

# ANALYSIS OF DULUTH-SUPERIOR AND PEER METROPOLITAN AREAS

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## Executive Summary

The Duluth-Superior Metropolitan Statistical Area (MSA) is composed of three counties: St. Louis and Carlton counties in Minnesota and Douglas County in Wisconsin, and approximately 280,000 individuals reside within its borders.

This MSA's industry mix, prevalence of shipping, labor pool, and distinct climate along with other factors makes it unique.

The National Bank of Commerce contacted the Bureau of Business and Economic Research (BBER) at the University of Minnesota Duluth's Labovitz School of Business and Economics to study the economic and social attributes of the Duluth-Superior Metropolitan Statistical Area and compare it to similar MSAs. The results will be available as a tool with which to gain a greater understanding of the strengths and issues facing the Duluth-Superior MSA.

Based on five key metrics, the study determined 24 peer MSAs selected from the 381 MSAs in the United States. Those metrics were the size of the population, the size of the local economy (GRP), geographic size (as measured in square miles), industry mix, and region within the U.S.

The economic indicator of gross regional product (GRP) per labor force member was used as the main comparison variable for the 24 peer MSAs and the Duluth-Superior MSA.

Those peer MSAs with the highest GRP per labor force member were Lake Charles, LA with a value of \$126,535 and Sioux Falls SD with \$107,511. A strong manufacturing sector is most likely the reason behind Lake Charles's high value, while that

of Sioux Falls is most likely attributed to the finance sector.

Duluth-Superior's GRP per labor force member was \$76,958, ranking it at #250 among all 381 U.S. MSAs and at #16 within the 25 peer areas.

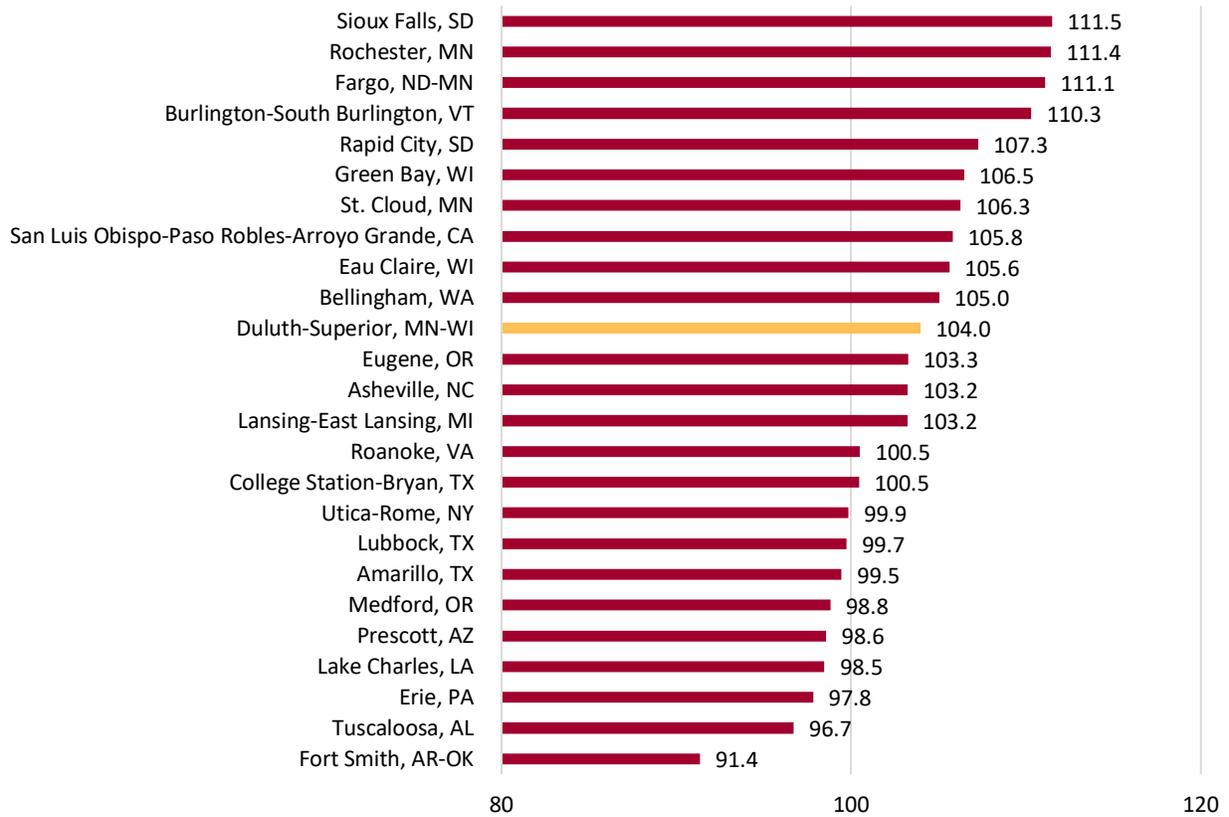
The peer MSAs where the Duluth-Superior MSA can gain insight from detrimental factors are Prescott, AZ, which had a value of \$51,861 and College Station, TX, which had a value of \$68,139.

