of the development process.

Market Street does not believe that the Bristol area should currently pursue targeted development of information and communications technology (ICT), headquarters, or professional services targets due to the low concentrations in these employment sectors, the skills dynamics of its talent base, and degree-attainment focus areas and trends. This poses a challenge to make the Bristol area a more technology-intensive economy with stronger wealth creation and greater attractiveness to young talent.

However, these issues do not preclude the Bristol area from pursuing and supporting technology entrepreneurship as a way to gain a foothold in the ICT sector and slowly build competitive capacity. Lightning fast internet connection speeds, compelling quality of life amenities, low costs of living, and proximity to a state research university (ETSU) provide fertile ground to better leverage technology entrepreneurs to expand the local economy.

As a technology startup culture builds, the Bristol area will be nurturing an environment that could one day be competitive for ICT and professional services-based sectors. In the short term, enhancing the community's small business development and entrepreneurship ecosystem will pay dividends as local technology startups see improved opportunities to plan, launch, and grow businesses.

Currently, as illuminated in the Community Assessment, **small business and self-employment data show that the Bristol area largely trails its comparison areas in terms of enterprise creation capacity and growth intensity.** Existing small business owners would like to see improvements in the local entrepreneurial ecosystem, including greater funding access, awareness of available resources, networking opportunities, and innovation spaces.

Findings from the Community Assessment included:

- In 2017, 23.2 percent of employees in the Bristol Area were employed at firms with less than 50 employees, a proportion lower than in all other comparison geographies except Spartanburg County. Over the five-year period examined, the Bristol Area also experienced the most rapid decrease in this measure (-3.2 percentage points, compared to only 1.0 percentage points nationally).
- Only 6.9 percent of all workers in the Bristol area are employed at firms in their first five years of existence, lower than every other geography examined and more than four points lower than the national average. The Bristol area experienced the most rapid decrease in this measure as well.

- Nearly 6 percent of all jobs in the Bristol Area are held by the self-employed, lagging all comparison geographies except Spartanburg County and Virginia. The Bristol area experienced the most rapid decrease between 2012 and 2017 in this measure as well.
- There is no institutional research conducted in the Bristol area, although nearby East Tennessee State University has intensified efforts to improve its research capacity, output, and technology commercialization processes.

In order to reverse these trends and create an environment where small business owners and entrepreneurs thrive, the Bristol area must leverage its assets and step up efforts to coordinate, collaborate, and fill in gaps.

TRAINING PROGRAMS

Increasingly, education and training institutions are recognizing that there are key skill sets, process knowledge, and mindsets necessary to foster entrepreneurship and are responding with customized programming to support local subject-matter experts' forays into enterprise development. There are currently two entrepreneurship-specific higher education programs in the Tri-Cities region.

- ✓ ETSU offers an entrepreneurship minor that prepares undergraduate students for conceptualizing, starting, and managing a business venture. Spanning six departments, coursework includes marketing, web design, entrepreneurial mindset, small business management, and various electives such as grant writing, personal finance, law and intellectual property for musicians, and corporate etiquette. The university also has a master's degree program in technology with a concentration in entrepreneurial leadership.
- ✓ Northeast State Community College offers a certificate program in entrepreneurship. The program provides students with knowledge related to establishing and managing a business, small business marketing, tax and license requirements, financing, and more.

There are also K-12 opportunities in the Bristol area introducing students to concepts and opportunities in entrepreneurship.

- ✓ The Career and Technical Education program at Bristol, VA Public Schools has curricula that expose students to career exploration topics that include entrepreneurship and small business ownership as a focus area.
- ✓ Within Bristol, TN City Schools, various campuses have created activities to promote entrepreneurship. For example, in 2016 and 2017, fifth grade teachers at Holston View Elementary School hosted a *Shark Tank*-style pitch competition for their students, giving them the experience of imagining or creating a product, developing a marketing plan to sell it, and listening to constructive feedback.

PLACE-BASED ASSETS

The Bristol area and larger Tri-Cities region have the “bones” of a successful entrepreneur-friendly community. There are several assets throughout the community that can be leveraged to further build and grow a healthy ecosystem.

- ✓ One of the most critical connectivity factors in modern communities is accessibility to competitive high-speed broadband communications; increasingly, companies, entrepreneurs, and even households are seeking speeds of at least 1 gigabit to access the internet and send/receive files. In many rural communities, broadband infrastructure is limited and prohibitively expensive to build. However, the Bristol area boasts access to a high speed fiber optic internet network with speeds up to 10 gigabytes. This network is a significant competitive advantage for the area.
- ✓ Based in Johnson City, the Angel Roundtable is an ad hoc network of investors, entrepreneurs, and other business leaders in Northeast Tennessee, Southwest Virginia, and Western North Carolina who provide angel funding for late seed and early stage entrepreneurial opportunities in technological sectors, financial services, life sciences, clean energy, chemical manufacturing, and more. The investment potential ranges from \$75,000 to \$1 million.
- ✓ Believe in Bristol is a non-profit in the heart of Bristol, TN-VA dedicated to promoting downtown and working on initiative to ensure that it continues to grow and thrive. In 2017, Believe in Bristol hosted a Downtown Bristol Entrepreneur Grants Program. The competition was funded through the Tennessee and Virginia Main Street programs and Well Fargo. Believe in Bristol received 58 applications, and 18 small business owners were selected to participate in a nine-week training program called Co.Starters. From that pool, six (three business from each side of the state line) were selected to receive \$10,000 grants. 2017 was the first year of the program’s history that more than one small business owner received funding.
- ✓ In 2018, Bristol, TN-VA, the Bristol Chamber of Commerce, and Startup Tri-Cities partnered to host the Tri-Cities Small Business Festival during National Small Business Week. The festival was a three-day event with events in Bristol, Johnson City, and Kingsport and included various networking opportunities and workshops about topics of interest to burgeoning entrepreneurs.
- ✓ Johnson City is home to multiple co-working and incubation spaces available to entrepreneurs and small business owners.
- ✓ The Virginia Highlands Small Business Incubator is located in Abingdon, VA. The facility has a resident program in which approved start-up businesses can utilize affordable office space and shared resources. There are also conference rooms and office spaces that can be rented. In addition, the incubator features manufacturing spaces with loading bays.
- ✓ The Holston Business Development Center is an incubator located in Kingsport. The center is a 13,000 square foot facility with 22 business suites that can be utilized for office space and light manufacturing. The incubator offers low rent, consulting services, and shared spaces and services.

- ✓ The East Tennessee State University Innovation Lab is located in Johnson City, and is a full-service small business incubator for technology start-up and spin-off companies with a goal of generating technology transfers, creating jobs, and enhancing economic development within the Tri-Cities region. The Innovation Lab is an initiative of ETSU, the Tennessee Small Business Development Center, and the ETSU Entrepreneurial Leadership Program.
- ✓ ACCEL Now, located in Kingsport, is an accelerator that provides various resources to entrepreneurs, including training, mentoring, access to capital, and networking opportunities.
- ✓ Square One is a new co-working facility located in Erwin, TN. It has flexible meeting space, a private office, six-co-working desks, white boards, and a high definition monitor television. Individuals can rent desks or the private office for as short a period of time as a day.
- ✓ Other resource centers in the region that provide assistance to small business owners include:
 - Startup Tri-Cities is a network of entrepreneurs and organizations in Bristol, Kingsport, and Johnson City that provides resources and mentoring to prospective and existing entrepreneurs.
 - Tennessee Small Business Development Center at Johnson City is located at ETSU is in the U.S. Small Business Administration (SBA) network and provides various business assistance, including business plan development, financial planning assistance, access to capital, marketing plan development, growth planning, government contracting advising, and more.
 - The Kingsport Office of Small Business and Entrepreneurship is a joint venture by the Kingsport Chamber and the City of Kingsport to provide business training, technical assistance, and advising services to small business owners.

STRATEGIC CONSIDERATIONS

- ✓ The Bristol area should find or create ways to leverage its 10 gigabyte internet infrastructure as a marketing asset to attract talent and prospective entrepreneurs, particularly those with professional, scientific, and technical services knowledge and skills.
- ✓ Entrepreneurs and small business owners in the area have identified lack of awareness of various resources as a major challenge. Ensuring that there is a dedicated entity that entrepreneurs and small business owners can go to in order to seek information would be helpful to supporting these individuals.
- ✓ Hosting networking events for entrepreneurs and small business owners is important so that they can expand their contacts and develop partnerships, collaborations, and local supply chain linkages.
- ✓ Developing co-working, incubation, and/or maker spaces in the Bristol area would fill a need in the area. As well, increased awareness is needed for the incubator that currently exists in Abingdon, VA.

- ✓ Finding ways to take advantage of the emerging collaboration between Ballad Health, ETSU, and the ETSU Research Foundation to increase patent production and technology transfers will have strong development value.

Chemical Manufacturing

Eastman Chemical Company, whose global headquarters is located in Kingsport, TN, is an anchor company for the entire Tri-Cities region. The nearly 7,000 employee manufacturing facility is one of the largest chemical manufacturing sites in North America and produces hundreds of various chemicals, fibers, plastics, and other advanced materials found in end products including paint, textiles, pharmaceuticals, medical devices, tires, and even food and beverage. In 2015, 76.2 percent of workers employed in the City of Kingsport lived elsewhere, including over 1,100 residents of Bristol, TN-VA. This data illustrates the importance of the Chemical Manufacturing as well as the impact of regionalism—the Bristol area benefits from the growth of this sector, even when jobs are not directly located there.

Because of Eastman's large-scale operations, there are prime upstream and downstream opportunities for the Bristol area, as evidenced by the already high concentrations of business activity in various chemical, plastics, fabrics, rubber, and other materials, including those related to packaging, in the area. A core tenet of cluster-development theory, firms tend to locate near other companies in their industry for three reasons: 1) access to shared infrastructure, inputs, and supply chains; 2) access to larger pools of prepared workers; and 3) the ability to share knowledge and ideas. Thus, it follows that companies who are or could be suppliers to Eastman, or those who can distribute or further transform Eastman products into final products, would benefit from close proximity to the manufacturer.

The Chemical Manufacturing target includes subsectors related to basic inorganic chemical manufacturing; resin, synthetic rubber, and artificial and synthetic fibers and filaments manufacturing; pharmaceutical preparation manufacturing; textile and fabric finishing and fabric coating mills; sugar and confectionery product manufacturing; plastics product manufacturing; rubber product manufacturing; glass product manufacturing; various types of container manufacturing; pulp, paper, and paperboard mills; and commercial printing.

KEY LOCAL EMPLOYERS

Employers supporting this target in the Bristol Area include Eastman Chemical Company, Domtar Paper Company, and Primester in Kingsport; Seaman Corporation and UPM Pharmaceuticals in Bristol, TN; and Strongwell, Permatile, Shearer's Foods, and Universal Fibers in Bristol, VA.

NATIONAL TRENDS

The chemical industry is a compelling one because the products that are imagined and created support the notion of a "world of things." As illustrated by the lengthy, and sometimes seemingly unrelated, list of subsectors for this target, chemicals are a component of nearly every product we consume, from various objects that we touch, the materials that are used to build our offices and homes, our food, our medicine, and so much more. Therefore, the chemical industry, its raw materials, and the products that are made using chemicals are wide-reaching and stand to be a viable sector for years to come.

Projections for growth in chemicals, including those derived from fossil fuels, are strong despite emerging threats to the industry such as sustainability concerns, global consumption trends, and digitization. According to McKinsey&Company, last decade's growth rate for petrochemicals was 3.6 percent. They project that this rate will decrease by 0.5 and 2.0 percentage points over the next ten years, depending on assumptions for regional GDP growth, and other factors. However, petrochemical usage is not expected to peak for decades.

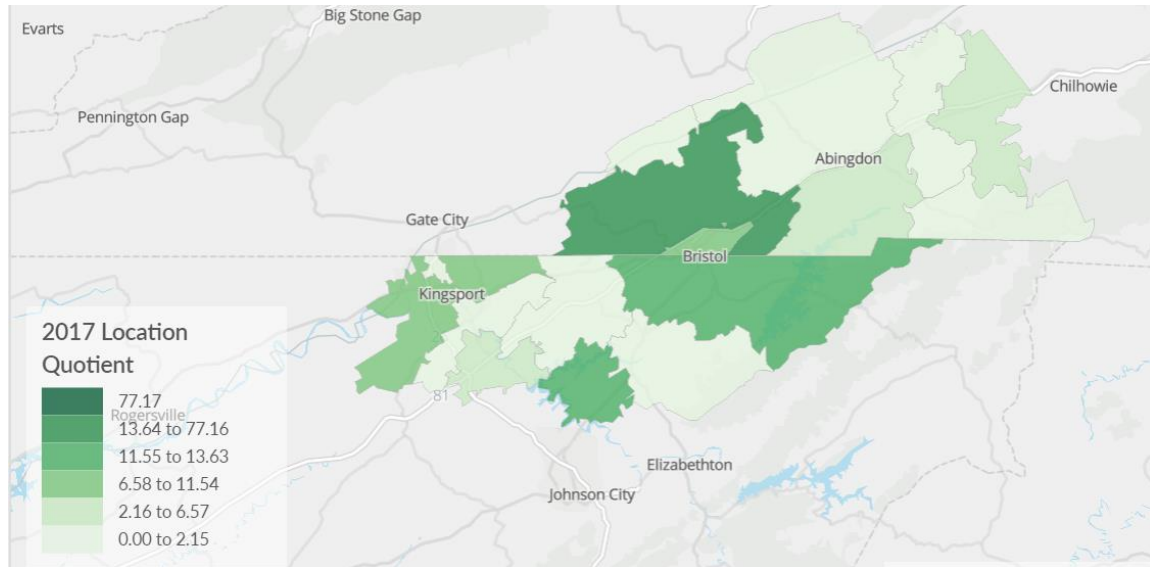
Employment in the Chemical Manufacturing target is projected to decline by 6.9 percent nationally over the next ten years. This decline will be principally driven by subsectors including commercial printing, all other plastics products manufacturing, paper mills, and pharmaceutical preparation manufacturing. Although these subsectors are projected to experience job loss over the next ten years, they were included in this target given the similar workforce competencies and transferable skills among employees. On the other hand, the Chemical Manufacturing subsectors of specialty food manufacturing, urethane and other foam product manufacturing, all other rubber products manufacturing, other basic inorganic chemical manufacturing, plastics pipe and pipe fitting manufacturing, and wood container and pallet manufacturing are projected to experience national job growth over the next ten years.

GEOGRAPHIC DISTRIBUTION

Though the target is highly concentrated in a portion of the City of Kingsport (LQ = 77.17), its employment spread is distributed strongly across other parts of the Bristol area. Bristol, VA is highly concentrated (14.91), partly due to the presence of Universal Fibers. Piney Flats (represented by ZIP code 37686) has a location quotient of 12.57 for the overall target, and Bristol, TN has a location quotient of 11.55.

The broad dispersion of Chemical Manufacturing employment confirms that companies do not have to locate immediately proximate to Eastman to benefit from its output. Though it is beyond the scope of this analysis to determine the exact number of firms and jobs in the Bristol area directly linked to Eastman's supply chain, colocation with Eastman is a powerful marketing message to prospect firms in this target sector.

GEOGRAPHIC CONCENTRATIONS OF CHEMICAL MANUFACTURING BY ZIP CODE



Source: Economic Modeling Specialists, Intl. (EMSI)

The following table provides location quotients of the target subsectors for the city of Bristol, TN-VA, as defined by seven ZIP codes; the Bristol area; and the Tri-Cities CSA. This table highlights the differences in concentrations across these important geographies and reveals where the Bristol area is already strong and where opportunities exist.

LOCATION QUOTIENTS BY SUBSECTOR BY GEOGRAPHY, 2017

NAICS	Description		7-ZIP (Bristol City) 2017 LQ		Bristol Area 2017 LQ		Tri-Cities CSA 2017 LQ
325220	Artificial & Synthetic Fibers & Filaments Mfg	●	189.78	●	386.36	●	197.30
313320	Fabric Coating Mills	●	110.63	●	35.53	●	32.90
325180	Other Basic Inorganic Chemical Mfg	●	0.08	●	32.83	●	27.42
325991	Custom Compounding of Purchased Resins	●	85.62	●	26.51	●	13.34
326299	All Other Rubber Product Mfg	●	0.00	●	9.22	●	7.55
322121	Paper (except Newsprint) Mills	●	0.00	●	8.68	●	4.36
326122	Plastics Pipe & Pipe Fitting Mfg	●	0.00	●	2.72	●	3.06
322219	Other Paperboard Container Mfg	●	8.77	●	2.71	●	1.36
325412	Pharmaceutical Preparation Mfg	●	8.60	●	2.66	●	1.36
327215	Glass Product Mfg Made of Purchased Glass	●	0.00	●	2.43	●	3.45
326291	Rubber Product Mfg for Mechanical Use	●	0.00	●	2.23	●	10.54
323111	Commercial Printing (except Screen & Books)	●	3.04	●	1.81	●	1.40
326199	All Other Plastics Product Mfg	●	3.62	●	1.78	●	2.05
327211	Flat Glass Mfg	●	0.00	●	1.77	●	29.74
321920	Wood Container & Pallet Mfg	●	0.28	●	1.39	●	1.92
322211	Corrugated & Solid Fiber Box Mfg	●	3.30	●	1.34	●	0.68
326150	Urethane & Other Foam Product (except Polystyrene) Mfg	●	2.82	●	1.23	●	0.71

Source: Economic Modeling Specialists, Intl. (EMSI)

Note: Subsectors with location quotients greater than or equal to 1.1 are presented with a green dot. LQs lower than 0.9 are presented with a red dot, and LQs between 0.9 and 1.1 with a yellow dot.

- ✓ **The cities of Bristol, TN-VA have several areas of significant concentration, including subsectors for which the combined cities' location quotients exceed those of the other two geographies.** Employment within the Twin Cities is a major driver of the area's LQ for the following subsectors: fabric coating mills, custom compounding of purchased resins, other paperboard container manufacturing, pharmaceutical preparation manufacturing, commercial printing, all other plastics product manufacturing, corrugated and solid fiber box manufacturing, and urethane and other foam product manufacturing.
- ✓ The subsectors that are highly concentrated primarily due to employment in the Bristol area but outside of the city of Bristol (including Kingsport, Blountville, and Abingdon) include: artificial and synthetic fibers and filament manufacturing, other basic inorganic chemical manufacturing, all other rubber product manufacturing, and paper mills. Of these four subsectors, three have very little presence in the city of Bristol and present an opportunity for business attraction efforts.
- ✓ More opportunities exist in subsectors that are concentrated because of employment in other parts of the Tri-Cities CSA—as noted previously, it is not imperative that companies co-locate in the same city, as long as they are within regional proximity. Based on their regional presence, Bristol, TN-VA could be a contender for prospective firms in the following subsectors: flat glass manufacturing,

rubber product manufacturing for mechanical use, glass product manufacturing made of purchased glass, plastics pipe and pipe fitting manufacturing, and wood container and pallet manufacturing.

EMPLOYMENT TRENDS

The Chemical Manufacturing target is comprised of nearly 10,500 jobs, or nearly 10 percent of all jobs in the Bristol area. The subsectors within this target are highly concentrated and provide the area with a clear opportunity to leverage an anchor and grow subsectors with supply chain linkages.

BRISTOL AREA CHEMICAL MANUFACTURING EMPLOYMENT TRENDS, 2017

NAICS	Description		2017 LQ	2017 Jobs	2017 Ests.	Employment Change, 2012-2017			Wages, Salaries, & Proprietor Earnings, 2017	
						#	%	US %	Bristol Area	% of US
311340	Nonchocolate Confectionery Mfg	●	10.13	144	2	96	200%	18%	\$40,610	80.1%
311351	Chocolate & Confectionery Mfg from Cacao Beans	●	3.06	19	1	19	NA	28%	\$27,159	46.9%
311919	Other Snack Food Mfg	●	16.60	459	1	272	145%	14%	\$34,273	67.3%
313320	Fabric Coating Mills	●	35.53	177	3	40	29%	(3%)	\$51,309	84.4%
321920	Wood Container & Pallet Mfg	●	1.39	60	4	(51)	(46%)	11%	\$30,821	84.6%
322121	Paper (except Newsprint) Mills	●	8.68	331	2	(26)	(7%)	(13%)	\$98,711	119.9%
322211	Corrugated & Solid Fiber Box Mfg	●	1.34	86	2	42	95%	6%	\$42,182	66.6%
322219	Other Paperboard Container Mfg	●	2.71	47	1	2	4%	3%	\$41,117	77.1%
323111	Commercial Printing (except Screen & Books)	●	1.81	408	17	(10)	(2%)	(6%)	\$45,431	89.9%
325180	Other Basic Inorganic Chemical Mfg	●	32.83	867	1	NA	NA	(2%)	\$85,393	89.1%
325220	Artificial & Synthetic Fibers & Filaments Mfg	●	386.36	6,475	3	(350)	(5%)	(3%)	\$98,829	127.3%
325412	Pharmaceutical Preparation Mfg	●	2.66	365	7	88	32%	(0%)	\$87,886	74.0%
325991	Custom Compounding of Purchased Resins	●	26.51	320	2	270	540%	10%	\$40,769	67.5%
326122	Plastics Pipe & Pipe Fitting Mfg	●	2.72	51	1	NA	NA	4%	\$45,565	84.6%
326150	Urethane & Other Foam Product (except Polystyrene) Mfg	●	1.23	30	1	30	NA	17%	\$29,978	60.6%
326199	All Other Plastics Product Mfg	●	1.78	357	6	59	20%	12%	\$49,055	98.1%
326291	Rubber Product Mfg for Mechanical Use	●	2.23	45	2	(178)	(80%)	10%	\$42,753	82.0%
326299	All Other Rubber Product Mfg	●	9.22	158	2	NA	NA	2%	\$57,394	109.5%
327211	Flat Glass Mfg	●	1.77	13	0	(47)	(78%)	20%	\$86,252	149.8%
327215	Glass Product Mfg Made of Purchased Glass	●	2.43	77	2	19	33%	15%	\$51,252	101.5%
Total, Downstream Chemical Products Manufacturing		●	10.99	10,488	60	1,350	15%	3%	\$84,441	75.7%

Source: Economic Modeling Specialists, Intl. (EMS)

Employment growth is color-coded such that growing sectors are presented in black text and declining sectors in red text. Those with location quotients greater than or equal to 1.1 are presented with a green dot. LQs lower than 0.9 are presented with a red dot, and LQs between 0.9 and 1.1 with a yellow dot.

- ✓ Overall, the target added 1,350 jobs in the Bristol area between 2012 and 2017, at a rate (15 percent) higher than the national average. The area has had success in growing a variety of manufacturing operations. The fastest growing subsectors in the target are custom compounding of purchased resins (540 percent; 270 net new jobs), nonchocolate confectionery manufacturing

(200 percent; 96 jobs), other snack food manufacturing (145 percent; 272 jobs), corrugated and solid fiber box manufacturing (95 percent; 42 jobs), glass product manufacturing made of purchased glass (33 percent; 19 jobs), and pharmaceutical preparation manufacturing (32 percent; 88 jobs).

- ✓ **A testament to the strength of these subsectors in the Bristol area, the overall Chemical Manufacturing target is 11 times more concentrated than the average American community.** There are several subsectors with location quotients exceeding 3.0: artificial and synthetics and filaments manufacturing (386.36); fabric coating mills (35.53); other basic inorganic chemical manufacturing (32.83); custom compounding of purchased resins (26.51); all other rubber product manufacturing (9.22); and paper mills (8.68).
- ✓ **The jobs in the target provide an average annual wage of \$84,441, over double the Bristol area's overall average wage of \$41,638.** Thirteen of the 20 subsectors provide annual wages exceeding the area average. The target's average annual wage is roughly three-fourths of the U.S. average, which is not completely offset by lower local costs of living. However, this target has historically and continues to be a prime opportunity for upward mobility for workers across an array of skills.

CHEMICAL MANUFACTURING, CURRENT AND PROJECTED IMPACTS

NAICS	Description	2017 Comp- etitive Effect	2017 Demand			2017 Exported Sales		Projected Employment Change, 2017-2027		
			Total (millions)	% Met In- Region	% Met by Imports	\$ (millions)	% of Total Sales	#	%	US %
311340	Nonchocolate Confectionery Mfg	125	\$5.87	52%	48%	\$48.80	94%	(57)	(40%)	7%
311351	Chocolate & Confectionery Mfg from Cacao Beans	18	\$2.87	63%	38%	\$2.69	60%	NA	NA	6%
311919	Other Snack Food Mfg	175	\$14.50	34%	66%	\$191.83	98%	34	7%	3%
313320	Fabric Coating Mills	(16)	\$1.12	98%	2%	\$41.93	97%	(10)	(6%)	(2%)
321920	Wood Container & Pallet Mfg	(91)	\$8.13	64%	36%	\$4.02	44%	(47)	(78%)	1%
322121	Paper (except Newsprint) Mills	145	\$24.20	81%	19%	\$270.08	93%	22	7%	(21%)
322211	Corrugated & Solid Fiber Box Mfg	(9)	\$43.56	9%	91%	\$18.79	83%	(7)	(8%)	(2%)
322219	Other Paperboard Container Mfg	23	\$9.98	8%	92%	\$11.50	93%	(5)	(11%)	4%
323111	Commercial Printing (except Screen & Books)	49	\$26.83	16%	84%	\$62.63	94%	(126)	(31%)	(18%)
325180	Other Basic Inorganic Chemical Mfg	78	\$51.06	91%	9%	\$637.57	93%	160	18%	2%
325220	Artificial & Synthetic Fibers & Filaments Mfg	952	\$6.68	100%	0%	\$4,021.38	100%	(1,597)	(25%)	(13%)
325412	Pharmaceutical Preparation Mfg	(139)	\$84.41	30%	70%	\$195.12	88%	(56)	(15%)	(4%)
325991	Custom Compounding of Purchased Resins	211	\$6.43	67%	33%	\$89.80	95%	256	80%	(3%)
326122	Plastics Pipe & Pipe Fitting Mfg	49	\$6.53	7%	93%	\$11.25	96%	26	51%	2%
326150	Urethane & Other Foam Product (except Polystyrene) Mfg	30	\$6.42	9%	91%	\$5.80	91%	29	97%	6%
326199	All Other Plastics Product Mfg	118	\$51.78	14%	86%	\$104.94	94%	(79)	(22%)	(5%)
326291	Rubber Product Mfg for Mechanical Use	(145)	\$4.96	12%	88%	\$10.88	95%	NA	NA	(8%)
326299	All Other Rubber Product Mfg	158	\$4.31	46%	54%	\$51.83	96%	0	0%	(7%)
327211	Flat Glass Mfg	(225)	\$1.31	92%	8%	\$4.42	79%	NA	NA	7%
327215	Glass Product Mfg Made of Purchased Glass	15	\$5.06	64%	36%	\$14.96	82%	40	52%	(3%)
Total, Downstream Chemical Products Manufacturing		1,522	\$366.01	39%	61%	\$5,800.21	98%	(1,476)	(14%)	(7%)

Source: Economic Modeling Specialists, Intl. (EMSI)

- ✓ Unfortunately, if all trends remain the same, employment is projected to decline over the next decade. Firms such as Dr. Reddy's Laboratories Tennessee LLC, Coyne International Enterprises Corp., SunChemical Corporation, and Ball North American Metal Beverage Package have closed or relocated in recent years, adding to community concerns of historical shuttering over many years due to global changes that have left a tangible need for replacement opportunities for workers who may not have high levels of education but have skills related to manufacturing operations.
 - Despite overall trends, there are seven subsectors that are projected to grow at rates more rapid than the nation. These include other snack food manufacturing; paper mills; other basic inorganic chemical manufacturing; custom compounding of purchased resins; plastics pipe and pipe fitting manufacturing; urethane and other foam product manufacturing; and glass product manufacturing made of purchased glass.
 - Recent announcements of relocations and expansions in the Bristol area include: Anita's Snack Foods, Microporous, Corrugated Container Corporation, Seaman Corporation, and Neopharma.
- ✓ Many advanced manufacturing sectors offer valuable export opportunities. An overwhelming 98 percent of 2017 total sales by subsectors in the Chemical Manufacturing target were export sales (or \$5.8 billion), leaving only 2 percent generated in-region. The distributed employment impact of the Chemical Manufacturing target is therefore significant.
- ✓ **In 2017, 61 percent of the demand of firms in the Chemical Manufacturing target was filled outside of the Bristol area**, an indication that there are opportunities to attract businesses who can meet those needs at a closer proximity.

OCCUPATIONAL TRENDS

Manufacturing occupations can no longer fit in a box of production occupations—this target is supported by positions that run the gamut from engineers and scientists with bachelor's and graduate degrees, technicians with associate degrees or specialized certifications, and production workers with high school diplomas or no formal training. The following table presents top occupations related to the Chemical Manufacturing target.

BRISTOL AREA OCCUPATIONAL TRENDS, 2017

SOC	Description		2017 LQ	2017 Jobs	Employment Change, 2012-2017			Average Hourly Earnings, 2017	
					#	%	US %	Bristol Area	% of US
11-1021	General & Operations Managers	●	0.76	1,167	8	1%	16%	\$49.14	83.2%
11-3051	Industrial Production Managers	●	1.53	184	(28)	(13%)	8%	\$57.38	109.2%
17-2041	Chemical Engineers	●	8.87	210	44	27%	4%	\$47.83	88.5%
17-2112	Industrial Engineers	●	1.44	259	19	8%	20%	\$41.24	95.0%
17-2141	Mechanical Engineers	●	1.96	396	(24)	(6%)	16%	\$49.71	113.2%
17-3026	Industrial Engineering Technicians	●	2.14	98	(3)	(3%)	(3%)	\$22.34	80.4%
17-3029	Engineering Technicians, Exc. Drafters, All Other	●	4.66	255	32	14%	17%	\$32.36	104.3%
19-2031	Chemists	●	2.90	167	4	2%	(1%)	\$40.41	102.7%
19-2032	Materials Scientists	●	4.99	27	(13)	(33%)	(5%)	\$47.99	98.0%
19-4031	Chemical Technicians	●	7.07	315	48	18%	7%	\$25.33	103.3%
41-4011	Sales Representatives, Wholesale & Mfg, Technical & Scientific Products	●	1.39	329	(100)	(23%)	(10%)	\$39.31	89.5%
41-4012	Sales Representatives, Wholesale & Mfg, Exc. Tech & Scientific Products	●	0.56	549	(195)	(26%)	(2%)	\$27.72	85.7%
43-5061	Production, Planning, & Expediting Clerks	●	1.00	239	(5)	(2%)	20%	\$25.68	109.0%
43-5081	Stock Clerks & Order Fillers	●	1.47	2,042	163	9%	13%	\$11.80	89.2%
49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	●	1.24	407	(4)	(1%)	8%	\$29.93	91.6%
49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	●	4.01	205	(57)	(22%)	(6%)	\$27.75	99.1%
49-9041	Industrial Machinery Mechanics	●	2.78	665	32	5%	13%	\$25.04	98.4%
49-9071	Maintenance & Repair Workers, General	●	1.19	1,213	(1)	(0%)	9%	\$18.96	98.0%
51-1011	First-Line Supervisors of Production & Operating Workers	●	1.58	664	(56)	(8%)	7%	\$33.06	110.6%
51-2020	Electrical, Electronics, & Electromechanical Assemblers	●	1.49	278	(26)	(9%)	7%	\$15.21	90.6%
51-2021	Coil Winders, Tapers, & Finishers	●	3.10	29	(11)	(28%)	(4%)	\$17.44	103.5%
51-2028	Electrical, Electronic, & Electromechanical Assemblers, Exc. Coil Winders, Tapers, & Finishers	●	1.41	249	(15)	(6%)	7%	\$14.95	89.1%
51-2098	Assemblers & Fabricators, All Other, Including Team Assemblers	●	0.78	693	(207)	(23%)	3%	\$15.92	99.7%
51-3092	Food Batchmakers	●	0.95	98	48	96%	53%	\$16.37	110.2%
51-4020	Forming Machine Setters, Operators, & Tenders, Metal & Plastic	●	2.11	169	(86)	(34%)	(10%)	\$18.38	101.8%
51-6060	Textile Machine Setters, Operators, & Tenders	●	1.99	102	24	31%	(1%)	\$14.44	103.9%
51-6091	Extruding & Forming Machine Setters, Operators, & Tenders, Synthetic & Glass Fibers	●	8.23	108	19	21%	11%	\$19.61	117.1%
51-6092	Fabric & Apparel Patternmakers	●	0.29	<10	NA	NA	(26%)	NA	NA
51-8091	Chemical Plant & System Operators	●	12.24	250	(76)	(23%)	(19%)	\$26.03	87.9%
51-9011	Chemical Equipment Operators & Tenders	●	17.98	950	289	44%	37%	\$27.22	111.7%
51-9012	Separating, Filtering, Clarifying, Precipitating, & Still Machine Setters, Operators, & Tenders	●	2.65	89	4	5%	17%	\$19.05	93.2%
51-9023	Mixing & Blending Machine Setters, Operators, & Tenders	●	1.11	98	(37)	(27%)	12%	\$18.29	98.2%
51-9041	Extruding, Forming, Pressing, & Compacting Machine Setters, Operators, & Tenders	●	3.26	169	(9)	(5%)	11%	\$15.97	93.8%
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	●	1.47	549	19	4%	18%	\$19.91	100.4%
51-9111	Packaging & Filling Machine Operators & Tenders	●	0.31	83	(49)	(37%)	7%	\$17.58	114.3%
51-9196	Paper Goods Machine Setters, Operators, & Tenders	●	4.18	266	31	13%	(1%)	\$16.03	83.9%
51-9198	Helpers--Production Workers	●	1.48	400	(113)	(22%)	(4%)	\$13.51	100.1%
51-9199	Production Workers, All Other	●	2.03	383	(1)	(0%)	15%	\$16.81	104.0%
53-7051	Industrial Truck & Tractor Operators	●	0.79	309	(46)	(13%)	16%	\$16.43	96.6%
53-7062	Laborers & Freight, Stock, & Material Movers, Hand	●	0.90	1,679	220	15%	25%	\$12.42	86.8%
53-7064	Packers & Packagers, Hand	●	1.06	510	(11)	(2%)	6%	\$11.45	93.3%

Source: Economic Modeling Specialists, Intl. (EMSI)

- ✓ **The workforce in the Bristol area is a clear competitive advantage for attracting and growing Chemical Manufacturing jobs.** The region possesses a high concentration of jobs in several key occupations, indicative of the community's long manufacturing history. Many of the occupations included in the preceding table are also supportive of the Metals and Machinery target and can and should be leveraged for additional growth within both targets. The following list is a sample of occupations across the skills spectrum that are particularly vital to support the Chemical Manufacturing target.
 - **Chemical engineers:** There are 210 workers within this occupational group in the Bristol area. Employment has increased by 27 percent over the past five years, compared to only 4 percent nationwide. The location quotient for chemical engineers is 8.87 and the average hourly wage \$47.83 in 2017. This occupation typically requires a minimum of a bachelor's degree.
 - **Chemical technicians:** There are 315 chemical technicians in the Bristol area. The concentration of this occupation is seven times that of an average American community. Employment growth increased by 18 percent between 2012 and 2017, outpacing the national growth rate (7 percent). In 2017, the average hourly wage was \$25.33, which exceeds the national average of \$24.52. This occupation typically requires a minimum of an associate degree.
 - **Chemical equipment operators and tenders:** The Bristol area has 950 workers who operate and tend chemical equipment. The location quotient for this occupation is 17.98, and the average hourly wage is \$27.22, higher than the national average (\$24.37) and the Bristol area's overall average hourly wage across all occupations (\$20.17). The occupation has experienced a five-year growth rate of 44 percent, compared to 37 percent national growth. This occupation typically requires a high school diploma.
- ✓ The occupations most at risk of being replaced by automation are coil winders, tapers, and finishers; production workers; hand packers and packagers; and various machine operators and tenders. Research has shown that lower skilled positions are more likely to be replaced by automation because the more hands-on skills and less decision-making required in a position, the more likely a machine can be programmed to perform those tasks. This finding is a reminder that although manufacturing fields are great opportunity areas for workers without a formal education, greater opportunities exist for those workers who have obtained specialized training.
 - The good news for Chemical Manufacturing workers is that because this target depends on innovation and knowledge-based operations, many of the occupations related to the target are not at risk of being replaced by automation, signalled by Automation Index figures of less than 100.
- ✓ It is important to note that there are a handful of Chemical Manufacturing occupations that have low concentrations. In addition, four of these six occupations have experienced a decline in employment over the five-year period examined. During stakeholder input sessions, employers noted that they

often have difficulty hiring trainable workers who can pass drug tests. This is an area that soft skills training and career exposure initiatives may impact.

- ✓ **The Tri-Cities CSA has many resources and supporting institutions in place to help grow the Chemical Manufacturing target.** The region's pre-K-12 and postsecondary institutions have a variety of programs and initiatives to support the community's manufacturing sector.
 - Eastman Chemical Company invests in workforce training through formal apprenticeship programs that support 11 occupations.
 - Between 2012 and 2017, 1,651 degrees and certificates related to chemistry, biochemistry, biology, biomedicine, and engineering were awarded in the Tri-Cities CSA.
 - **King University** has undergraduate degree programs in biochemistry, biology, chemistry, engineering, and physics.
 - **Emory and Henry College** has undergraduate degree programs in biology, chemistry, environmental studies, food studies, pre-engineering, and pre-health.
 - **Northeast State Community College** has a certificate program in chemical process operations and Associate of Science programs in biology, chemistry, environmental health, manufacturing technology, physics, and pre-engineering, including concentrations in chemical and mechanical.
 - However, community stakeholders have voiced the desire for a greater focus on and coordination around career and technical education (CTE). Because of the state line, there are differences in vocational and CTE programs available to students based on their residency. A top wish for stakeholders is a training center that brings students to one location and shares programs across partner institutions.

STRATEGIC CONSIDERATIONS

- ✓ Although automated and autonomous mobility technologies are being developed and piloted, **manufacturers – especially smaller firms – are often hesitant or unable to adopt and buy-in to the new technologies.** According to a recent PwC and the Manufacturing Institute's Industrial Mobility report, manufacturers cited several barriers to adoption of autonomous systems such as high costs, technology not being mature enough, safety issues, and lacking the skills to adopt and exploit semi-autonomous/autonomous mobility technology. When asked what factor would most likely prompt their company to adopt advanced industrial mobility technologies, 86 percent said once it was a cost advantage and 47 percent stated that customer and supply chain requirements and expectations. This is both an important challenge and opportunity area for the Bristol area to address.
- ✓ The Bristol area must ensure that its workforce sustainability will support growth in manufacturing sub-sectors, etc. This includes continuing to expose middle school and high school students to the

opportunities in the Bristol area that are available to them upon graduation—as well as working with companies to expand internship and apprenticeship opportunities.

Metals and Machinery Manufacturing

Tied to its rich history of mining, the Metals and Machinery Manufacturing target has legacy strength in the Bristol area. Comprised of several of the area's recognized legacy companies, the Metals and Machinery Manufacturing target includes three niches: metals, machinery and transportation equipment, and electrical. Included in the metals niche are establishments engaged in smelting and refining ferrous and non-ferrous metals and those that transform metal into intermediate or end products. The machinery and transportation niche includes establishments that create end products that apply mechanical force, for example, the application of gears and levers, to perform work as well as produce equipment for transporting people and goods, particularly automobiles, trucks, or aircraft. The electrical niche comprises manufacturers of products that generate, distribute and use electrical power.

Various components of this target is already recognized by economic development partners as important areas for investment. The Washington County, VA Department of Economic Development and Community Relations lists Metal Manufacturing and Transportation Equipment Manufacturing as two of its economic development focus areas. NETWORKS Sullivan Partnership lists Steels and Metals, Automotive Suppliers, and Aerospace as three of its targeted sectors.

KEY LOCAL EMPLOYERS

Key metals manufacturers in the Bristol area include Bristol Metals LLC, Kinkead Machine Co., Modern Forge Tennessee, Tennessee Investment Casting, Thompson Metal Services, Hirschfield Industries, Leonard Iron and Metal, and Virginia Insulated Products. Machinery and transportation equipment manufacturers include Aeronautical Accessories, Bell Helicopter, Columbus McKinnon Corporation, Dana Incorporated, Electro Motor Inc., Kingsport Armature and Electric, and General Engineering Company. Electrical manufacturers in the area include Electro-Mechanical Corporation, Line Power Manufacturing, and Microporous LLC.

NATIONAL TRENDS

Nationally, the manufacturing sector in the United States suffered heavy losses during the Great Recession. In addition to the negative effect caused by the economic downturn, the decline was also brought about by increasing global competition, labor cost differentials, and automation, among other factors. Over the past five years, U.S. employment in Metals and Machinery Manufacturing has rebounded and employment is up 4.5 percent. Manufacturing remains an important part of the nation's economy; data illustrates that it will continue to be an important source of wealth. It is also necessary to differentiate manufacturing employment from productive output. As an industry, manufacturing is innovating to compete globally; this typically results in increased output as formerly manned jobs are automated. Thus, productivity increases, but employment does not. This is good for the regional economy, but does not accrue benefits equally to the production-oriented workforce.

There are numerous positive signs that support manufacturing growth in the United States. For instance, although large plants and developments make the headlines, many new projects represent smaller

manufacturing projects with less than 100 jobs. As noted, while automation and other technological advancements have reduced the number of workers necessary to manufacture certain products, it has also shifted the scale of operations towards smaller facilities. Overall, the average size of a manufacturing establishment (of any kind) was 36.1 employees in 2017, down from 38.7 in 2007. **These changes in production processes have also led to heightened educational and skill requirements for many production occupations.**

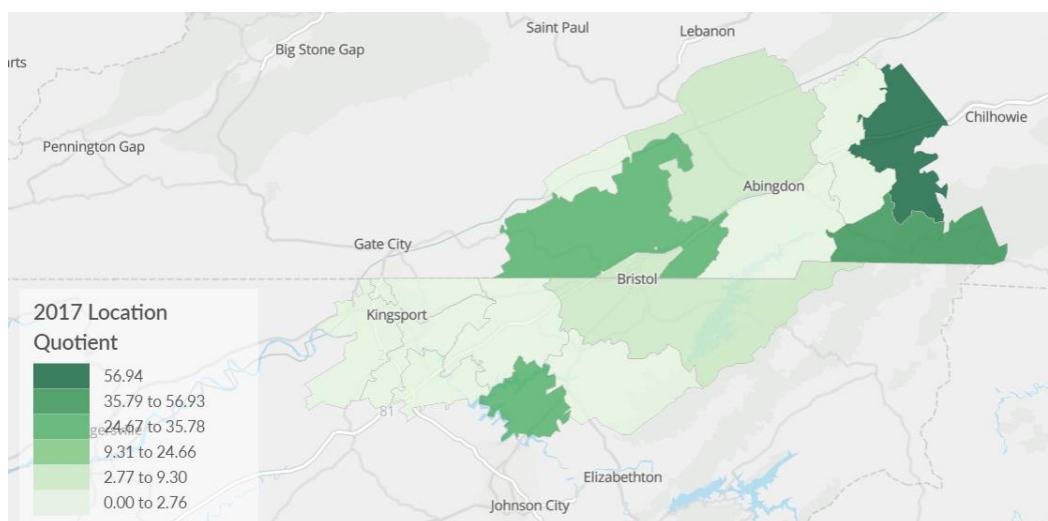
There is also the growing trend of companies “reshoring” manufacturing operations from other countries back to the United States that has helped to contribute to growth in new manufacturing operations across the country. Rising wages overseas have contributed to an erosion of labor-cost advantages in many regions. According to a report by the Manufacturing Institute and Deloitte, half of manufacturing company executives reported that they would consider reshoring by 2020.ⁱ

Employment in the Metals and Machinery Manufacturing target is projected to grow by 1.1 percent nationally over the next ten years. Job growth will be driven by storage battery manufacturing, travel trailer and camper manufacturing, mining machinery and equipment manufacturing, automobile manufacturing, other aircraft parts and auxiliary equipment manufacturing, truck trailer manufacturing, and iron and steel pipe and tube manufacturing from purchased steel. Employment within each of these subsectors is projected to increase by more than 5 percent.

GEOGRAPHIC DISTRIBUTION

When the target is examined across all niches, it is well distributed throughout the Bristol area, with its highest concentrations in Glade Spring (represented by ZIP code 24340), Damascus (24236), Piney Flats (37686), Bristol, VA (24202 and 24201), Bristol, TN (37621 and 37620), and Abingdon (24210).

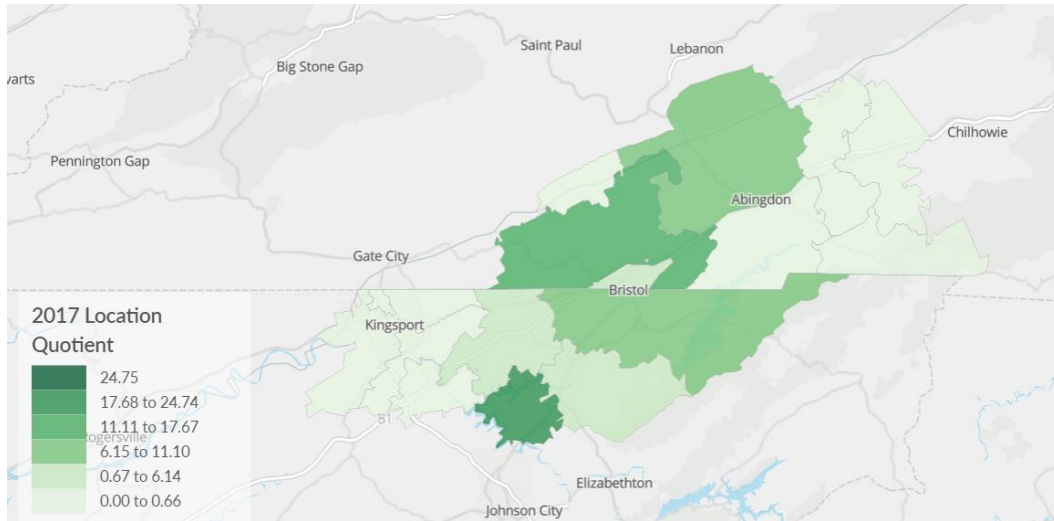
GEOGRAPHIC CONCENTRATIONS OF METALS AND MACHINERY MANUFACTURING BY ZIP CODE



Source: Economic Modeling Specialists Intl. (EMSI)

Likewise, there is broad representation of metals manufacturing across the Bristol area. The highest concentrations of metal manufacturing are in Bristol, TN (LQ = 24.75), home of Bristol Metals and Tennessee Investment Casting; Piney Flats (17.68), home of Modern Forge Tennessee and Electro Motors; Bristol, VA (11.11), home of Hirschfield Industries, Metal Casting Company, and Becker Global America; and Abingdon (6.58), home of Appalachian Cast Products and Virginia Metals.

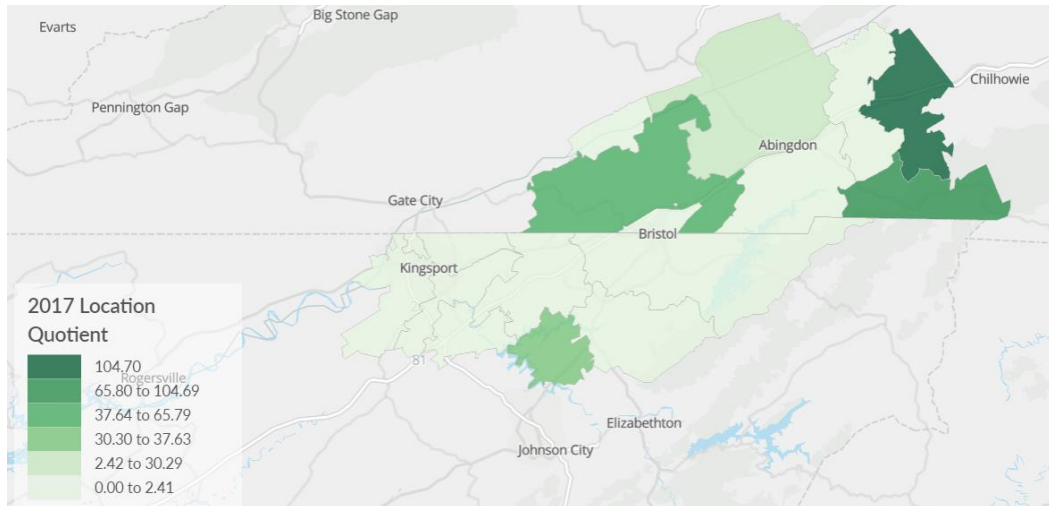
GEOGRAPHIC CONCENTRATIONS OF METALS MANUFACTURING NICHE BY ZIP CODE



Source: Economic Modeling Specialists, Intl. (EMSI)

Large concentrations of machinery and transportation equipment manufacturing are largely on the Virginia side of the area, including Glade Spring (LQ = 104.70), home of Glade Machine and Utility Trailer Manufacturing; Damascus (65.80), where Columbus McKinnon Corporation is located; Bristol (37.64), the location of Becker Global America and Zenith Fuel Systems; and Abingdon (2.42), the location of Carter Machinery, General Engineering, and Damascus Equipment. Piney Flats, TN (represented by 37686) has a location quotient of 30.30 and is home to Aeronautical Accessories and Bell Helicopter.

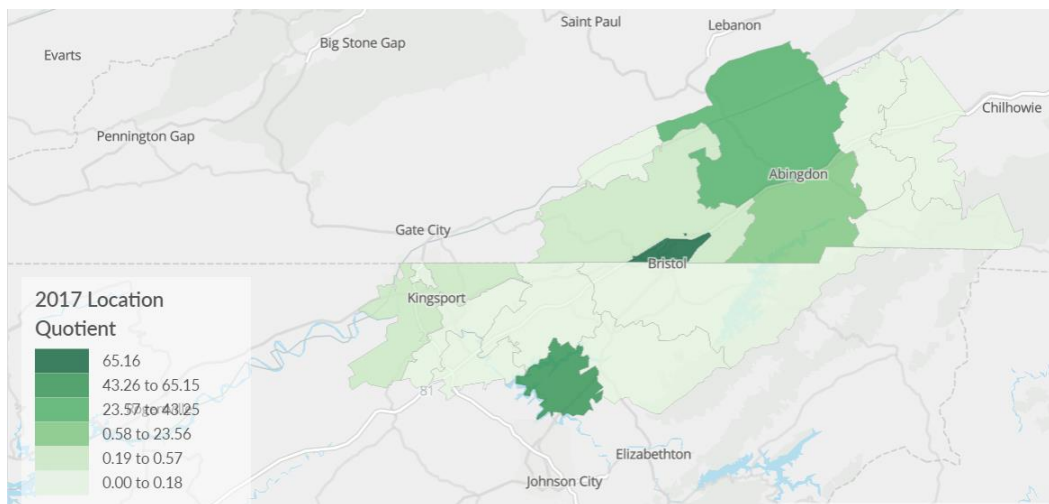
GEOGRAPHIC CONCENTRATIONS OF MACHINERY AND TRANSPORTATION EQUIPMENT MANUFACTURING NICHE BY ZIP CODE



Source: Economic Modeling Specialists, Intl. (EMSI)

The electrical manufacturing niche is primarily located in Bristol, VA (LQ = 65.16), where Aerus and Line Power Manufacturing are located; Piney Flats (43.26), where Microporous is located; and Abingdon (23.57), where General Engineering is based.

GEOGRAPHIC CONCENTRATIONS OF ELECTRICAL MANUFACTURING NICHE BY ZIP CODE



Source: Economic Modeling Specialists, Intl. (EMSI)

The following table provides location quotients of the target subsectors for the city of Bristol, TN-VA, as defined by seven ZIP codes; the Bristol area; and the Tri-Cities CSA. This table highlights the differences in concentrations across these geographies and reveals where the Bristol area is already strong and opportunities exist.

LOCATION QUOTIENTS BY SUBSECTOR BY GEOGRAPHY, 2017

NAICS	Description		7-ZIP (Bristol City) 2017 LQ		Bristol Area 2017 LQ		Tri-Cities CSA 2017 LQ
Metals							
331210	Iron & Steel Pipe & Tube Mfg from Purchased Steel	●	25.75	●	7.95	●	4.00
331318	Other Aluminum Rolling, Drawing, & Extruding	●	28.05	●	8.66	●	4.39
331512	Steel Investment Foundries	●	19.30	●	8.47	●	4.26
331523	Nonferrous Metal Die-Casting Foundries	●	5.36	●	4.63	●	2.33
331524	Aluminum Foundries (except Die-Casting)	●	3.01	●	2.60	●	1.31
332111	Iron & Steel Forging	●	0.00	●	12.93	●	8.88
332312	Fabricated Structural Metal Mfg	●	5.16	●	2.54	●	1.34
332313	Plate Work Mfg	●	7.58	●	3.88	●	1.95
332431	Metal Can Mfg	●	6.20	●	1.91	●	0.96
332721	Precision Turned Product Mfg	●	0.00	●	1.62	●	0.82
332722	Bolt, Nut, Screw, Rivet, & Washer Mfg	●	0.00	●	1.30	●	0.66
332813	Electroplating, Plating, Polishing, Anodizing, & Coloring	●	2.77	●	1.37	●	2.53
332912	Fluid Power Valve & Hose Fitting Mfg	●	4.04	●	1.25	●	0.63
Machinery and Transportation Equipment							
333131	Mining Machinery & Equipment Mfg	●	0.00	●	6.16	●	16.67
333243	Sawmill, Woodworking, & Paper Machinery Mfg	●	6.77	●	2.09	●	1.05
333415	Air-Conditioning & Warm Air Heating Equipment & Commercial & Industrial Refrigeration Equipment Mfg	●	30.72	●	12.29	●	6.18
333514	Special Die & Tool, Die Set, Jig, & Fixture Mfg	●	0.00	●	2.25	●	1.32
333923	Overhead Traveling Crane, Hoist, & Monorail System Mfg	●	0.00	●	19.39	●	9.75
333999	All Other Miscellaneous General Purpose Machinery Mfg	●	1.71	●	2.55	●	1.50
336111	Automobile Mfg	●	0.72	●	2.28	●	1.15
336211	Motor Vehicle Body Mfg	●	0.00	●	1.05	●	0.53
336212	Truck Trailer Mfg	●	0.00	●	21.94	●	11.05
336214	Travel Trailer & Camper Mfg	●	0.08	●	1.53	●	0.79
336310	Motor Vehicle Gasoline Engine & Engine Parts Mfg	●	27.41	●	8.60	●	4.34
336413	Other Aircraft Parts & Auxiliary Equipment Mfg	●	0.00	●	2.92	●	1.47
Electrical							
335129	Other Lighting Equipment Mfg	●	0.00	●	20.87	●	10.50
335210	Small Electrical Appliance Mfg	●	0.29	●	6.47	●	3.25
335311	Power, Distribution, & Specialty Transformer Mfg	●	20.81	●	6.43	●	3.23
335313	Switchgear & Switchboard Apparatus Mfg	●	38.10	●	15.63	●	7.88
335911	Storage Battery Mfg	●	0.00	●	2.62	●	1.32

Source: Economic Modeling Specialists, Intl. (EMSI)

Note: Subsectors with location quotients greater than or equal to 1.1 are presented with a green dot. LQs lower than 0.9 are presented with a red dot, and LQs between 0.9 and 1.1 with a yellow dot.

- ✓ The cities of Bristol, TN-VA have several areas of significant concentration, including subsectors for which location quotients exceed those of the Bristol area and the Tri-Cities CSA. This is a sign of major competitive advantages within the Metals and Machinery Manufacturing target.

- Within the metals niche, these subsectors include those related to primary metal manufacturing (NAICS codes beginning with 331); fabricated structured metal manufacturing; plate work manufacturing; metal can manufacturing; electroplating, plating, polishing, anodizing, and coloring; and fluid power valve and hose fitting manufacturing.
- Within the machinery and transportation equipment niche, there are three subsectors with location quotients that exceed those of the other two geographies: sawmill, woodworking, and paper machinery manufacturing; air-conditioning and warm air heating equipment and commercial and industrial refrigeration equipment manufacturing; and motor vehicle gasoline engine and engine parts manufacturing.
- Related to the electrical niche, there are two subsectors for which Bristol, TN-VA has significant concentration: power, distribution, and specialty transformer manufacturing and switchgear and switchboard apparatus manufacturing.
- ✓ The subsectors that are highly concentrated primarily due to employment in the Bristol area but outside of the city of Bristol include: iron and steel forging; precision turned product manufacturing; bolt, nut, screw, rivet, and washer manufacturing; special die and tool, die set, jig, and fixture manufacturing; overhead traveling crane, hoist, and monorail system manufacturing; all other miscellaneous general purpose machinery manufacturing; automobile manufacturing; truck trailer manufacturing; travel trailer and camper manufacturing; other aircraft parts and auxiliary equipment manufacturing; other lighting equipment manufacturing; small electrical appliance manufacturing; and storage battery manufacturing.
- ✓ A burgeoning opportunity for the Bristol area is in aerospace, propelled forward by the Tri-Cities Airport's Aerospace Park. The 160-acre park is a joint venture by the Tri-Cities Airport; NETWORKS Sullivan Partnership; Northeast Tennessee Regional Economic Partnership (NeTREP); the cities of Bristol, Kingsport, and Johnson City, TN; Sullivan County, TN; and Washington County, TN. Site construction for the park is scheduled for completion in 2020, and 32 acres are currently available for development. Once the total site is complete, the airport will seek certification of the site through the Tennessee Department of Economic and Community Development's Select Tennessee Site program. The goal for the park is to attract firms related to maintenance, repair and overhaul (MRO) operations, completion and delivery centers, passenger to freighter conversion centers, and manufacturers. Leaders estimate that the park will create between 1,500 and 2,000 jobs.
 - Recently, the Tri-Cities Airport Authority was awarded a \$1.69 million grant from the Tennessee Department of Transportation's Aeronautics Economic Development Fund to support the development of the Aerospace Park. The Aerospace Park received a \$4.1 million grant from this source in the FY 2018 award cycle, the largest award of the cycle.
 - Currently, NETWORKS sends staff to the MRO Americas Aviation Week Conference, the only trade show the economic development organization invests in. The annual conference is for airline and aviation leaders and features workshops and symposiums focused on what's

new in technology operations, industry challenges and issues, and expectations from the aftermarket.

EMPLOYMENT TRENDS

The Metals and Machinery Manufacturing target is highly concentrated in the Bristol area, with subsectors that provide job opportunities for workers with various levels of skills and wage levels that appeal to both employer and worker. One area of concern is that, overall, the target has shed jobs between 2012 and 2017.

BRISTOL AREA METALS AND MACHINERY MANUFACTURING EMPLOYMENT TRENDS, 2017

Employment Change, 2012-2017									Wages, Salaries, & Proprietor Earnings, 2017	
NAICS	Description		2017 LQ	2017 Jobs	2017 Ests.	#	%	US %	Bristol Area	% of US
Metals										
331210	Iron & Steel Pipe & Tube Mfg from Purchased Steel	●	7.95	138	1	(145)	(51%)	(7%)	\$44,001	63.7%
331318	Other Aluminum Rolling, Drawing, & Extruding	●	8.66	164	1	37	29%	8%	\$53,889	96.6%
331512	Steel Investment Foundries	●	8.47	69	2	55	393%	2%	\$40,433	70.8%
331523	Nonferrous Metal Die-Casting Foundries	●	4.63	80	1	(67)	(46%)	7%	\$39,283	76.1%
331524	Aluminum Foundries (except Die-Casting)	●	2.60	30	1	(2)	(6%)	2%	\$55,714	107.2%
332111	Iron & Steel Forging	●	12.93	188	1	(32)	(15%)	(12%)	\$43,035	66.7%
332312	Fabricated Structural Metal Mfg	●	2.54	152	9	(73)	(32%)	5%	\$52,690	92.4%
332313	Plate Work Mfg	●	3.88	116	1	(200)	(63%)	(10%)	\$51,942	89.6%
332431	Metal Can Mfg	●	1.91	25	0	(98)	(80%)	(5%)	\$56,181	76.1%
332721	Precision Turned Product Mfg	●	1.62	44	2	12	38%	2%	\$48,660	92.3%
332722	Bolt, Nut, Screw, Rivet, & Washer Mfg	●	1.30	34	1	10	42%	3%	\$37,060	59.7%
332813	Electroplating, Plating, Polishing, Anodizing, & Coloring	●	1.37	56	4	44	367%	(4%)	\$36,160	77.1%
332912	Fluid Power Valve & Hose Fitting Mfg	●	1.25	29	2	18	164%	(5%)	\$45,067	64.2%
Machinery and Transportation Equipment										
333131	Mining Machinery & Equipment Mfg	●	6.16	38	2	(122)	(76%)	(34%)	\$85,850	121.0%
333243	Sawmill, Woodworking, & Paper Machinery Mfg	●	2.09	19	1	NA	NA	2%	\$86,212	131.3%
333415	Air-Conditioning & Warm Air Heating Equipment & Commercial & Industrial Refrigeration Equipment Mfg	●	12.29	721	4	(124)	(15%)	7%	\$44,544	77.9%
333514	Special Die & Tool, Die Set, Jig, & Fixture Mfg	●	2.25	96	4	(11)	(10%)	(3%)	\$52,972	88.0%
333923	Overhead Traveling Crane, Hoist, & Monorail System Mfg	●	19.39	181	1	(61)	(25%)	2%	\$64,329	102.9%
333999	All Other Miscellaneous General Purpose Machinery Mfg	●	2.55	67	2	NA	NA	(2%)	\$54,828	82.9%
336111	Automobile Mfg	●	2.28	191	1	NA	NA	20%	\$56,473	68.9%
336211	Motor Vehicle Body Mfg	●	1.05	39	1	(40)	(51%)	10%	\$10,403	19.3%
336212	Truck Trailer Mfg	●	21.94	539	1	209	63%	8%	\$27,119	58.1%
336214	Travel Trailer & Camper Mfg	●	1.53	47	2	(87)	(65%)	51%	\$26,424	49.3%
336310	Motor Vehicle Gasoline Engine & Engine Parts Mfg	●	8.60	373	3	146	64%	11%	\$53,617	85.0%
336413	Other Aircraft Parts & Auxiliary Equipment Mfg	●	2.92	211	2	(238)	(53%)	2%	\$74,875	102.1%
Electrical										
335129	Other Lighting Equipment Mfg	●	20.87	114	1	(16)	(12%)	(10%)	\$64,932	106.9%
335210	Small Electrical Appliance Mfg	●	6.47	49	1	(119)	(71%)	(8%)	\$45,331	72.1%
335311	Power, Distribution, & Specialty Transformer Mfg	●	6.43	112	1	(68)	(38%)	3%	\$56,859	83.3%
335313	Switchgear & Switchboard Apparatus Mfg	●	15.63	348	2	104	43%	8%	\$47,330	66.7%
335911	Storage Battery Mfg	●	2.62	33	1	(270)	(89%)	31%	\$18,740	29.0%
Total, Metals and Machinery Manufacturing		●	5.29	4,304	56	(860)	(17%)	(3%)	\$47,903	76.5%

Source: Economic Modeling Specialists, Intl. (EMS)

Employment growth is color-coded such that growing sectors are presented in black text and declining sectors in red text. Those with location quotients greater than or equal to 1.1 are presented with a green dot. LQs lower than 0.9 are presented with a red dot, and LQs between 0.9 and 1.1 with a yellow dot.

- ✓ **Companies in this target are the source of over 4,000 jobs in the Bristol area.** Although the overall target shed 860 jobs over the five year period examined, there are nine subsectors that experienced significant employment growth, even when compared to national growth in these subsectors.
- ✓ **The overall Metals and Machinery Manufacturing target is over five times more concentrated than the average American community, a clear sign of competitive advantage in the Bristol area.** Out of the 30 total subsectors, 15 have location quotients exceeding 3.0.
 - Within the metals niche, the subsectors with the greatest levels of concentration are iron and steel forging (LQ = 12.93), other aluminium rolling, drawing, and extruding (8.66), steel investment foundries (8.47), iron and steel pipe and tube manufacturing from purchased steel (7.95), nonferrous metal die-casting foundries (4.63), and plate work manufacturing (3.88).
 - Within the machinery and transportation equipment niche, the subsectors with location quotients greater than 3.0 include: truck trailer manufacturing (21.94), overhead traveling crane, hoist, and monorail system manufacturing (19.39), air-conditioning and warm air heating equipment and commercial and industrial refrigeration equipment manufacturing (12.29), motor vehicle gasoline engine and engine parts manufacturing (8.60), and mining machinery and equipment manufacturing (6.16).
 - All five subsectors in the electrical niche are highly concentrated. Other lighting equipment manufacturing has an LQ of 20.87, and switchgear and switchboard apparatus manufacturing, 15.63.
- ✓ **The jobs in the target provide an average annual wage of \$47,903, higher than the area average of \$41,638 but 76.5 percent of the U.S. average. This finding can be considered a double-edged sword. While low wages make the region an attractive destination for employers, it can cause difficulty in attracting and retaining workers.**
 - There are six subsectors in which the average worker in the Bristol area earns more than the national average for that subsector: aluminium foundries; mining machinery and equipment manufacturing; sawmill, woodworking, and paper machinery manufacturing; overhead traveling crane, hoist, and monorail system manufacturing; other aircraft parts and auxiliary equipment manufacturing; and other lighting equipment manufacturing.
 - There are 22 subsectors that offer average annual wages of greater than the area average of \$41,638. This is important to note because it illustrates the diversity of opportunity across skill sets for workers in the Bristol area.

METALS AND MACHINERY MANUFACTURING, CURRENT AND PROJECTED IMPACTS

		2017 Comp- etitive Effect	2017 Total Demand			2017 Exported Sales		Projection Employment Change, 2017-2027		
NAICS	Description		Total	% Met In- Region	% Met by Imports	#	% of Total Sales	#	%	US %
			(millions)			(millions)				
Metals										
331210	Iron & Steel Pipe & Tube Mfg from Purchased Steel	(143)	\$5.79	28%	72%	\$33.95	96%	(38)	(28%)	5%
331318	Other Aluminum Rolling, Drawing, & Extruding	131	\$12.36	28%	72%	\$73.12	95%	(20)	(12%)	(6%)
331512	Steel Investment Foundries	22	\$1.91	33%	67%	\$11.35	95%	6	9%	(8%)
331523	Nonferrous Metal Die-Casting Foundries	(88)	\$5.07	24%	76%	\$11.90	91%	(58)	(73%)	(14%)
331524	Aluminum Foundries (except Die-Casting)	12	\$3.45	24%	76%	\$6.13	88%	(7)	(23%)	(10%)
332111	Iron & Steel Forging	16	\$7.75	28%	72%	\$39.57	95%	(32)	(17%)	(5%)
332312	Fabricated Structural Metal Mfg	23	\$18.81	33%	67%	\$33.31	84%	50	33%	(0%)
332313	Plate Work Mfg	(119)	\$9.54	39%	61%	\$25.57	87%	(96)	(83%)	2%
332431	Metal Can Mfg	(205)	\$3.90	42%	58%	\$8.44	84%	NA	NA	(5%)
332721	Precision Turned Product Mfg	22	\$10.46	23%	77%	\$10.33	81%	12	27%	2%
332722	Bolt, Nut, Screw, Rivet, & Washer Mfg	35	\$11.55	34%	66%	\$6.64	63%	12	35%	(0%)
332813	Electroplating, Plating, Polishing, Anodizing, & Coloring	26	\$16.04	9%	91%	\$7.48	84%	22	39%	(6%)
332912	Fluid Power Valve & Hose Fitting Mfg	14	\$5.86	47%	53%	\$4.75	63%	13	45%	(1%)
Machinery and Transportation Equipment										
333131	Mining Machinery & Equipment Mfg	(306)	\$1.07	21%	79%	\$13.49	98%	(26)	(68%)	13%
333243	Sawmill, Woodworking, & Paper Machinery Mfg	10	\$2.86	28%	72%	\$5.88	88%	10	53%	(13%)
333415	Air-Conditioning & Warm Air Heating Equipment & Commercial & Industrial Refrigeration Equipment Mfg	(391)	\$31.52	36%	64%	\$179.17	94%	(383)	(53%)	(7%)
333514	Special Die & Tool, Die Set, Jig, & Fixture Mfg	14	\$6.93	16%	84%	\$10.90	91%	(18)	(19%)	(7%)
333923	Overhead Traveling Crane, Hoist, & Monorail System Mfg	(9)	\$3.58	40%	60%	\$73.06	98%	(63)	(35%)	2%
333999	All Other Miscellaneous General Purpose Machinery Mfg	58	\$5.25	20%	80%	\$16.61	94%	52	78%	(1%)
336111	Automobile Mfg	179	\$57.63	69%	31%	\$80.46	67%	130	68%	8%
336211	Motor Vehicle Body Mfg	(48)	\$10.65	21%	79%	\$0.25	10%	(27)	(69%)	(0%)
336212	Truck Trailer Mfg	267	\$7.61	44%	56%	\$103.11	97%	168	31%	6%
336214	Travel Trailer & Camper Mfg	(52)	\$10.41	51%	49%	\$4.71	47%	(25)	(53%)	16%
336310	Motor Vehicle Gasoline Engine & Engine Parts Mfg	240	\$14.01	40%	60%	\$173.86	97%	90	24%	0%
336413	Other Aircraft Parts & Auxiliary Equipment Mfg	(8)	\$10.07	53%	47%	\$88.64	94%	(134)	(64%)	8%
Electrical										
335129	Other Lighting Equipment Mfg	105	\$1.12	42%	58%	\$32.93	98%	(7)	(6%)	(4%)
335210	Small Electrical Appliance Mfg	(27)	\$1.33	18%	82%	\$8.39	97%	28	57%	(7%)
335311	Power, Distribution, & Specialty Transformer Mfg	(10)	\$4.85	18%	82%	\$25.64	97%	(23)	(21%)	3%
335313	Switchgear & Switchboard Apparatus Mfg	348	\$6.07	45%	55%	\$75.52	96%	67	19%	3%
335911	Storage Battery Mfg	(625)	\$2.91	10%	90%	\$3.90	93%	NA	NA	31%
Total, Metals and Machinery Manufacturing		(512)	\$290.33	39%	61%	\$1,169.05	80%	(297)	(7%)	2%

Source: Economic Modeling Specialists, Intl. (EMSI)

- ✓ In line with most manufacturing sectors, Metals and Machinery Manufacturing is a traded sector with sizable impacts resulting from the area's employment. Of 2017 total sales by subsectors in this target, 80 percent were export sales, or \$1.2 billion.

- ✓ In 2017, 61 percent of the demand of firms in the Metals and Machinery Manufacturing target was filled outside of the Bristol area, an indication that there are opportunities to attract businesses who can meet those needs at a closer proximity.

OCCUPATIONAL TRENDS

As highlighted in the Chemical Manufacturing target, manufacturing occupations are no longer limited to production. The Metals and Machinery Manufacturing target provides opportunities for workers with high school diplomas or no formal training, technicians who have earned certifications and/or a two-year degree, and engineers who hold undergraduate and graduate degrees.

The following table presents top occupations related to the Metals and Machinery Manufacturing target.

BRISTOL AREA OCCUPATIONAL TRENDS, 2017

SOC	Description	2017 LQ	2017 Jobs	Employment Change, 2012-2017			Average Hourly Earnings, 2017	
				#	%	US %	Bristol Area	% of US
13-1028	Buyers & Purchasing Agents	0.88	261	(33)	(11%)	4%	\$33.05	96.3%
17-2011	Aerospace Engineers	0.28	13	(15)	(54%)	(14%)	\$81.60	144.9%
17-2071	Electrical Engineers	1.41	178	29	19%	14%	\$50.33	105.6%
17-2072	Electronics Engineers, Except Computer	0.38	36	(19)	(35%)	(0%)	\$45.89	89.7%
17-2112	Industrial Engineers	1.44	259	19	8%	20%	\$41.24	95.0%
17-2131	Materials Engineers	2.64	50	14	39%	20%	\$51.54	108.7%
17-2141	Mechanical Engineers	1.96	396	(24)	(6%)	16%	\$49.71	113.2%
17-3020	Engineering Technicians, Except Drafters	2.03	617	14	2%	(3%)	\$29.07	99.8%
17-3021	Aerospace Engineering and Operations Technicians	0.97	<10	NA	NA	31%	NA	NA
47-2211	Sheet Metal Workers	1.96	191	(44)	(19%)	1%	\$20.72	83.9%
47-2221	Structural Iron & Steel Workers	1.71	90	0	0%	26%	\$19.50	71.7%
49-2092	Electric Motor, Power Tool, & Related Repairers	1.69	26	(3)	(10%)	(15%)	\$18.54	83.5%
49-2093	Electrical & Electronics Installers & Repairers, Transportation Equipment	0.61	<10	NA	NA	(26%)	NA	NA
49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	4.01	205	(57)	(22%)	(6%)	\$27.75	99.1%
49-2095	Electrical & Electronics Repairers, Powerhouse, Substation, & Relay	0.70	13	0	0%	(2%)	\$34.12	91.3%
49-2096	Electronic Equipment Installers & Repairers, Motor Vehicles	1.88	15	NA	NA	(8%)	\$16.18	93.4%
49-3011	Aircraft Mechanics and Service Technicians	0.39	52	(22)	(30%)	6%	\$40.57	129.5%
49-9041	Industrial Machinery Mechanics	2.78	665	32	5%	13%	\$25.04	98.4%
49-9071	Maintenance & Repair Workers, General	1.19	1,213	(1)	(0%)	9%	\$18.96	98.0%
51-1011	First-Line Supervisors of Production & Operating Workers	1.58	664	(56)	(8%)	7%	\$33.06	110.6%
51-2000	Assemblers & Fabricators	0.94	1,122	(306)	(21%)	3%	\$16.33	98.2%
51-2020	Electrical, Electronics, & Electromechanical Assemblers	1.49	278	(26)	(9%)	7%	\$15.21	90.6%
51-2021	Coil Winders, Tapers, & Finishers	3.10	29	(11)	(28%)	(4%)	\$17.44	103.5%
51-2028	Electrical, Electronic, & Electromechanical Assemblers, Except Coil Winders, Tapers, & Finishers	1.41	249	(15)	(6%)	7%	\$14.95	89.1%
51-2041	Structural Metal Fabricators & Fitters	1.26	68	(48)	(41%)	(0%)	\$20.36	104.6%
51-2098	Assemblers & Fabricators, All Other, Including Team Assemblers	0.78	693	(207)	(23%)	3%	\$15.92	99.7%
51-4011	Computer-Controlled Machine Tool Operators, Metal & Plastic	1.52	150	(35)	(19%)	4%	\$17.16	87.0%
51-4030	Machine Tool Cutting Setters, Operators, & Tenders, Metal & Plastic	1.91	421	(86)	(17%)	(4%)	\$15.64	89.6%
51-4041	Machinists	0.85	221	(97)	(31%)	(2%)	\$20.79	98.1%

Source: Economic Modeling Specialists, Intl. (EMSI)

BRISTOL AREA OCCUPATIONAL TRENDS, 2017, CONTINUED

SOC	Description	2017 LQ	2017 Jobs	Employment Change, 2012-2017			Average Hourly Earnings, 2017	
				#	%	US %	Bristol Area	% of US
51-4050	Metal Furnace Operators, Tenders, Pourers, & Casters	2.63	45	(8)	(15%)	(18%)	\$21.13	106.6%
51-4060	Model Makers & Patternmakers, Metal & Plastic	1.70	11	(3)	(21%)	(6%)	\$25.23	101.4%
51-4070	Molders & Molding Machine Setters, Operators, & Tenders, Metal & Plastic	1.36	155	(2)	(1%)	23%	\$19.29	118.7%
51-4071	Foundry Mold & Coremakers	2.20	21	(1)	(5%)	11%	\$18.05	103.0%
51-4072	Molding, Coremaking, & Casting Machine Setters, Operators, & Tenders, Metal & Plastic	1.28	134	(1)	(1%)	25%	\$19.49	120.7%
51-4081	Multiple Machine Tool Setters, Operators, & Tenders, Metal & Plastic	0.95	79	(8)	(9%)	41%	\$15.94	90.2%
51-4111	Tool & Die Makers	1.22	61	(30)	(33%)	(5%)	\$22.79	89.0%
51-4121	Welders, Cutters, Solderers, & Brazers	0.96	265	(73)	(22%)	13%	\$19.51	94.6%
51-4122	Welding, Soldering, & Brazing Machine Setters, Operators, & Tenders	2.51	70	(44)	(39%)	(21%)	\$21.37	115.0%
51-4190	Miscellaneous Metal Workers & Plastic Workers	1.02	69	(13)	(16%)	(5%)	\$18.30	100.7%
51-4191	Heat Treating Equipment Setters, Operators, & Tenders, Metal & Plastic	1.50	20	(2)	(9%)	(11%)	\$17.89	95.8%
51-4192	Layout Workers, Metal & Plastic	0.63	<10	NA	NA	(29%)	NA	NA
51-4193	Plating & Coating Machine Setters, Operators, & Tenders, Metal & Plastic	0.82	21	3	17%	8%	\$16.13	97.2%
51-4194	Tool Grinders, Filers, & Sharpeners	0.73	<10	NA	NA	(28%)	NA	NA
51-4199	Metal Workers & Plastic Workers, All Other	1.19	19	(7)	(27%)	8%	\$19.48	108.0%
51-9000	Other Production Occupations	1.94	3,510	75	2%	8%	\$19.88	114.6%
51-9022	Grinding & Polishing Workers, Hand	0.60	12	(12)	(50%)	(1%)	\$16.71	112.6%
51-9023	Mixing & Blending Machine Setters, Operators, & Tenders	1.11	98	(37)	(27%)	12%	\$18.29	98.2%
51-9032	Cutting & Slicing Machine Setters, Operators, & Tenders	1.06	46	0	0%	7%	\$18.39	110.5%
51-9051	Furnace, Kiln, Oven, Drier, & Kettle Operators & Tenders	1.94	24	(8)	(25%)	(10%)	\$17.21	91.1%
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	1.47	549	19	4%	18%	\$19.91	100.4%
51-9121	Coating, Painting, & Spraying Machine Setters, Operators, & Tenders	1.36	81	(24)	(23%)	9%	\$14.65	85.7%

Source: Economic Modeling Specialists, Intl. (EMSI)

- ✓ **The Metals and Machinery Manufacturing target benefits from a diverse talent pool.** The Bristol area possesses a comparatively high concentration of jobs in several key occupations across skill levels, evidence of the community's long mining and manufacturing history. The following list is a sample of occupations across the skills spectrum that are particularly key to the target.

- **Sheet metal workers:** There are 191 workers within this occupational group in the Bristol area. Employment has decreased by 19 percent over the past five years, compared to an increase of only 1 percent nationwide. The location quotient for chemical engineers is 1.96 and the average hourly wage is \$20.72 in 2017, higher than the Bristol area's overall average hourly wage across all occupations (\$20.17). This occupation typically requires a high school diploma and/or an apprenticeship.
- **Metal furnace operators, tenders, pourers, and casters:** There are 45 workers who handle metal furnaces in the Bristol area. The concentration of this occupation is nearly three times (LQ = 2.63) that of an average American community. Employment has declined by 15 percent between 2012 and 2017, less than the national employment decline (18 percent). In 2017, the average hourly wage was \$21.13, which exceeds the national average of \$19.82. This occupation typically requires no formal education or training.

- **Industrial machinery mechanics:** The Bristol area has 665 workers who maintain and repair factory equipment and other industrial machinery. The location quotient for this occupation is 2.78, and the average hourly wage is \$25.04. The occupation has experienced a five-year growth rate of 5 percent, compared to 13 percent national growth. This occupation typically requires a high school diploma.
 - **Other production occupations:** There are over 3,500 workers who actually operate the machines that physically handle and process the items being manufactured in the Bristol area. This occupation category has a location quotient of 1.94, and the average hourly wage is \$19.88, just under the Bristol area's overall average of \$20.17. The occupation has experienced employment growth of 2 percent between 2012 and 2017, compared to 8 percent nationwide. This occupation does not require any formal training.
 - **Electrical engineers:** There are 178 electrical engineers employed in the Bristol area. The location quotient for this occupation is 1.41, and the average hourly wage is \$50.33, compared to \$47.66 nationwide, a competitive advantage for the community as it attracts and retains talent. The occupation has experienced a five-year growth rate of 19 percent, compared to 14 percent national growth. This occupation typically requires a bachelor's degree.
- ✓ It is important to note that there are several occupations that have experienced a decline in employment over the five-year period examined. While automation is not likely the primary reason for this decline at this time, it could compound this existing issue in the future. Since many of these positions are those that can be filled with workers with little to no formal education, it is possible that a major factor is the prevalence of drug use, as discussed in the Community Assessment.
- ✓ Within the Tri-Cities CSA, there is one college with undergraduate degree programs and four institutions that can provide students with access to associate degree and certification programs that support the Metals and Machinery Manufacturing target: Milligan College, Northeast State Community College, Virginia Highlands Community College, Tennessee College of Applied Technology – Elizabethton, and Southwest Virginia Advanced Manufacturing Center of Excellence.
- Between 2012 and 2017, 1,410 degrees and certificates related to manufacturing engineering, precision metal working, general mechanics and repair, engineering mechanics, electrical engineering technology, and others were awarded in the Tri-Cities CSA.
 - **Milligan College** offers bachelor of science degree programs in electrical engineering and mechanical engineering.
 - **Northeast State Community College** has academic and technical certificate programs in auto body service technology; automotive service; aviation maintenance technology; combination welding; construction electricity; heating, ventilation, and air conditioning; industrial operations; and machine tool operations. Northeast State also has Associate of Applied Science programs in aviation

technology, electrical technology with concentrations in electrical and electromechanical, and industrial technology with concentrations in automotive body/collision repair, automotive service, engineering design technology, machine tool, manufacturing engineering technology, mechanical, motor sports, and welding/metal fabrication. The school also has Associate of Science programs in manufacturing technology; physics; and pre-engineering, including concentrations in industrial and systems, electrical, and mechanical.

- **Virginia Highlands Community College** has certificates in diesel mechanic, electricity, industrial supervision, industrial electricity, mechatronics, precision machining, refrigeration, and welding. Virginia Highlands also has associate degree programs in air conditioning, refrigeration, and heating; electrical technology with specializations in mechatronics and energy technology; and science with a specialization in engineering.
 - **Tennessee College of Applied Technology – Elizabethton** has certificate programs in automotive technology, diesel powered equipment technology, HVAC, industrial electricity, machine tool technology, millwright skills, pipefitting, and welding.
 - **The Southwest Virginia Advanced Manufacturing Center of Excellence** has training programs in industrial maintenance mechatronics, lean six sigma black belt, and welding and inspection.
- As stated in the Chemical Manufacturing target, there is a need for a greater focus on and coordination around career and technical education (CTE) that could possibly be addressed by establishing a training center that brings students to one location and shares programs across partner institutions and across the state line.

STRATEGIC CONSIDERATIONS

- ✓ Ensuring that the community continues to train workers to support the Metals and Machinery Manufacturing target is a challenge that leaders will need to address.
- ✓ Retaining businesses and assisting them in expansion efforts should be a key priority for this target, particularly as the category has shed jobs over time.
- ✓ Continuing efforts to leverage the development potential of the Tri-Cities Airport Aerospace Park will be an important strategy moving forward, especially in the context of external marketing programs.

Healthcare Services

The Healthcare Services target is comprised of establishments that provide healthcare services and delivery, social assistance to those in need, medical research and development. It includes establishments engaged in the practice of general or specialized medicine, providing diagnostic and medical treatment (both surgical and nonsurgical) to inpatients with a wide variety of medical conditions, and outpatient services, among others. Additionally, skilled nursing facilities, residential facilities, and continuing care retirement communities are included in this sector.

Growth opportunities are primarily focused on supporting the expansion of and partnership between existing employers. As a key sub-region of the Tri-Cities, the Bristol area benefits from two major anchors that provide a strong foundation for the target: Ballad Health and East Tennessee State University. Ballad Health was formed in 2018 by the merger of two regional health systems: Wellmont Health System and Mountain States Health Alliance. It is now the Tri-Cities region's sole in-patient healthcare provider, serving approximately two-thirds of the Tri-Cities' in-patient health services.

Market Street cautions that attracting healthcare services firms to the Bristol area is not a viable strategy due to the competitive realities of this sector and the largely local-serving nature of the community's healthcare economy. So-called "traded," export-driven healthcare services sectors can be found in national and global medical hubs such as Rochester, Minnesota – home of the Mayo Clinic – the Texas Medical Center in Houston, the Johns Hopkins complex in Baltimore, and other major healthcare destinations that attract well-heeled patients from around the world.

With that said, given that the healthcare sector is a major source for Bristol area employment and wealth, its continued success is a crucial component of the community's future prosperity. Availability of quality healthcare is also a critical quality of life factor. In addition to ensuring that the healthcare community has the business climate and workforce that it needs to be successful, there are also opportunities to leverage emerging collaborations between Ballad Health and ETSU, including initiatives that will expand the community's research and development investments and outcomes.

KEY LOCAL EMPLOYERS

Key employers in the Bristol area include Ballad Health, which operates Bristol Regional Medical Center (BMRC)¹, Holston Valley Medical Center, Indian Path Community Hospital, and Johnston Memorial Hospital as well as seven urgent care facilities, 72 physician practices, three imaging centers, and several other types of health facilities in the Bristol area; Rehabilitation Hospital of Bristol; Brookhaven Manor, a rehabilitation center; Greystone Healthcare Centers; Highlands Community Services; NHC Healthcare Bristol; Chiltern International, a clinical research and development firm; and UPM Pharmaceuticals.

¹ It should be noted that Ballad Health has announced changes for BRMC, including downgrading the Level II trauma center to a Level III and adding a pediatric emergency room.

NATIONAL TRENDS

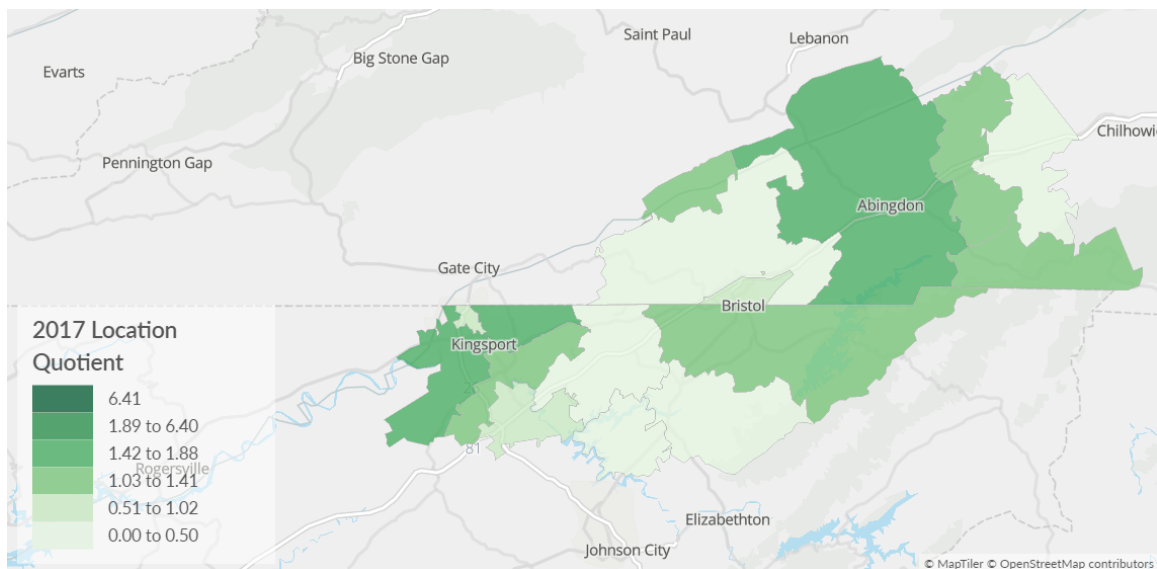
Nationally, healthcare jobs have been growing rapidly. Over the past five years, employment in healthcare grew by 11.7 percent, compared to 8.2 percent growth of the overall economy. The U.S. Bureau of Labor Statistics projects that employment of healthcare occupations will grow by 18 percent between 2016 and 2026 and that it will create about 2.4 million new jobs across the U.S.

Increased demand tied to an aging population will be a main driver of growth for healthcare services. The U.S. Census Bureau projects that by 2030, all Baby Boomers will be older than age 65 and that by 2035, older adults will outnumber children for the first time in U.S. history. While greater demand for healthcare services will help to drive job creation in the healthcare sector, there will also be additional demand for skilled workers to fill jobs vacated by the Baby Boomer generation retiring in the coming years. Overall, there will be an estimated 5 million job openings from workers retiring or otherwise permanently leaving a healthcare-related occupation over the next ten years.

GEOGRAPHIC DISTRIBUTION

Healthcare is available throughout the Bristol area. Given that the healthcare sector is focused on services and the delivery of care, it is concentrated around hospitals, where large levels of employment are contained in one space and around which specialty service facilities locate.

GEOGRAPHIC CONCENTRATIONS OF HEALTHCARE SERVICES BY ZIP CODE



Source: Economic Modeling Specialists Intl. (EMSI)

The following table provides location quotients of the target subsectors for the city of Bristol, TN-VA, as defined by seven ZIP codes; the Bristol area; and the Tri-Cities CSA. This table highlights the differences in concentrations across these geographies and reveals where the Bristol area is already strong and where opportunities exist.

LOCATION QUOTIENTS BY SUBSECTOR BY GEOGRAPHY, 2017

NAICS	Description		7-ZIP (Bristol City) 2017 LQ		Bristol Area 2017 LQ		Tri-Cities CSA 2017 LQ
621111	Offices of Physicians (except Mental Health Specialists)	●	1.40	●	1.92	●	1.98
621112	Offices of Physicians, Mental Health Specialists	●	0.00	●	0.48	●	0.65
621210	Offices of Dentists	●	1.22	●	1.27	●	1.11
621310	Offices of Chiropractors	●	1.06	●	0.81	●	0.80
621320	Offices of Optometrists	●	0.99	●	1.11	●	1.71
621340	Offices of Physical, Occupational and Speech Therapists, and Audiologists	●	0.62	●	0.59	●	0.94
621391	Offices of Podiatrists	●	1.74	●	1.34	●	0.92
621399	Offices of All Other Miscellaneous Health Practitioners	●	0.18	●	0.50	●	0.53
621420	Outpatient Mental Health and Substance Abuse Centers	●	1.89	●	1.62	●	1.81
621492	Kidney Dialysis Centers	●	0.21	●	0.52	●	1.24
621493	Freestanding Ambulatory Surgical and Emergency Centers	●	3.25	●	1.94	●	1.73
621511	Medical Laboratories	●	2.83	●	1.62	●	1.13
621512	Diagnostic Imaging Centers	●	2.38	●	1.50	●	0.89
621610	Home Health Care Services	●	0.14	●	0.55	●	0.63
621910	Ambulance Services	●	1.02	●	1.02	●	1.63
621991	Blood and Organ Banks	●	3.87	●	2.65	●	2.52
621999	All Other Miscellaneous Ambulatory Health Care Services	●	1.06	●	0.68	●	0.61
622110	General Medical and Surgical Hospitals	●	1.89	●	1.64	●	1.38
622210	Psychiatric and Substance Abuse Hospitals	●	1.82	●	0.56	●	0.96
622310	Specialty (except Psychiatric and Substance Abuse) Hospitals	●	5.69	●	2.93	●	1.61
623	Nursing and Residential Care Facilities	●	0.49	●	0.86	●	1.21
623312	Assisted Living Facilities for the Elderly	●	1.15	●	1.73	●	1.20
624	Social Assistance	●	0.67	●	0.56	●	0.58
624229	Other Community Housing Services	●	0.00	●	2.17	●	1.16
624230	Emergency and Other Relief Services	●	4.86	●	1.65	●	0.83
339116	Dental Laboratories	●	1.77	●	1.63	●	1.77
541713	Research and Development in Nanotechnology	●	0.00	●	1.37	●	0.69

Source: Economic Modeling Specialists, Intl. (EMS)

Note: Subsectors with location quotients greater than or equal to 1.1 are presented with a green dot. LQs lower than 0.9 are presented with a red dot, and LQs between 0.9 and 1.1 with a yellow dot.

- ✓ **The cities of Bristol, TN-VA have 11 areas of concentration greater than that of the Bristol area and the Tri-Cities CSA.** They include: specialty hospitals (LQ = 5.69), emergency and other relief services (4.86), blood and organ banks (3.87), freestanding ambulatory surgical and emergency centers (3.25), medical laboratories (2.83), diagnostic imaging centers (2.38), general medical and surgical hospitals (1.89), outpatient mental health and substance abuse centers (1.89), and psychiatric and substance abuse hospitals (1.82), dental laboratories (1.77 – same as the Tri-Cities CSA), and offices of podiatrists (1.74).

- ✓ Bristol area subsectors with +1.0 LQs concentrated primarily outside the cities of Bristol include: other community housing services (2.17), assisted living facilities for the elderly (1.73), ambulance services (1.63), and offices of dentists (1.27).
- ✓ Subsectors that are more highly concentrated in the Tri-Cities CSA than locally are offices of physicians (1.98), offices of optometrists (1.71), kidney dialysis centers (1.24), and nursing and residential care facilities (1.21).

EMPLOYMENT TRENDS

The Healthcare Services target is comprised of nearly 850 firms or facilities. In addition to traditional healthcare and social services, the Bristol area has many specialty services. An emerging area of continued growth is clinical research and development. The recent announcement of partnership initiatives between Ballad Health and East Tennessee State University is a key opportunity to expand the Healthcare Services target's reach into innovation with commercialization potential.

BRISTOL AREA HEALTHCARE SERVICES EMPLOYMENT TRENDS, 2017

Employment Change, 2012-2017									Wages, Salaries, & Proprietor Earnings, 2017	
NAICS	Description		2017 LQ	2017 Jobs	2017 Ests.	#	%	US %	Bristol Area	% of US
621111	Offices of Physicians (except Mental Health Specialists)	●	1.92	3,296	193	(147)	(4%)	7%	\$92,998	103.3%
621112	Offices of Physicians, Mental Health Specialists	●	0.48	22	5	(2)	(8%)	7%	\$60,074	83.2%
621210	Offices of Dentists	●	1.27	831	87	3	0%	9%	\$59,436	109.8%
621310	Offices of Chiropractors	●	0.81	86	27	21	32%	8%	\$27,219	72.1%
621320	Offices of Optometrists	●	1.11	106	14	12	13%	15%	\$47,212	104.7%
621330	Offices of Mental Health Practitioners (except Physicians)	●	0.45	38	14	5	15%	34%	\$37,768	93.1%
621340	Offices of Physical, Occupational and Speech Therapists, and Audiologists	●	0.59	159	18	(26)	(14%)	25%	\$39,431	89.1%
621391	Offices of Podiatrists	●	1.34	32	6	4	14%	(2%)	\$28,855	62.7%
621399	Offices of All Other Miscellaneous Health Practitioners	●	0.50	53	10	2	4%	30%	\$44,017	100.6%
621420	Outpatient Mental Health and Substance Abuse Centers	●	1.62	268	9	26	11%	23%	\$34,344	82.3%
621492	Kidney Dialysis Centers	●	0.52	47	2	12	34%	29%	\$46,116	81.7%
621493	Freestanding Ambulatory Surgical and Emergency Centers	●	1.94	200	9	48	32%	41%	\$44,341	72.8%
621511	Medical Laboratories	●	1.62	223	16	(42)	(16%)	17%	\$45,310	72.9%
621512	Diagnostic Imaging Centers	●	1.50	78	2	(21)	(21%)	2%	\$44,165	68.9%
621610	Home Health Care Services	●	0.55	544	19	47	9%	17%	\$40,718	136.6%
621910	Ambulance Services	●	1.02	126	4	(52)	(29%)	8%	\$42,001	104.3%
621991	Blood and Organ Banks	●	2.65	134	4	107	396%	3%	\$31,380	64.3%
621999	All Other Miscellaneous Ambulatory Health Care Services	●	0.68	35	3	9	35%	28%	\$57,671	99.6%
622110	General Medical and Surgical Hospitals	●	1.64	5,150	6	(109)	(2%)	6%	\$42,829	67.9%
622210	Psychiatric and Substance Abuse Hospitals	●	0.56	45	1	(27)	(38%)	16%	\$42,635	92.0%
622310	Specialty (except Psychiatric and Substance Abuse) Hospitals	●	2.93	451	3	149	49%	4%	\$43,280	71.7%
623	Nursing and Residential Care Facilities	●	0.86	1,927	50	(156)	(7%)	5%	\$29,107	93.3%
623312	Assisted Living Facilities for the Elderly	●	1.73	508	16	112	28%	17%	\$19,597	76.4%
624	Social Assistance	●	0.56	1,610	338	(300)	(16%)	21%	\$22,355	95.9%
624229	Other Community Housing Services	●	2.17	55	1	NA	NA	(0%)	\$22,322	51.4%
624230	Emergency and Other Relief Services	●	1.65	31	3	12	63%	(6%)	\$72,500	133.1%
339116	Dental Laboratories	●	1.63	56	8	(21)	(27%)	(1%)	\$29,805	66.9%
541713	Research and Development in Nanotechnology	●	1.37	20	1	9	82%	(5%)	\$46,907	41.8%
Total, Health Care Services		●	1.16	15,535	849	(449)	(3%)	11%	\$50,184	104.5%

Source: Economic Modeling Specialists, Intl. (EMS)

Employment growth is color-coded such that growing sectors are presented in black text and declining sectors in red text. Those with location quotients greater than or equal to 1.1 are presented with a green dot. LQs lower than 0.9 are presented with a red dot, and LQs between 0.9 and 1.1 with a yellow dot.

- ✓ **Healthcare Services firms employ nearly 16,000 workers in the Bristol area, or 15 percent of all local jobs.** The target's employment declined by 3 percent over the five year period examined, which is a contrast to most U.S. communities, where healthcare was often the only private sector that grew during the Great Recession and its aftermath. Despite this overall decline, 16 of the 28 Bristol area subsectors examined experienced employment growth, with nine of those exceeding national rates.
- ✓ **The overall location quotient for the Healthcare Services target is 1.16, which indicates that the Bristol area is attracting patients from outside its geographic boundary.** The most concentrated subsectors include specialty hospitals (LQ = 2.93), blood and organ banks (2.65), other community housing services (2.17), freestanding ambulatory surgical and emergency centers (1.94), and offices

of physicians (except mental health specialists) (1.92). With the exception of offices of physicians, each of these subsectors are growing rapidly.

- ✓ The Healthcare Services target provides quality employment opportunities across multiple skill levels in the Bristol area. The target's average annual wage was \$50,184 in 2017, nearly \$10,000 higher than the area average across all industries and roughly \$2,000 higher than the national target average.

HEALTHCARE SERVICES, CURRENT AND PROJECTED IMPACTS

NAICS	Description	Competitive Effect	2017 Demand			2017 Exported Sales		Projected Employment Change, 2017-2027		
			Total (millions)	% Met In-Region	% Met by Imports	\$ (million s)	% of Total Sales	#	%	US %
621111	Offices of Physicians (except Mental Health Specialists)	(195)	\$253.42	98%	2%	\$356.50	59%	331	10%	19%
621112	Offices of Physicians, Mental Health Specialists	(15)	\$8.56	42%	58%	\$0.10	3%	(2)	(9%)	21%
621210	Offices of Dentists	(84)	\$64.30	100%	0%	\$44.51	41%	91	11%	17%
621310	Offices of Chiropractors	(6)	\$6.28	60%	40%	\$0.34	8%	15	17%	10%
621320	Offices of Optometrists	(23)	\$6.46	94%	6%	\$2.62	30%	4	4%	18%
621330	Offices of Mental Health Practitioners (except Physicians)	(15)	\$10.11	60%	40%	\$0.18	3%	3	8%	24%
621340	Offices of Physical, Occupational and Speech Therapists, and Audiologists	(103)	\$19.82	58%	42%	\$1.24	10%	13	8%	36%
621391	Offices of Podiatrists	17	\$1.68	85%	15%	\$0.16	10%	11	34%	13%
621399	Offices of All Other Miscellaneous Health Practitioners	(20)	\$14.42	90%	10%	\$2.33	15%	11	21%	36%
621420	Outpatient Mental Health and Substance Abuse Centers	(165)	\$16.08	83%	17%	\$13.39	50%	(10)	(4%)	25%
621492	Kidney Dialysis Centers	32	\$11.71	46%	54%	\$0.93	15%	24	51%	31%
621493	Freestanding Ambulatory Surgical and Emergency Centers	(25)	\$14.73	81%	19%	\$14.32	54%	37	19%	37%
621511	Medical Laboratories	1	\$20.21	94%	6%	\$7.39	28%	(8)	(4%)	25%
621512	Diagnostic Imaging Centers	44	\$7.87	98%	2%	\$1.26	14%	(13)	(17%)	22%
621610	Home Health Care Services	(98)	\$48.96	92%	8%	\$0.63	1%	183	34%	44%
621910	Ambulance Services	(106)	\$11.87	70%	30%	\$6.19	43%	(3)	(2%)	20%
621991	Blood and Organ Banks	121	\$5.87	100%	0%	\$5.57	49%	123	92%	20%
621999	All Other Miscellaneous Ambulatory Health Care Services	2	\$7.63	79%	21%	\$1.59	21%	5	14%	32%
622110	General Medical and Surgical Hospitals	(1,093)	\$449.80	96%	4%	\$189.47	30%	(141)	(3%)	8%
622210	Psychiatric and Substance Abuse Hospitals	(209)	\$8.29	44%	56%	\$1.70	31%	19	42%	24%
622310	Specialty (except Psychiatric and Substance Abuse) Hospitals	451	\$20.97	94%	6%	\$34.89	64%	421	93%	35%
623	Nursing and Residential Care Facilities	(366)	\$131.42	82%	18%	\$27.76	21%	73	4%	13%
623312	Assisted Living Facilities for the Elderly	174	\$15.41	100%	0%	\$8.91	37%	195	38%	30%
624	Social Assistance	(753)	\$107.90	57%	43%	\$20.14	25%	137	9%	23%
624229	Other Community Housing Services	50	\$1.44	86%	14%	\$0.79	39%	22	40%	16%
624230	Emergency and Other Relief Services	17	\$1.33	100%	0%	\$2.36	64%	10	32%	13%
339116	Dental Laboratories	(13)	\$4.25	16%	84%	\$3.20	82%	8	14%	2%
541713	Research and Development in Nanotechnology	13	\$3.52	38%	62%	\$1.48	53%	2	10%	23%
Total, Health Care Services		(2,607)	\$1,256	88%	12%	\$738	40%	1,334	9%	19%

Source: Economic Modeling Specialists, Intl. (EMSI)

- ✓ As mentioned previously, healthcare in most communities is largely local-serving. In the Bristol area, 40 percent of 2017 total sales by subsectors in the Healthcare Services target were export sales, roughly \$738 million. While this percentage of sales by consumers outside of the community is

smaller than that of a global hub such as Rochester, MN (with export sales comprising over 80 percent of total sales), this is still a sizable pull from other communities, likely rural communities surrounding the Bristol area.

- ✓ **In 2017, 88 percent of the demand of firms in the Healthcare Services target was filled by other firms in the Bristol area**, which could partially be a result of the Ballad Health merger but also an indication of strong local supply chain linkages.
- ✓ **The Healthcare Services target is projected to add 1,334 jobs between 2017 and 2027.** This employment growth is expected to be driven by specialty hospitals, offices of physicians, assisted living facilities for the elderly, and blood and organ banks.

OCCUPATIONAL TRENDS

The Healthcare Services target is a vital source of employment opportunities in the Bristol area, including highly paid positions for doctors and other healthcare practitioners, who are required to attain many years of training and expertise. Some of these occupations have average hourly wages that are very near or exceed national averages, an important factor for attracting and retaining prospective talent. There are also significant opportunities for workers who have associate degrees and technical training and established career paths accessible through additional training.

BRISTOL AREA HEALTHCARE SERVICES OCCUPATIONAL TRENDS, 2017

SOC	Description	2017 LQ	2017 Jobs	Employment Change, 2012-2017			Average Hourly Earnings, 2017	
				#	%	US %	Bristol Area	% of US
11-9111	Medical and Health Services Managers	1.21	300	29	11%	19%	\$49.59	93.9%
19-3031	Clinical, Counseling, and School Psychologists	0.48	52	(1)	(2%)	5%	\$43.70	116.0%
19-3039	Psychologists, All Other	0.56	<10	NA	NA	24%	NA	NA
21-1010	Counselors	0.94	478	(11)	(2%)	14%	\$20.69	85.9%
21-1015	Rehabilitation Counselors	1.44	112	(48)	(30%)	(4%)	\$13.32	71.5%
21-1019	Counselors, All Other	1.26	29	2	7%	2%	\$18.79	82.8%
21-1020	Social Workers	1.32	612	94	18%	6%	\$21.04	84.6%
29-1000	Health Diagnosing and Treating Practitioners	1.26	4,697	242	5%	11%	\$41.61	85.5%
29-1022	Oral and Maxillofacial Surgeons	1.17	<10	NA	NA	(7%)	NA	NA
29-1051	Pharmacists	1.92	403	41	11%	10%	\$55.61	95.2%
29-1061	Anesthesiologists	1.93	45	(4)	(8%)	(0%)	\$119.68	95.8%
29-1062	Family and General Practitioners	0.57	54	(2)	(4%)	11%	\$103.28	105.2%
29-1064	Obstetricians and Gynecologists	0.94	13	(4)	(24%)	(11%)	\$99.79	90.4%
29-1065	Pediatricians, General	1.44	31	(7)	(18%)	(9%)	\$97.41	110.3%
29-1066	Psychiatrists	1.15	22	0	0%	2%	\$88.51	86.7%
29-1067	Surgeons	0.96	28	(7)	(20%)	(10%)	\$103.24	87.4%
29-1069	Physicians and Surgeons, All Other	1.05	277	3	1%	12%	\$113.90	114.1%
29-1122	Occupational Therapists	1.10	98	8	9%	19%	\$44.34	109.9%
29-1123	Physical Therapists	1.54	245	18	8%	17%	\$46.01	109.4%
29-1124	Radiation Therapists	4.06	48	(6)	(11%)	(6%)	\$33.51	81.8%
29-1126	Respiratory Therapists	1.65	143	8	6%	10%	\$21.49	72.3%
29-1141	Registered Nurses	1.26	2,497	81	3%	10%	\$24.99	70.8%
29-1151	Nurse Anesthetists	1.09	33	2	6%	25%	\$62.80	77.0%
29-1171	Nurse Practitioners	2.17	251	77	44%	56%	\$44.93	87.0%
29-2000	Health Technologists and Technicians	1.51	3,228	(41)	(1%)	9%	\$19.51	81.0%
29-2018	Clinical Laboratory Technologists and Technicians	1.59	353	(46)	(12%)	1%	\$28.92	76.8%
29-2021	Dental Hygienists	1.16	168	1	1%	11%	\$27.61	76.1%
29-2030	Diagnostic Related Technologists and Technicians	2.21	580	(11)	(2%)	9%	\$23.34	75.3%
29-2041	Emergency Medical Technicians and Paramedics	1.58	283	(12)	(4%)	7%	\$16.23	92.0%
29-2050	Health Practitioner Support Technologists and Technicians	1.51	812	89	12%	17%	\$14.74	84.8%
29-2061	Licensed Practical and Licensed Vocational Nurses	1.57	776	(73)	(9%)	(2%)	\$16.70	76.1%
29-2071	Medical Records and Health Information Technicians	0.95	137	(1)	(1%)	13%	\$16.84	81.6%
29-2081	Opticians, Dispensing	1.13	58	5	9%	16%	\$21.52	113.2%
29-2090	Miscellaneous Health Technologists and Technicians	0.61	62	9	17%	41%	\$24.73	102.7%
29-9000	Other Healthcare Practitioners and Technical Occupations	1.70	205	3	1%	16%	\$30.39	97.5%
31-1000	Nursing, Psychiatric, and Home Health Aides	0.97	1,615	(194)	(11%)	(2%)	\$11.16	85.8%
31-2021	Physical Therapist Assistants	3.03	186	15	9%	26%	\$24.39	88.0%
31-9090	Miscellaneous Healthcare Support Occupations	1.26	1,270	30	2%	10%	\$14.77	87.3%
37-2012	Maids and Housekeeping Cleaners	1.10	1,105	0	0%	(7%)	\$9.30	83.2%
39-9011	Childcare Workers	0.72	592	(20)	(3%)	(16%)	\$8.81	89.5%
39-9021	Personal Care Aides	0.58	888	185	26%	78%	\$8.56	74.5%
43-1011	First-Line Supervisors of Office and Administrative Support Workers	1.10	1,111	50	5%	7%	\$22.76	81.0%
43-4051	Customer Service Representatives	1.00	1,897	356	23%	21%	\$14.39	83.8%
43-4171	Receptionists and Information Clerks	0.94	682	2	0%	4%	\$12.82	89.4%
43-6013	Medical Secretaries	0.84	338	(12)	(3%)	14%	\$15.25	88.4%
51-9081	Dental Laboratory Technicians	0.74	20	(9)	(31%)	(5%)	\$21.48	102.6%

Source: Economic Modeling Specialists, Intl. (EMSI)

- ✓ **The Healthcare Services target benefits from a robust supply of workers with varying skill and knowledge levels.** The following list is a sample of occupations across the skills spectrum that are key to the target.
- **Pediatricians:** There are 31 general pediatricians in the Bristol area. Employment has decreased by 18 percent over the past five years, compared to 9 percent decrease nationwide. The location quotient for chemical engineers is 1.44 and the average hourly wage is \$97.41 in 2017, more than triple Bristol area's overall average hourly wage across all occupations (\$20.17) and higher than the national average for pediatricians (\$88.31). This occupation requires a medical degree and residency. This occupation is expected to experience growth in the coming decade, particularly since new pediatric emergency rooms will be added to the hospitals in Bristol and Kingsport.
 - **Medical and health services managers:** There are over 300 workers who handle the business aspect of medicine, coordinating and planning services. This occupation category has a location quotient of 1.21, and the average hourly wage is \$49.59, more than double the Bristol area's overall average of \$20.17. The occupation has experienced employment growth of 11 percent between 2012 and 2017, compared to 19 percent nationwide. This occupation typically requires at least a bachelor's degree.
 - **Registered nurses:** The Bristol area has 2,497 registered nurses, which is often a highly in-demand and hard-to-fill occupation in communities. The location quotient for this occupation is 1.26, and the average hourly wage is \$24.99. The occupation has experienced a five-year growth rate of 3 percent, compared to 10 percent national growth. This occupation typically requires either an associate or bachelor's degree.
 - **Radiation therapists:** There are 48 workers who administer radiation treatments to cancer patients in the Bristol area. The concentration of this occupation is four times that of an average American community. Employment has declined by 11 percent between 2012 and 2017, less than the national employment decline (6 percent). In 2017, the average hourly wage was \$33.51, which exceeds the Bristol area average. This occupation typically requires an associate degree.
 - **Diagnostic related technologists and technicians:** There are 580 workers who operate equipment to capture images or generate test results that physicians use to diagnose patients in the Bristol area. The location quotient for this occupation is 2.21, and the average hourly wage is \$23.34. The occupation has experienced a 2 percent employment decline, compared to 9 percent national growth. This occupation typically does not require formal education.
 - **Miscellaneous healthcare support occupations:** There are 1,270 workers in this occupational category, which includes occupations such as phlebotomists, aides, orderlies, and medical assistants. The location quotient for this occupation is 1.26, and the average hourly wage is \$14.77, less than the area average. The occupation has experienced 2 percent employment

growth, compared to 10 percent national growth. This occupation typically does not require formal education.

- The Bristol area benefits from the regional capacity to train healthcare workers. East Tennessee State University has undergraduate degree programs as well as a medical school and pharmacy school. King University, Milligan College, and Emory and Henry College have bachelor's and master degree options; and Virginia Highlands Community College, Northeast State Community College, and Tennessee College of Applied Technology – Elizabethton provide technical training through associate degree and certificate programs for workers who want to enter the healthcare space.
- Between 2012 and 2017, 5,498 degrees and certificates related to healthcare training fields were awarded in the Tri-Cities CSA.
 - **East Tennessee State University** has certificate and degree programs across many disciplines related to healthcare. The university has also announced various partnership initiatives with Ballad Health, including the creation of a fellowship program in addiction medicine as well as the exploration of other opportunities to expand research and treatment options related to the opioid epidemic and other forms of addiction. Plans also include working with ETSU's research foundation to spur patent production in the Bristol area.
 - ETSU has bachelor's degree programs in allied health leadership, cardiopulmonary science, dental hygiene, nutrition, radiological science, biology, community health, health administration, counseling and human services, biomedical engineering technology, environmental health, human health, microbiology, nursing, pharmacy studies, psychology, public health, and social work.
 - There are also ETSU programs in pre-chiropractic, pre-dentistry, pre-medicine, pre-optometry, pre-pharmacy, pre-physician assistant, and pre-podiatry programs.
 - On the graduate level, ETSU has master's degree programs in allied health, biology, biomedical sciences, microbiology, clinical nutrition, clinical mental health, family nurse practitioner, nursing administration, nursing education, psychiatric/mental health nurse practitioner, clinical psychology, experimental psychology, biostatistics, community health, environmental health sciences, epidemiology, public health administration, and social work.
 - ETSU has doctoral degree programs in audiology, biomedical sciences, environmental health sciences, human services, medicine, various nursing disciplines, pharmacy, physical therapy, clinical psychology, experimental

psychology, community health, epidemiology, health management and policy, speech-language pathology, sport performance, and sport physiology.

- Finally, ETSU also offers dual track programs, including MD/MPH, PharmD/MBA, and PharmD/MPH.
- **King University** has bachelor's degree programs in biochemistry, biology, exercise science, health informatics, healthcare administration, nursing, psychology, and social work. The university also offers Master of Science in Nursing and Doctor of Nursing Practice programs.
- **Milligan College** offers undergraduate degrees in allied health science, biology, exercise science, fitness and wellness, health sector management, nursing, physical science, psychology, and social work. The college also has pre-professional programs in paramedical fields, pre-dentistry, pre-medicine, pre-optometry, and pre-pharmacy. It also offers master degree programs in counseling, occupational therapy, and physician assistant studies.
- **Emory and Henry College** offers undergraduate programs in biology, environmental studies, exercise science, food studies, health and human performance, pre-health, and psychology. The college also offers graduate programs in occupational therapy, physical therapy, and physician assistant studies.
- **Virginia Highlands Community College** offers Associate of Applied Science programs in administrative support technology with a specialization in medical office specialist, emergency medical services technology, human services, nursing, occupational therapy assistant, and radiography. The community college also offers certificate programs in health information management, health sciences, human services advocate, practical nursing, advanced emergency medical technician, dental assisting, emergency medical technician, paramedic, magnetic resonance imaging, medical assistant, and nurse aide.
- **Northeast State Community College** offers certificate programs in advanced emergency medical technician, dental assisting, emergency medical technician, and paramedic. The community college also Associate of Applied Science degrees in administrative professional technology with a concentration in medical office, allied health with a concentration in dental assisting, cardiovascular technology with invasive and non-invasive options, medical laboratory technology, nursing (LPN to RN), traditional nursing, paramedic, and surgical technology. There is an Associate of Arts degree in psychology as well as Associate of Science degrees in biology, environmental health, exercise science, imaging sciences, nutrition and food science, pre-cardiopulmonary science, pre-clinical laboratory sciences, pre-dental

hygiene, pre-health, pre-nursing, pre-occupational therapy, pre-pharmacy, pre-physical therapy, pre-radiography, and social work.

- The **Tennessee College of Applied Technology – Elizabethton** offers programs in phlebotomy and practical nursing.

STRATEGIC CONSIDERATIONS

- ✓ The Bristol area's strong healthcare sector is an important component of the community's competitive advantage, not just in supporting the economy through jobs and investment, but also its role within the area's quality of life. The community's healthcare assets should be included in marketing materials across economic development and talent attraction efforts.
- ✓ Population dynamics have an impact on healthcare demand, so making sure that the community is working to bolster its healthcare workforce (to support the community's aging population) and that the community is attracting residents (as market demands are tied to population trends) are just as important as BRE efforts to retain and support existing businesses in the area.
- ✓ Supporting employers' efforts to hire talent for medical specializations currently not available in the region will be important to growing the local market for healthcare services.
- ✓ Improving the utilization of health information technology innovations to optimize the patient-care system in the Bristol area will help reduce costs, improve process efficiencies, and enable medical providers to compete more effectively in the marketplace

Entertainment and Tourism

The Entertainment and Tourism target seeks to leverage the Bristol area's racetrack, natural assets, downtowns, and activity centers to draw travelers for multi-day stays and generate increased attention for the area. Key components of the Bristol area's entertainment and tourism market are the Birthplace of Country Music Museum, the Bristol Motor Speedway, which hosts two NASCAR races annually, the Bristol Hotel, the Paramount, and the Pinnacle. The area also has craft breweries, distilleries, diverse restaurants, retail opportunities, and vast natural assets, including South Holston Lake, Steele Creek Park, and Sugar Hollow Park.

In its 2018 annual report, the Tennessee Department of Tourist Development reports that the state of Tennessee saw an economic impact of \$20.77 billion in travel expenditures in 2017. State figures show that of that amount, visitors spent \$386.7 million in Sullivan County in 2017, ranked seventh in the state of 95 counties. Virginia saw an economic impact of \$24.8 billion in 2017, according to the Virginia Tourism Corporation. Of this amount, \$55.43 million were spent in Bristol, VA, and \$106.44 million was spent in Washington County.

One noted source of visitor spending in the Bristol area is the Bristol Rhythm and Roots Reunion, which generated \$9.86 million in direct visitor spending in 2015, according to an economic impact study conducted by the Birthplace of Country Music Museum. The popular festival also generated \$2.86 million in indirect spending impact and an induced spending impact of \$3.34 million, for a total economic impact of \$16.06 million.

The Entertainment and Tourism warrants inclusion as a Bristol area target sector because of the visibility and exposure provided to the region that can be leveraged for follow-on marketing as well as the dynamic talent attraction and investment opportunities. Dense mixed-use development with residential components could also be viable investments that would add to the housing product mix in the area. Opportunities such as the proposed Bristol, Virginia casino resort project, which would transform a vacant former retail center into a resort with a hotel, restaurants, retail, entertainment and family attractions, can spur additional redevelopment projects. Another recently announced project is the proposed development of 350 acres sitting adjacent to The Pinnacle into an entertainment district with a hotel, indoor water park, amusement park, and amphitheater. Coordinated marketing regional attractions could be impactful for growing the Entertainment and Tourism sector.

KEY LOCAL EMPLOYERS

In addition to the aforementioned major attractions in the Bristol area (Birthplace of Country Music Museum, the Bristol Motor Speedway, the Bristol Hotel, and the Paramount, other local key employers include Lowe's, Walmart, Target, Viking Hall, Best Buy, Holiday Inn-Bristol Conference Hotel, Courtyard by Marriott, Hilton Garden Inn, Fairfield Inn and Suites, Hampton Inn, Country Inn and Suites by Radisson, Meadowview Conference Resort, Barter Theatre in Abingdon, and a host of restaurants in Bristol, TN-VA and Kingsport.

NATIONAL TRENDS

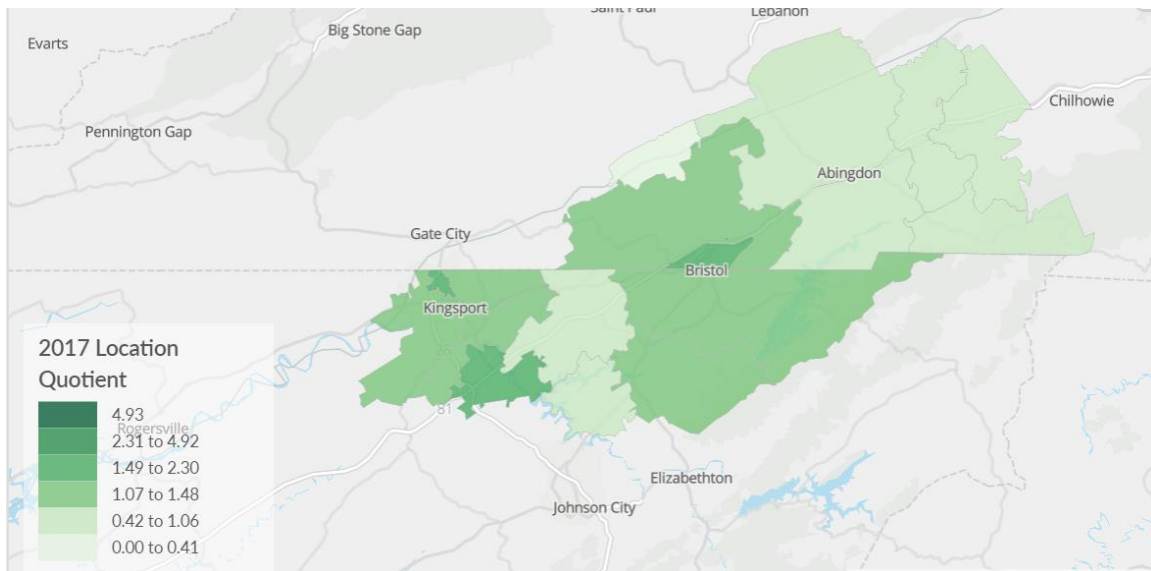
Tourism, also referred to as destination marketing or promotion, is an important segment of economic development. Destination marketing, while usually primarily intended to increase hotel/motel tax revenue as well as attract visitor spending in other markets while in town, can also increase a community's exposure to opportunities for business relocation, expansion, and new start-ups since every visitor could be a future resident, employee, or business owner. Tourism investment can also address the quality of life issues that can not only impact a visitor's impression of the community but can also be critical to a relocation decision.

According to the World Travel and Tourism Council, the Travel and Tourism sector accounted for 10.4 percent of global GDP and 9.9 percent of total employment in 2017. The direct contribution of Travel & Tourism to GDP in the United States was \$509.4 billion, or 2.6 percent of total GDP in 2017. The World Travel and Tourism Council projects that this figure will increase at a rate of 2.5 percent from 2018 to 2028, estimating direct impact in 2028 to be \$673.9 billion nationwide. According to the U.S. Travel Association, domestic travel is projected to grow 2.4 percent year-over-year through April 2019, with business travel leading the way. However, heightened market volatility and rising trade tensions are causes for concern.

GEOGRAPHIC DISTRIBUTION





























































The target is highly concentrated in downtown areas, around Bristol Motor Speedway, and other attractions in the Bristol area. As expected, there is more concentration in the more urban-esque portions of the region, specifically Kingsport and Bristol, versus more rural portions of the region.

GEOGRAPHIC CONCENTRATIONS OF ENTERTAINMENT AND TOURISM BY ZIP CODE



Source: Economic Modeling Specialists Intl. (EMSI)

LOCATION QUOTIENTS BY SUBSECTOR BY GEOGRAPHY, 2017

NAICS	Description		7-ZIP (Bristol City) 2017 LQ	Bristol Area 2017 LQ	Tri-Cities CSA 2017 LQ
711110	Theater Companies & Dinner Theaters		0.03 	2.41 	1.23
711211	Sports Teams & Clubs		3.38 	1.05 	1.04
711212	Racetracks		21.31 	6.61 	3.38
711219	Other Spectator Sports		2.65 	1.11 	0.95
7113	Promoters of Performing Arts, Sports, & Similar Events		0.65 	0.30 	0.41
7114	Agents & Managers for Artists, Athletes, Entertainers, & Other Public Figures		0.32 	0.17 	0.25
7115	Independent Artists, Writers, & Performers		0.13 	0.63 	0.62
712	Museums, Historical Sites, & Similar Institutions		0.44 	0.32 	0.40
713	Amusement, Gambling, & Recreation Industries		0.66 	0.39 	0.50
713120	Amusement Arcades		0.00 	1.13 	2.42
713930	Marinas		6.48 	2.65 	2.28
721	Accommodation		0.99 	0.72 	0.61
721199	All Other Traveler Accommodation		0.63 	1.47 	0.98
721211	RV (Recreational Vehicle) Parks & Campgrounds		4.87 	2.26 	1.86
722	Food Services & Drinking Places		1.41 	1.22 	1.23
722511	Full-Service Restaurants		1.39 	1.11 	1.09
722513	Limited-Service Restaurants		1.76 	1.63 	1.64
722514	Cafeterias, Grill Buffets, & Buffets		1.07 	1.80 	1.28
44	Retail Trade		1.62 	1.27 	1.22
339992	Musical Instrument Manufacturing		5.22 	1.81 	5.36

Source: Economic Modeling Specialists, Intl. (EMSI)

Note: Subsectors with location quotients greater than or equal to 1.1 are presented with a green dot. LQs lower than 0.9 are presented with a red dot, and LQs between 0.9 and 1.1 with a yellow dot.

- ✓ Subsectors that are driven by the cities of Bristol, TN-VA include sports teams and clubs, racetracks, and other spectator sports (both indicative of the importance of the Bristol Motor Speedway), marinas (which surround South Holston Lake), and RV parks and campgrounds. With a higher location quotient in the city than the larger Bristol area (but not significantly), the twin city holds its own in terms of its selection of restaurants and drinking places. The cities of Bristol, TN-VA also has a stronger location quotient in retail than the Bristol area and the Tri-Cities CSA.
- ✓ Subsectors that are strong in the Bristol area but are driven by Kingsport include theater companies and dinner theaters; all other traveler accommodation; and cafeterias, grill buffets, and buffets.

EMPLOYMENT TRENDS

Nearly one-quarter (23.8 percent) of all jobs in the Bristol area are related to entertainment and tourism. Staffing all of its notable attractions as well as its restaurants and shops, the large employment figures in a

community as small as Bristol compared to the other two Tri-Cities might come as a surprise to some. During stakeholder input sessions, several leaders expressed concern that in a regional marketing initiative, the Bristol area might be overshadowed by the larger cities. However, the Bristol area has a concentration in key subsectors, indicating that the Bristol area has assets that the region can leverage and promote, if given the funding to complete on the same level.

BRISTOL AREA ENTERTAINMENT AND TOURISM EMPLOYMENT TRENDS, 2017

NAICS	Description	2017 LQ	2017 Jobs	2017 Ests.	Employment Change, 2012-2017			Wages, Salaries, & Proprietor Earnings, 2017	
					#	%	US %	Bristol Area	% of US
711110	Theater Companies & Dinner Theaters	2.41	123	1	8	7%	13%	\$18,533	54.6%
711211	Sports Teams & Clubs	1.05	70	1	41	141%	19%	\$57,368	28.7%
711212	Racetracks	6.61	164	2	36	28%	(10%)	\$39,889	134.0%
711219	Other Spectator Sports	1.11	42	3	19	83%	3%	\$29,910	98.1%
7113	Promoters of Performing Arts, Sports, & Similar Events	0.30	31	5	6	24%	37%	\$18,866	49.0%
7114	Agents & Managers for Artists, Athletes, Entertainers, & Other Public Figures	0.17	<10	2	NA	NA	16%	NA	NA
7115	Independent Artists, Writers, & Performers	0.63	126	7	9	8%	5%	\$19,732	49.3%
712	Museums, Historical Sites, & Similar Institutions	0.32	37	3	(38)	(51%)	21%	\$45,953	131.4%
713	Amusement, Gambling, & Recreation Industries	0.39	459	46	(8)	(2%)	15%	\$17,591	78.7%
713120	Amusement Arcades	1.13	22	1	NA	NA	37%	\$16,057	98.5%
713930	Marinas	2.65	75	7	(11)	(13%)	14%	\$20,425	62.9%
721	Accommodation	0.72	964	63	58	6%	9%	\$20,033	64.5%
721199	All Other Traveler Accommodation	1.47	16	1	NA	NA	30%	\$17,426	62.2%
721211	RV (Recreational Vehicle) Parks & Campgrounds	2.26	48	6	25	109%	15%	\$13,529	59.4%
722	Food Services & Drinking Places	1.22	9,654	423	742	8%	17%	\$15,372	80.8%
722511	Full-Service Restaurants	1.11	4,029	161	-137	(3%)	14%	\$17,101	81.3%
722513	Limited-Service Restaurants	1.63	4,780	207	830	21%	19%	\$13,497	85.6%
722514	Cafeterias, Grill Buffets, & Buffets	1.80	142	7	-37	(21%)	(9%)	\$16,223	88.6%
44	Retail Trade	1.27	14,024	882	428	3%	6%	\$26,356	85.0%
339992	Musical Instrument Manufacturing	1.81	15	1	3	25%	7%	\$19,939	43.0%
Total, Entertainment & Tourism		1.16	25,711	1,439	1,307	5%	11%	\$21,960	81.4%

Source: Economic Modeling Specialists, Intl. (EMSI)

- ✓ There are 25,711 workers in the Bristol area employed in Entertainment and Tourism subsectors. Although the area is roughly on par with the average American community in terms of overall concentration of Entertainment and Tourism, the Bristol area has a significant concentration of employment in specific components of the target, including racetracks (LQ = 6.61), marinas (2.65), theater companies and dinner theaters (2.41), and RV parks and campgrounds (2.26).
- ✓ Understandably, wages are much lower than the area's average annual wage of \$41,638. However, it is important to note that many of these jobs are often part-time and provide earning opportunities for unskilled workers, retired workers looking for supplemental income, and for college students to

offset educational costs. In addition, the target generates significant sales tax and property tax revenues for the area and attracts outside dollars to the economy.

ENTERTAINMENT AND TOURISM, CURRENT AND PROJECTED IMPACTS

NAICS	Description	2017 Comp- etitive Effect	2017 Demand			2017 Exported Sales		Projection Employment Change, 2017-2027		
			Total (millions)	% Met In- Region	% Met by Imports	\$ (millions)	% of Total Sales	#	%	US %
711110	Theater Companies & Dinner Theaters	30	\$5.26	45%	55%	\$5.27	69%	27	22%	10%
711211	Sports Teams & Clubs	(48)	\$19.96	44%	56%	\$0.11	1%	2	3%	15%
711212	Racetracks	105	\$1.18	95%	5%	\$11.11	91%	(49)	(30%)	(5%)
711219	Other Spectator Sports	(56)	\$3.02	89%	11%	\$1.53	36%	9	21%	5%
7113	Promoters of Performing Arts, Sports, & Similar Events	0	\$14.85	24%	76%	\$0.20	5%	12	39%	21%
7114	Agents & Managers for Artists, Athletes, Entertainers, & Other Public Figures	1	\$7.37	29%	71%	\$0.15	7%	NA	NA	6%
7115	Independent Artists, Writers, & Performers	34	\$18.72	75%	25%	\$2.00	12%	19	15%	4%
712	Museums, Historical Sites, & Similar Institutions	(29)	\$9.05	27%	73%	\$2.18	47%	(4)	(11%)	19%
713	Amusement, Gambling, & Recreation Industries	(178)	\$79.15	28%	72%	\$5.29	19%	52	11%	13%
713120	Amusement Arcades	14	\$1.21	76%	24%	\$0.72	44%	14	64%	34%
713930	Marinas	30	\$2.31	89%	11%	\$2.95	59%	7	9%	16%
721	Accommodation	(158)	\$131.47	54%	46%	\$16.92	19%	9	1%	6%
721199	All Other Traveler Accommodation	7	\$1.17	84%	16%	\$0.25	20%	2	13%	32%
721211	RV (Recreational Vehicle) Parks & Campgrounds	29	\$2.00	99%	1%	\$6.92	78%	20	42%	18%
722	Food Services & Drinking Places	(706)	\$404.39	93%	7%	\$169.25	31%	842	9%	12%
722511	Full-Service Restaurants	(379)	\$183.79	96%	4%	\$33.10	16%	163	4%	9%
722513	Limited-Service Restaurants	(285)	\$174.19	100%	0%	\$130.33	43%	510	11%	13%
722514	Cafeterias, Grill Buffets, & Buffets	1	\$2.33	89%	11%	\$2.34	53%	16	11%	(2%)
44	Retail Trade	111	\$994.04	37%	63%	\$913.65	71%	1,005	7%	4%
339992	Musical Instrument Manufacturing	(21)	\$1.40	16%	84%	\$1.64	88%	NA	NA	0%
Total, Entertainment & Tourism		(915)	\$1,689.86	52%	48%	\$1,129.31	56%	1,924	7%	8%

Source: Economic Modeling Specialists, Intl. (EMSI)

- ✓ In 2017, the Entertainment and Tourism target generated \$723 million in sales. Of that amount, 30 percent were exports, meaning that sales were from customers who are not residents of the Bristol area. More specifically, the eight retail subsectors included in this analysis generated \$289 million in sales, and 65.2 percent of that amount were exports.
 - It is clear that because of the popularity of the Bristol Motor Speedway, racetracks can be categorized as a “traded” sector that brings new money into the community. Over 90 percent of the area’s total sales for this subsector was derived by consumers outside of the Bristol area.
 - It is also notable that 71 percent of retail trade sales are exported sales, indicating that retail in the Bristol area is not only local-serving but also attracts business from outside of the community.

OCCUPATIONAL TRENDS

Although Entertainment and Tourism traditionally is comprised of many occupations with low wages, it is important to emphasize how vital many of these workers are—some will provide the first impression of visitors (and prospective residents, workers, and business owners). Their hospitality or helpfulness or politeness can be the impetus to want to know more about the Bristol area or a lasting negative impression that could be difficult to overcome. Thus, it will be ever important to ensure that workers not only know how to perform their jobs but that they have the interpersonal customer service skills that can go unnoticed when done well but are unforgettable when done poorly.

BRISTOL AREA ENTERTAINMENT AND TOURISM OCCUPATIONAL TRENDS, 2017

SOC	Description		2017 LQ	2017 Jobs	Employment Change, 2012-2017			Average Hourly Earnings, 2017	
					#	%	US %	Bristol Area	% of US
11-9051	Food Service Managers	●	1.41	272	6	2%	3%	\$18.81	82.0%
11-9081	Lodging Managers	●	1.08	34	4	13%	16%	\$24.38	94.5%
11-1021	General & Operations Managers	●	0.76	1,167	8	1%	16%	\$49.14	83.2%
27-2000	Entertainers & Performers, Sports & Related Workers	●	0.78	442	43	11%	6%	\$23.18	88.3%
27-2010	Actors, Producers, & Directors	●	0.36	48	2	4%	7%	\$23.52	65.5%
27-2021	Athletes & Sports Competitors	●	1.48	18	2	13%	(10%)	\$36.25	94.3%
27-2040	Musicians, Singers, & Related Workers	●	1.11	198	13	7%	(0%)	\$25.92	96.5%
27-2041	Music Directors & Composers	●	1.26	56	0	0%	(7%)	\$23.26	90.2%
27-2042	Musicians & Singers	●	1.06	142	13	10%	2%	\$26.97	99.2%
27-2099	Entertainers & Performers, Sports & Related Workers, All Other	●	0.65	15	0	0%	(14%)	\$18.17	86.7%
27-3043	Writers & Authors	●	0.60	59	7	13%	13%	\$17.83	81.3%
35-0000	Food Preparation & Serving Related Occupations	●	1.14	10,357	604	6%	14%	\$10.15	85.4%
35-1010	Supervisors of Food Preparation & Serving Workers	●	1.39	1,031	80	8%	15%	\$14.56	82.1%
35-1011	Chefs & Head Cooks	●	0.49	50	9	22%	32%	\$19.78	88.0%
35-1012	First-Line Supervisors of Food Prep & Serving Workers	●	1.54	981	71	8%	12%	\$14.29	84.2%
35-2000	Cooks & Food Preparation Workers	●	1.10	2,473	51	2%	11%	\$10.21	84.9%
35-3000	Food & Beverage Serving Workers	●	1.20	6,121	498	9%	15%	\$9.42	84.4%
35-9000	Other Food Preparation & Serving Related Workers	●	0.76	731	(25)	(3%)	10%	\$9.89	91.0%
37-2011	Janitors & Cleaners, Except Maids & Housekeeping Cleaners	●	0.78	1,346	15	1%	3%	\$12.07	90.4%
37-2012	Maids & Housekeeping Cleaners	●	1.10	1,105	0	0%	(7%)	\$9.30	83.2%
37-3000	Grounds Maintenance Workers	●	0.96	908	(20)	(2%)	6%	\$11.31	83.3%
39-3000	Entertainment Attendants & Related Workers	●	0.68	286	38	15%	10%	\$10.47	92.4%
39-3021	Motion Picture Projectionists	●	1.17	<10	NA	NA	(31%)	NA	NA
39-3099	Entertainment Attendants & Related Workers, All Other	●	1.80	<10	NA	NA	(50%)	NA	NA
41-2011	Cashiers	●	1.36	3,271	159	5%	7%	\$9.83	92.3%
41-2031	Retail Salespersons	●	1.34	4,082	202	5%	2%	\$11.96	90.4%
43-4081	Hotel, Motel, & Resort Desk Clerks	●	1.19	205	15	8%	11%	\$9.56	82.0%

Source: Economic Modeling Specialists, Intl. (EMSI)

- ✓ The most concentrated occupations in the target are entertainment attendants and related workers (LQ = 1.8), first-line supervisors of food preparation and serving workers (1.54), athletes and sports competitors (1.48), food serving managers (1.41), cashiers (1.36), retail salespersons (1.34), and music

directors and composers (1.26). Two of these, athletes and sports competitors and music directors and composers, earn average hourly wages exceeding the area's overall average of \$20.17.

- ✓ Occupational growth from 2012 to 2017 has been positive for all but two selected occupations, other food preparation and serving related workers (-3 percent) and grounds maintenance workers (-2 percent). Although the nation has experienced a more rapid growth rate overall, there were seven occupations that experienced nationwide decline over the five-year period.
- ✓ While many of the occupations related to Entertainment and Tourism do not require formal education, they do require "soft" skills focused on attitude, dress, customer relations, professional behavior, and hygiene that employers indicated during stakeholder input sessions should be a focus area in public schools and other workforce training programs.

STRATEGIC IMPLICATIONS

- ✓ Continued efforts to differentiate the Bristol area as a tourism destination will support growth in this target.
- ✓ Strategies could be pursued to grow the community's music sector by leveraging existing assets like the Birthplace of Country Music Museum, Radio Bristol, and local performance venues.
- ✓ To support the Bristol area's growing food and beverage scene, workforce training geared to restaurant operations was noted as a critical need.
- ✓ Ongoing efforts to attract investment, stimulate small business growth, and provide differentiated assets in Downtown Bristol will contribute to growth in this target.

MARKETING REVIEW

This review of the Bristol Area's economic development marketing efforts complements the Target Sector Analysis by confirming the viability of existing programs and identifying potential enhancements to future efforts. Market Street's framework for assessing community and economic development marketing programs is based on our client communities' efforts and best practices from top chambers and economic development organizations, regions, institutions and companies. Coupled with the key findings of the Community Assessment and Target Sector Analysis, Market Street will leverage the principal takeaways of the Marketing Review to directly inform development of key components of the Bristol 2040 Strategy.

Currently, the Bristol area is marketed by a number of entities for job creation and tourism development. As is the case for other components of the community's programmatic implementation, the Bristol area is represented by organizations on both sides of the state line. Its Tennessee communities are promoted by **NETWORKS Sullivan Partnership (NETWORKS)**, which represents Bristol, TN-VA, Kingsport, TN, and Bluff City, TN, or what it calls "two-thirds of the Tri-Cities Region".

On the Virginia side, the Virginia Economic Development Partnership (VEDA) website promotes a region called the **I-81 I-77 Crossroads**², which it describes as "a prime Southwest Virginia location...The I-81 I-77 Crossroads region is at the intersection of two major interstate highways, allowing companies quick access to national markets. Composed of six counties (Bland, Carroll, Grayson, Smyth, **Washington**, and Wythe) and two cities (**Bristol** and Galax) with a total population of nearly 200,000, much of the area lies in picturesque valleys bordered by the Blue Ridge and Allegheny Mountain ranges." The website also links to a twitter feed for I-81 I-77 Crossroads (https://twitter.com/viaa_i81i77) and a website (i81-i77crossroads.com).

However, the I-81 I-77 URL links to a website for an entity called the **Virginia's Industrial Advancement Alliance** (<http://viaalliance.org>). Confusingly, the Alliance website notes that it "represents a population of about 193,000 in five counties and one city in Virginia. Stretching from Carroll County to Bland County along Interstates 81 and 77, the organization include membership of Smyth, Wythe, Grayson, Carroll and Bland counties, and the City of Galax." **Clearly, at some point, Washington County and the City of Bristol ceased to be affiliated with a regional marketing entity in Virginia and are now not promoted externally by any organization.**

² <https://www.vedp.org/region/i-81-i-77-crossroads>

The **City of Bristol, Tennessee's Industrial Development Board** has authority to authorize industrial development bonds under state and federal statute amid other powers. The Bristol, Tennessee City Council appoints seven members to the IDA Board, which handles the city's Economic Development Strategy and Economic Development Incentive Program.

For hospitality and tourism purposes, Bristol, Tennessee is included in regional promotion efforts of the **Northeast Tennessee Tourism Association**, which primarily serves Carter, Greene, Hancock, Hawkins, Johnson, Sullivan, Unicoi, and Washington counties in Tennessee but also supports portions of Southwest Virginia.

An affiliate of the Bristol Area Chamber of Commerce, the **Bristol Area Convention and Visitors Bureau** (branded as Discover Bristol) receives general fund allocations in Bristol, TN-VA to engage in tourism-promotion activities. Its parent organization, the **Bristol Chamber of Commerce** supports the growth of existing local businesses but does not invest in an external economic development program.

As noted earlier, the Bristol area joins with nine other counties in the NETVRIDA marketing partnership. However, there is no single entity that markets the Tri-Cities region nor the expanded geography including Bristol and Washington County, Virginia. An announced regional communications and marketing effort initially branded as **Appalachian Highlands** would represent an area inclusive of yet broader than the Tri-Cities. Driven by the region's three largest employers – Eastman Chemical, Ballad Health, and ETSU – the campaign would seek to change external perceptions of the greater Tri-Cities. Some local leaders and economic development professionals are concerned that the Bristol area may be overshadowed by Kingsport and Johnson City in the campaign.

When Community Assessment survey respondents were asked, "Would there be benefit to creating and marketing a cohesive Tri-Cities 'brand'?" an overwhelming majority (82.6 percent) answered "yes." However, consensus does not extend to how this could be accomplished.

Economic Development Marketing Overview

Prior to an assessment of the Bristol area's current external marketing efforts, it is instructive to present the components of a fully comprehensive program to highlight the extent to which communities promote a brand, message, and competitive profile to external investors and visitors. These core programmatic elements are applicable and adaptable across many communities and serve to highlight organizations differentiate their markets from competitors.

In addition to messaging, programs should focus on the relationship-building necessary to ensure that corporate and economic development "influencers" have the community on their radar as they consider locations for investment. In the end, however, marketing is just one of three legs on the "stool" of effective economic development, including existing business retention and expansion, and small business/entrepreneurship support services.

Holistic programs focus both on internal (key investors, existing businesses, entrepreneurs, government, institutions, organizations, and residents) and external (site selectors, prospective companies, future residents, and skilled workers) audiences. They are professionally staffed, sufficiently funded, and targeted on sectors that provide the greatest opportunity for high-value growth. External marketing focuses on communicating the community's competitive assets and opportunities to outside audiences. Internal marketing addresses the need for local stakeholders to understand strategic development initiatives, efforts to enhance competitiveness, and be able to effectively tell the community's "story" to companies, talent, and visitors. Residents and businesses must be vocal champions for their community; not only is every visitor to a community a potential investor or resident, but companies and site consultants often seek out business leaders independent of visits with economic development officials in order to get unbiased and informed opinions about the local business climate.

COMMUNITY BRAND

In marketing, a brand is often described as a “promise fulfilled.” It is less about a cute tagline and more about presenting a value proposition that can be supported by results. The idea of a brand was historically synonymous with corporations and their logos and projected “personalities” that identify the company and its products to consumers. However, the understanding of branding now goes beyond a designed symbol for a product and reflects a broader set of characteristics, including expertise, consistency, and innovation. Apple Inc.’s products are desired throughout the world, not because of a picture of an apple, but because they have the widely-held perception of being cutting-edge, usable, and accessible.

So too must a community work to establish its own brand, a concept that must be consistently and easily represented through its logo, messaging, marketing outreach, materials, and actions. According to CEOs for Cities, a community brand “is a tool that can be used by cities to define themselves and attract positive attention in the midst of an international information glut.” The community brand should be understood as the umbrella under which marketing activities occur. Successful marketing and messaging will be reflective of the values, competitive advantages, and opportunities that are inherent in the brand.

DIRECT SALES

Direct sales are activities that place economic development organizations (EDOs) face-to-face with their target audiences. These activities include marketing missions, in-bound events, and trade show attendance. Direct sales strategies are important for relationship-building with key corporate and professional influencers and decision-makers. Consistency in direct sales is critical so that EDO staff and key local volunteers can leverage multiple meetings with prospect companies and site consultants to build relationships that can eventually bear fruit through new investments or relocations.

Marketing Missions

Marketing missions are opportunities for EDO staff and key local public and private leaders to travel to domestic or international markets that can provide good opportunities to meet with and attract targeted companies to the community. These missions should entail detailed pre- and post-trip planning to ensure that time spent in the market is maximized and future trips can be planned and programmed to provide the highest value possible.

In-Bound Marketing Events

In-bound events are often planned around a major local festival or attraction (i.e., South-by-Southwest in Austin, the Jazz Festival in New Orleans, or a major sporting event like the Super Bowl or Final Four). The event must be compelling enough to secure commitments from corporate and site location professionals who often field multiple offers at one time. As with marketing missions, in-bound events should be carefully and strategically programmed to ensure face-time with decision-makers and site consultants is optimized.

Trade Shows and Real Estate Events

Typically associated with industry sectors (aviation, biotechnology, agriculture, etc.) or real estate associations (NAI, SIOR, CORENET, etc.), these shows and events can be ways to invest in marketing opportunities geared

towards target sectors or communicate to site consultants and real estate professionals the community's competitive strengths and targeted opportunities. While they can be useful, these trips are often cost-intensive (travel, booth display, marketing materials, etc.) and crowded, with hundreds or thousands of competing communities vying for attendees' attention. Local communities should always try to piggyback trips with state organizations that might shoulder more of a fiscal load. On the whole, marketing missions tend to provide more value than these industry events and should be prioritized as such.

WEBSITE

A professional, consistently updated, user-friendly, and content-driven website is an absolute necessity in today's economic development climate. A chamber or economic development organization website is often the front door to the community— a first impression to site selectors, prospective companies, and future residents. The website can also help build, shape and support relationships with internal constituents. Simply stated, an economic development organization's website must be easily navigable, visually appealing, and contain complete, accurate and sought-after information. That is not a future goal. It is the standard by which the community is judged.

SOCIAL MEDIA

Leveraging social media as a vehicle for business and economic development marketing has become an integral component of most organizations' toolkits. EDOs able to capitalize on new and dynamic tools with flexibility, discretion, and targeted success are reaching new markets and building trust and communication among existing audiences. There are many reasons for economic development practitioners to utilize social media networks and tools; principal among them is being able to contribute to and guide online conversations that are shaping how communities are perceived and promoted.

ONLINE AND TRADITIONAL MEDIA

The move to an around-the-clock news cycle and constant online media coverage creates many opportunities for communities to gain publicity. However, not all coverage is created equal. Three types of media coverage—paid, owned, and earned—impact the authenticity and legitimacy of messaging. With so much information inundating consumers and clients, it is important that publicity be genuine and engaging.

- **Earned Media:** Coverage stimulated by an organization "winning" coverage by reaching out to and interacting with a third-party channel. This type of coverage carries the most legitimacy and authenticity as it is part of an ongoing information flow. Of course, this kind of coverage is harder to control and can, at times, be negative.
- **Paid Media:** An organization pays for a story or advertisement. The credibility of this type of media is low as consumers are less inclined to take an organization's word for it. However, the organization has much more control over and closeness to the message, a level of influence that not replicated with other forms of coverage.

- **Owned Media:** The dissemination channel is part of the outputting organization. Examples include organization newsletters (printed and electronic), websites, blogs, promotions, and press releases. This type of coverage can be closely controlled, and defined audiences can be targeted with specific messages. Though some may question the trustworthiness of the message, quality owned media can often stimulate earned coverage.

PRINT COLLATERAL

The use of print collateral, including brochures, direct mail, print advertising, and handouts, has waned in recent years but still bears some importance to certain economic development marketing campaigns. Much of this collateral is used to paint a picture of the competitive nature of a community's business climate and thus aimed at business prospects. Drawbacks to these kinds of marketing techniques include high production costs, personnel time, and rapidly changing data that can make materials obsolete quickly. Thus, the trend has largely been to move away from investments in print collateral or create digital materials.

Bristol Area Marketing

The "Bristol area" for the purposes of Bristol 2040 includes Bristol, TN-VA, Sullivan County, Tennessee and Washington County, Virginia. Because this is not an "official" geography for government data reporting entities or representation by an EDO, there should be no expectations that marketing for this community designation is the responsibility of a single organization. Rather, this Marketing Review seeks to identify and detail the principal ways the Bristol area is promoted to potential employers and investors.

Traditional economic development external marketing for Sullivan County, Tennessee, inclusive of the City of Bristol, Tennessee, is overseen by NETWORKS. The Bristol area's Virginia communities included in the NETVRIDA footprint, but otherwise are not promoted externally for economic development at this time through a holistic program. The Bristol Chamber and the cities of Bristol, TN-VA maintain websites and social media with promotional components, but these entities do not engage in additional external programming. Two Bristol area utilities are also investors in the coalition of regional power generators called NETVRIDA, which includes communities in Tennessee and Virginia.

COMMUNITY BRAND

The Bristol Chamber celebrates the community's music history with its iconic guitar-inspired "B" logo prominently displayed outside its headquarters. And the famous State Street sign promoting Bristol, TN-VA as "A Good Place to Live" has become a recognized identifier. But the community currently does not have an officially promoted local brand. In 2017, Bristol, TN rolled out a new branding campaign called "BrIStol" (or "Bristol is"); some feel this brand makes sense to be adopted on both sides of the state line.

NETWORKS promotes a brand "Where Tennessee Begins its Business Day" for their Sullivan County geography, but there is no equivalent brand for the broader Tri-Cities region. The Appalachian Highlands

initiative will eventually seek to create a more definitive association with the region in the minds of external audiences.

DIRECT SALES

Direct sales are most effective when focused on priority target sectors in which the community has competitive advantages. The Target Sector Analysis component of this report recommends four industries specific to the Bristol area for targeted pursuit. The community's representation by regional EDOs provides opportunities for promotional outreach in a broader set of targeted categories. NETWORKS Sullivan Partnership currently targets the sectors of Aerospace; Automotive Suppliers; Distribution; Food Processing; Plastics and Chemicals; and Steels and Metals. The 13-county NETVRIDA coalition currently targets Appliances; Chemicals; Logistics and Transportation; Call Centers; Motor Vehicles; Health Services/Life Sciences; and Plastic and Rubber.

Economic development officials noted that the vast majority of Bristol area prospect leads are generated and distributed via state economic development departments. Tourism officials noted that Discover Bristol engages in direct sales activities and could potentially increase its exposure if funds were available to enhance these efforts.

Marketing Missions

Currently, economic development entities representing the Bristol area do not invest significantly in speculative out-of-market prospecting trips either domestically or internationally. However, NETWORKS participates in outbound trips with the Tennessee Department of Economic and Community Development, Tennessee Economic Partnership, TVA, and other entities, typically oriented around aerospace due to the presence of Aerospace Park, a direct-airfield development at Tri-Cities Airport. The site offers 20 acres certified for immediate development and an additional 140 acres under preparation. NETWORKS notes in its 2018 Annual Report that the organization was represented at every outbound Tennessee Economic Partnership event. NETWORKS also partnered with Tri-Cities Airport on two outbound trips to Dallas and South Carolina.

Many times, marketing missions are "pay-to-play" opportunities via larger EDOs or are tag-along trips with a state governor or economic development team that provide little value to smaller communities. Therefore, Market Street believes the Bristol area does not sacrifice realistic corporate attraction opportunities by not investing significantly in direct missions of this type.

In-Bound Marketing Events

NETWORKS hosts an annual Red Carpet Tour for site consultants in which the visitors are introduced to Sullivan County's competitive assets, sites, and top companies. The tour itinerary include a songwriter's forum at the Birthplace of Country Music Museum, pit passes at Bristol Motor Speedway, a tour of Aerospace Park, and presentations at the Regional Center for Advanced Manufacturing (RCAM), an offsite teaching facility for Northeast State Community College located in downtown Kingsport. NETWORKS also participated in two state-wide inbound events hosted by the Tennessee Economic Partnership: the CMA Festival and Consultant Connect's ECONOMIX conference. NETWORKS also participates in marketing events hosted by other

Tennessee communities. In addition, the organization hosts site consultants to the region four to five times per year outside of the Red Carpet Tour.

Trade Shows and Real Estate Events

NETWORKS staff typically attends from four to seven trade shows per year, including three aerospace shows. Attendance is principally coordinated in partnership with the state of Tennessee and/or the Tennessee Valley Authority economic development team. NETWORKS officials note that meetings are set up with potential prospects and other influencers at these shows in partnership with Tennessee and TVA representatives. NETWORKS only exhibits at one show per year, the MRO Americas Conference, billed as the aviation industry's top aircraft maintenance conference and exhibition. This was the fourth consecutive year NETWORKS exhibited at this show. NETWORKS also partners with the Tri-Cities Airport to promote opportunities at the Aerospace Park.

Market Street feels that trade show attendance has, on average, a very low return on investment. This is especially true for the extremely large global shows like BIO and the Paris Air Show. There is simply too much competition for a community of the Bristol area's size to truly stand out. However, the Tri-Cities Aerospace Park does provide a differentiated asset for the Bristol area to leverage. NETWORKS and other organizations should collaborate on smart, cost-effective, but meaningful strategies to identify the top domestic shows for attendance and potential sponsorship, particularly in aircraft maintenance.

NETWORKS also attends selected real estate events for entities such as NAI, SIOR, CORENET, and others as part of their "Recruit the Recruiters" strategy. Last year, NETWORKS joined the Tennessee Economic and Community Development Department and TVA at the Site Selectors Guild conference in Cincinnati. These are valuable if utilized to build relationships with corporate real estate professionals who can potentially bring projects to the Bristol area, but only if attendance is effectively programmed with one-on-one meetings and targeted outreach to consultants with strong portfolios in aerospace and the Bristol area's highest priority target sectors.

WEBSITE

The online presence of a regional economic development organization must be its most polished and effective marketing tool. Websites are typically the point of first contact for prospects and site-location professionals, who will only contact a community (either directly or through a regional or state agency) once a short list of destinations has been developed. Therefore, economic development websites must be graphically compelling, user-friendly, logically designed and structured, and provide a wealth of timely information on all aspects of the regional economy, population, physical assets, and quality of life and place amenities.

NETWORKS Sullivan Partnership

<https://networkstn.com>

This website serves as the economic development home page for the Sullivan County, Tennessee market.

UTILITY AND DESIGN

Overall design and layout	<ul style="list-style-type: none"> Overall, the site has a nice clean look and visual appeal. Use of images and graphics is effective as opposed to a text-heavy design. Header tabs function well and link to information that is useful for multiple audiences Sub-pages are more text heavy and less visually compelling, which NETWORKS notes is by design due to a greater focus on depth and accuracy of the presented information NETWORKS's tagline, "Where Tennessee Begins its Business Day," is not displayed on their website
Home page	<ul style="list-style-type: none"> The landing page is well-designed with scrolling graphics that draw attention to the community's top assets Inclusion of icons representing target sectors and interactive mapping on the top quadrant of the home page is effective and demonstrates a good grasp of the site's principal target user Translation flags are prominently displayed, functional, and contain more languages than are typically found on an economic development website The front-facing presence of NETWORKS' promotional video and top PDF downloads is a smart choice We like the positioning of the social media links in the upper right corner but also appreciate when sites have a running scroll of latest social media posts included on the landing page The "My Report" link in the top right of the home page is a welcome tool, except the page was not functional at the time of review
Navigation	<ul style="list-style-type: none"> Navigation is fairly intuitive and user-friendly, with all links being active. It is also appreciated that links do not open in new browser windows. Sub-pages are easily accessible and contain useful information, but are less visually appealing than the home page
Interactivity	<ul style="list-style-type: none"> We would like to see more data interactivity, including the ability for site users to customize spreadsheets in a downloadable format like Excel The Map Center on the landing page is a nice feature and functions well. Customized maps are available via a link to the TVA site location database at: https://tvasites.com As noted, the report generator feature on the website was not functioning at the time of review.
Timeliness of information	<ul style="list-style-type: none"> Timeliness of data on the site could be improved. Many indicators do not have source years listed or feature data that has not been updated with the latest reported figures. For example, construction cost data, which can be highly variable, does not have a source date for the information.

	<ul style="list-style-type: none"> The only source year for tax data is 2014 for local rates. Remaining rates years are not cited. The latest sourced data for demographic information is 2015; there have been additional local area updates reported since that time. Similarly, workforce data is either sourced from 2014 figures or does not have a data year listed.
Content	<ul style="list-style-type: none"> (see following two tables)

Adapted from the American Chamber of Commerce Executives Awards for Communications Excellence (ACE) scorecard and Southern Economic Development Council Communications Awards score sheet

TOP 10 MOST USED ECONOMIC DEVELOPMENT WEBSITE PAGES

1	2	3	4	5	6	7	8	9	10
About Us	Programs	Data Center	News	Relocate & Expand	Find Property	Site Selection Services	Workforce Information	Large Employers	Maps
Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

MOST USED INFORMATION BY SITE SELECTORS

Contact Info	Incentive Programs	Tax Rates	Recent Announcements	Target Industry Info	Interactive Mapping Tool	Site Building Inventory	& Workforce Training Info
Y	Y	Y	Y	Y	N*	Y	Y

*Linked via the TVA sites website

If the issues cited with the NETWORKS website are resolved it will be an even stronger tool for local economic development. As it stands, it is already a useful resource for its intended purposes.

Northeast Tennessee Valley Regional Industrial Development Association (NETVRIDA)

<http://netvaly.org/index.php>

This website serves as the principal information portal for 13-county Northeast Tennessee Valley region in Virginia and Tennessee. The organization is funded by 11 power generators in the region.

UTILITY AND DESIGN

Overall Design and layout	<ul style="list-style-type: none"> The design is professional but feels a bit static and dated. Content is limited to the center quadrant of the page and could be expanded to the full width of the screen Use of larger images could make the site more dynamic, in addition to upgrading text design and layout
Home page	<ul style="list-style-type: none"> Sufficient yet static and should be optimized for full-screen content

	<ul style="list-style-type: none"> • We appreciate the size and placement of the social media scrolling feed • Translate tool is very hard to find and only translates site into German • Alternating snapshots in upper right quadrant should be larger and the font more distinctive • Prominent placement and size of the recent announcement news is effective • FTZ, site database, and Bristol Speedway links at the bottom of the page are well-chosen
Navigation	<ul style="list-style-type: none"> • Overall, navigation is satisfactory and largely intuitive • Information on sub-pages is text-heavy and largely consists of links to other sites and organizations • Link to the "Education" subpage via "The Region" tab is inactive
Contact information	<ul style="list-style-type: none"> • Contact information is not readily accessible from the home page • "Contact Us" link is buried under the "About Us" tab or listed separately in small font at the bottom of the home page • Once accessed, however, contact names, images, and information is prominently displayed
Interactivity	<ul style="list-style-type: none"> • There is very little interactivity in the website, which has a static feel. As noted, content largely consists of brief information capsules or links to other sites • There are no mapping or customizable data tools on the site, although customized mapping is available via the TVA site database link
Timeliness of information	<ul style="list-style-type: none"> • There is very little data presented on the site; most data sub-pages consist of links to other organizations and sites and/or PDF files • What data is presented is not sourced by year
Content	<ul style="list-style-type: none"> • <i>(see following two tables)</i>

Adapted from the American Chamber of Commerce Executives Awards for Communications Excellence (ACE) scorecard and Southern Economic Development Council Communications Awards score sheet

TOP 10 MOST USED ECONOMIC DEVELOPMENT WEBSITE PAGES

1	2	3	4	5	6	7	8	9	10
About Us	Programs	Data Center	News	Relocate & Expand	Find Property	Site Selection Services	Workforce Information	Large Employers	Maps
Y	N	N	Y	N	Y	Y	Y*	Y**	Y***

*Limited and not sourced by date; principally available through external links

**Difficult to locate as they are listed by sector under the target industries tab

***Available via links to TVA site and building database

MOST USED INFORMATION BY SITE SELECTORS

Contact Info	Incentive Programs	Tax Rates	Recent Announcements	Target Industry Info	Interactive Mapping Tool	Site & Building Inventory	Workforce Training Info
Y	N	Y	Y*	Y	N**	Y**	Y

*No news posted since summer 2018

**Available via link to TVA site and building database

Even though many of the categories in the previous two tables are included on the NETVRIDA site, the content is either difficult to locate, not as useful or data-rich as necessary, or provided via links to other sites and partners. Overall, the NETVRIDA warrants a refresh and update to take it to industry-standard levels of content, design, interactivity, and utility. For such a large (13-county) region, site selectors and other influencers would certainly expect a more professional and dynamic online economic development tool.

Bristol (TN-VA) Chamber of Commerce

<https://www.bristolchamber.com>

The Bristol Chamber website is not intended to be an external economic development marketing tool in the context of a traditional prospect-attraction focused model aimed at the site location community and typical employer relocation prospects. Therefore, the below table focuses instead on its efficacy as an online tool for the community.

UTILITY AND DESIGN

Overall Design and layout	<ul style="list-style-type: none"> The Chamber website is well-designed, visually dynamic, and current-feeling online resource Content is useful and well presented
Home page	<ul style="list-style-type: none"> The large image of the chamber building is used effectively on the home page to capture the viewer's attention; ideally, we would like to see shifting images with additional community landmarks presented on the landing page.

	<ul style="list-style-type: none"> • Well designed and placed social media links just below the screen break • Icons for links to new membership, the Chamber store, and the Bristol 2040 process are positioned prominently and clearly • Especially useful scrolling information presented on Upcoming and Community Events and list of new members • Nice use of icons for links to Directory, Deals, Map, News, and Calendar • We appreciate the inclusion of the current time and weather tab • Scrolling list of top investors on the bottom of the page is effective
Navigation	<ul style="list-style-type: none"> • Banner tabs with sub-page links are well placed and intuitive; we would like for the links to populate when the mouse hovers over the tab instead of having to click for access • Lots of useful sub-pages with good graphical appeal and underlying content • We especially like that the scrolling events list is included on all sub-pages • We also appreciate that sub-page links to local partners are featured via large, colorful logos
Contact information	<ul style="list-style-type: none"> • President's message is listed prominently on the landing page • Contact email is provided at the bottom of the page • Staff listing is available via a sub-page link, but we would like to see contact information presented more directly on the home page and sub-pages, however
Interactivity	<ul style="list-style-type: none"> • Multiple functional interactive tools, including many features for members and visitors to access calendars, social media feeds, and other information • We like the interactive map feature on the Relocation tab; very useful and information-rich • The "Get Social" tab is a creative inclusion of social media content
Timeliness of information	<ul style="list-style-type: none"> • Events calendar is current and includes multiple listings • All community related information, business listings, and local resources appear current, although we cannot verify that it is completely up to date • Under "What's New" tab, Hot Deals and Job Postings have no content, while latest News posting is from March 2017 • Chamber blog appears to have not been updated since April 2018; if the blog is no longer being produced, we would recommend removing the tab and content from the site

Adapted from the American Chamber of Commerce Executives Awards for Communications Excellence (ACE) scorecard and Southern Economic Development Council Communications Awards score sheet

Overall, we feel that the Bristol Chamber website is a well-designed, information rich, and effective community promotion and access tool. The site uses graphics, icons, and interactive content in a compelling

way and provides all the necessary information sought by typical users of a chamber of commerce website. With slight updates to news, jobs listings, blogs, and other content, the site would be even that much more effective.

Bristol Convention and Visitors Bureau

<https://discoverbristol.org>

As a division of the Bristol Chamber, the Bristol Convention and Visitors Bureau features a website that serves as an online gateway for prospective and returning visitors.

UTILITY AND DESIGN

Overall Design and layout	<ul style="list-style-type: none"> • Very visually compelling and colorful, with a multitude of images • At times, the sheer number of images can be a bit overwhelming; more text-based content and accessible links could help balance out the prevalence of photos
Home page	<ul style="list-style-type: none"> • Effective use of local images to draw the user's attention • Good placement of social media links, promotional video, and content tabs • Would potentially like to see more content links accessible on the home page without having to click on the banner tabs or content category tabs next to the video • A consideration should be given to having the events calendar featured more prominently on the home page, perhaps via scrolling content or an interactive calendar image • Instagram images are large and plentiful, perhaps overly so; would be nice to see them more clearly labeled
Navigation	<ul style="list-style-type: none"> • Navigating the site is fluid, intuitive, and user-friendly • Plentiful sub-pages and useful content • As with the site overall, use of smaller images on sub-pages would make the links more accessible and allow for more content as opposed to just images • Because none of the content links have information populated under "reviews," this option should probably be removed • The "Blog" tab should be renamed – the content is useful, but consists of sample itineraries not blog posts • The "Get Social" tab is likely redundant as the Instagram posts are already presented on the home page
Contact information	<ul style="list-style-type: none"> • An envelope icon is available at the top and bottom of the home page to launch an email program, but we would like to see a more prominent "contact us" option or a staff tab on the homepage banner
Interactivity	<ul style="list-style-type: none"> • Interactive features are effective, although we would like to see the calendar or events listing more readily accessible

	<ul style="list-style-type: none"> The sample itineraries feature is very well done yet the large number of images seems to slow the download time for the content Multiple opportunities to link to social media posts, but only images are featured and rarely content; as noted, no “reviews” posted for sub-page links
Timeliness of information	<ul style="list-style-type: none"> The event calendar is current Links to partners across multiple visitation categories are assumed to be current

Adapted from the American Chamber of Commerce Executives Awards for Communications Excellence (ACE) scorecard and Southern Economic Development Council Communications Awards score sheet

The Discover Bristol website is an effective one-stop shop for potential and returning visitors to identify tourist attractions, dining options, accommodations, and cultural as well as entertainment events in Bristol, TN-VA. The site is consistent with expectations for design and content among those interested in the Bristol area as a destination. We would like to see a more streamlined use of images, however, not only to make content more accessible and plentiful, but to potentially improve download times to access sub-pages.

SOCIAL MEDIA

Social media has become an integral component of a holistic economic development marketing program. Different sites are utilized by different audiences, so EDOs must be smart in terms of which accounts they utilize and the content presented there. Above all, if a social media tool is utilized, content must be posted consistently to ensure that influencers flag or frequently visit the EDO’s account to receive updated information and access new posts.

NETWORKS Sullivan Partnership

- **Facebook** account contains useful content, plentiful images, and is updated consistently with new original posts and reposts from partners
- **Twitter** feed redirects to account of NETWORKS director; content is regularly posted and is useful for intended audiences
 - All NETWORKS staff have professional Twitter accounts as well
- **YouTube** account until recently contained NETWORKS’ promotional video of the area but no other content; the account recently added a Discover Bristol promotional video and three short films are planned; its use could potentially be discontinued as the video is prominently featured on the NETWORKS website and Facebook page
- Staff also utilize **LinkedIn** as a tool to make connections and start valuable relationships

Northeast Tennessee Valley Regional Industrial Development Association (NETVRIDA)

- **Facebook** account is sole social media presence; account is updated roughly every month with a new post; additional postings could improve the efficacy of the tool
- NETVRIDA should consider adding a social media tool more typically associated with a business audience such as twitter or LinkedIn

Bristol Chamber of Commerce

- **Facebook** account is well utilized with photo and video content, event information, and regular postings on community and organizational activities
- **Twitter** feed is consistently updated with relevant information; account has nearly 3,500 followers
- **Periscope** icon links to the site but not the Chamber account
- **Instagram** feed is regularly updated with content appropriate to the desired audience

Bristol Convention and Visitors Bureau

- **Facebook** account is regularly updated with useful content, including events listings and relevant media articles
- **Twitter** feed includes multiple recent posts with links to media content, events, and other information useful to desired audiences
- **YouTube** account contains four posts and has not been updated for a year; consideration should be given to eliminating the use of this tool
- **Instagram** account is very effectively used and compelling; we especially like the use of the content icons at the top of the account page. This feature should be considered for use on the Discover Bristol website as well

ONLINE AND TRADITIONAL MEDIA

Earned Media

Bristol area EDOs do not invest in public relations contracts or have in-house PR staff at this time.

Paid Media

NETWORKS Sullivan Partnership advertises in site selection magazines six times per year but only if it is given featured editorial content in the magazine. Market Street typically does not advocate for investment in paid media in these trade magazines, but the ability to craft featured content makes these ads more worthwhile. However, in the long run, expending budgeted monies on site selection magazine ads should be reconsidered as an external marketing strategy. NETWORKS also advertises in more creative outlets such as suites in sports stadiums and other venues.

The Bristol Chamber and CVB also utilize tradition and online media advertising to promote the community and specific events.

Owned Media

NETWORKS Sullivan Partnership produces a quarterly e-newsletter that is well done and contains a significant amount of content. It also effectively utilizes images and links to relevant media content. It is delivered consistently with no lags, which is often a concern for EDO-produced material. The NETWORKS Community Video is one of the better Market Street has seen of this type. It effectively presents the area's advantages and avoids many of the clichéd images and content often seen in these types of productions. Upon its launch in 2016, the video has been seen over 800,000 times. Three years after its release, the video has been updated twice and thus does not feel dated. The organization has also created and posted a Quality of Life video in 2018, while a Workforce Training and Education video is currently in production.

The Discover Bristol videos posted on the organization's YouTube page are very professionally done. The longer form video is principally directed at stock car racing fans and visitors interested in craft beer. The three short 15 second television spots each feature a different subject area, from fishing to shopping and dining to beer and racing, all with the tagline of "who says you can't be in two places at once," a reference to Bristol's two-state geography. While the videos are visually compelling and slickly produced, the content feels a bit generic in the context of the vast number of community lifestyle and tourism promotional videos currently in the marketplace. While challenging to differentiate in this crowded promotional environment, future content could nevertheless be more unique to the Bristol area's unique character.

PRINT COLLATERAL

NETWORKS' Aeronautics Sector informational document contains 2014 data and is in need of an update. It would also benefit from more dynamic graphical design content and complexity.

Clout Magazine, the Bristol Chamber's seasonal magazine, is consistent with typical publications of this type, with multiple local ads and community-specific content. For a community of Bristol's size, it is not expected that Clout have the same look and feel of a large regional chamber with the assets to produce newsstand-quality publications. However, consideration could be given to slightly upgrading Clout's design sophistication and layout quality to make it a more compelling tool for potential investors and prospect companies who access the magazine online.

Market Street was very impressed with the most current version of the Discover Bristol visitor's guide. Pullout maps of the Twin City, Downtown Bristol, and the Pinnacle lifestyle mall were especially well crafted. The guide is equivalent to the quality one would find in a much larger destination community. We would expect that Bristol area visitors find the guide to be very user-friendly and useful for their purposes.

Tourism representatives note that a Bristol visitor's map has been designed, with ads currently being sold. The map will be distributed to all key partners.

Overall Perspectives

The Bristol area's population size and compact geography does not warrant investing in a high-dollar, multi-media, multi-platform, holistic external economic development marketing program. Ultimately, incorporating the Bristol area into a truly regional marketing initiative for a geography inclusive of the Tri-Cities plus the region's Virginia communities would be sufficient to ensure that local assets were promoted to potential investors and employers domestically and, potentially, internationally. Local economic development professionals would work with regional and state staff to provide necessary information on local assets and opportunities, respond to promising leads and requests for information, and support prospect management responsibilities, site visits, and other client-management activities.

Currently, the Bristol area is marketed externally by two EDOs, the 13-county NETVRIDA coalition and the one-county NETWORKS partnership. Of the two, NETWORKS features the more professionalized programmatic and promotional content and outputs. NETWORKS is a well-run and competitive organization. It is redoubling efforts to focus on existing business services and support, and it works regularly with lead-providing organizations at the state-level

Because of its massive 13-county footprint and correspondingly high number of target sector focus areas, NETVIDRA does not provide a lot of value add for the Bristol area. It must also upgrade its website and better differentiate its programmatic advantages to its member communities in order to maximize its local and regional impact.

In the future, the Bristol area should continue seeking to improve its community product for existing residents, visitors, and businesses. As the Twin City becomes a more competitive location for investment, it will be better positioned to capitalize on enhanced regional economic development marketing to external audiences, be it through the Appalachian Highlands campaign or another Tri-Cities-focused initiative.

CONCLUSION

Many communities and economic regions are faced with a stark reality when evaluating their economic competitiveness and defining their economic potential: a relative lack of assets and opportunities upon which a targeted economic development strategy can be derived. Fortunately, the Bristol area has both local and regional assets and opportunities upon which it can build a targeted approach to economic development.

The Bristol area has a strong history of manufacturing that provides a solid foundation of talent and anchor businesses for two target sectors: Chemical Manufacturing and Metals and Machinery Manufacturing. Healthcare Services leverages the community's existing network of providers and burgeoning research opportunities and serves as a vital quality of life asset for current and prospective residents and workers. Business retention and expansion tactics will be vital to strengthening and growing these sectors.

There are two remaining targets that build on the community's quality of place assets and will also provide a means of deploying talent attraction and retention efforts, which are a necessity for achieving population and workforce sustainability while also building capacity and the resources required for future professional and technical opportunities: Entertainment and Tourism and Entrepreneurship and Small Business Development.

By focusing economic development resources on specific business sectors that leverage the Bristol area's local and regional asset base, economic development partners in the community can support the expansion of a more dynamic and diverse economy.

ⁱ "The Skills Gap in U.S. Manufacturing 2015 and Beyond." Deloitte and Manufacturing Institute. 2015.