However, the study went beyond estimating the MSA's GRP per labor force member and determined all 381 MSAs ranking on a Metro Vitality Index (MVI), developed by the BBER for this study, which measured economic well-being and livability in 24 indicators within eight categories.

According to the study's findings, there is a positive relationship between the MVI and the key economic growth measures: as the index score increases, so does the ten-year GRP growth rate, the ten-year labor force growth rate, and the static ratio of GRP per labor force member.

Among the 25 peer MSAs, Sioux Falls, SD; Rochester, MN; and Fargo, ND, had the highest MVI scores (Figure 1 below). Duluth-Superior's MVI ranking was 11 out of the 25. From within all 381 MSAs, Duluth-Superior ranked #96. This suggests it is better than average regarding economic wellbeing and livability within the United States. Out of the 24 indicators, the Duluth-Superior MSA performed best in health factors, education, and social factors and worst in demographics, amenities, and business environment. More specific information is detailed within the report.

**Figure 1. Metro Vitality Index Scores for Peer Areas**



Source: BBER

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## Study Highlights

- Areas selected as most similar to Duluth-Superior include: Fargo, ND; Amarillo, TX; St. Cloud, MN; San Luis Obispo, CA; Fort Smith, AR; Rochester, MN; Rapid City, SD; and Utica, NY (along with 16 other communities across the country).
- Rather than compare peer areas on GRP per capita, the study uses GRP per labor force member as the primary indicator of economic growth and productivity, as it accounts for changes in a region's demographics.
- The study also compares peer areas on the Metro Vitality Index (MVI) – an index developed exclusively for this study by the BBER – comprised of 24 variables in eight categories related to economic growth and livability.
- Compared with its peers, the Duluth-Superior MSA ranks 16/25 in GRP per labor force member and 11/25 on the Metro Vitality Index.
- Over a short period (2015-2016), Duluth-Superior saw above average labor force growth and below average GRP growth. Over a 10-year period (2006-2016), the opposite was true. Duluth's GRP growth was significantly higher than the national average, while its labor force grew by only 1%.
- Sioux Falls, SD; Rochester, MN; and Fargo, ND – the three cities with the highest scores on the MVI – were also some of the cities with the highest GRP and labor force growth rates.
- Among the communities with lower than average performance on the MVI and economic growth measures were Fort Smith, AK-OK; Erie, PA; and Utica-Rome, NY.
- Duluth-Superior performed best in the MVI's health factors, education, and social factors sub-indices, and worst in demographics, amenities, and business environment sub-indices.
- Specifically, Duluth-Superior ranks highest on the variables of health insurance coverage, high school graduation rates, and social participation. Conversely, Duluth-Superior performs poorly in broadband access, natural population change, and median age.

## I. Introduction

The Duluth-Superior Metropolitan Statistical Area (MSA) is home to roughly 280,000 individuals in St. Louis and Carlton counties in Minnesota and Douglas County, Wisconsin. This three-county MSA region is unique due to many factors such as its industry mix, prevalence of shipping, labor pool, and distinct climate.

The National Bank of Commerce contacted UMD's Bureau of Business and Economic Research (BBER) to study the economic and social attributes of the Duluth-Superior MSA and compare those to other peer MSAs throughout the United States. The purpose of the research is to gain a better understanding of the strengths and challenges facing our MSA region and to help community leaders develop actionable goals for the improvement of our area's economy.

The report begins with a summary of previous literature related to economic growth and well-being. The literature review provides rationale for the use of GDP per labor force member as the primary variable of interest. It also describes some of the factors most commonly thought to be predictors of GDP and/or labor force growth and provides rationale for the inclusion of those factors in a regional comparison study.

Second, the report includes a description of the methods and data sources used in determining the 24 peer areas included in the study and in developing the Metro Vitality Index (MVI) – an index comprised of 24 indicators in eight categories that was developed by the BBER for this study. A complete list of all of the variables included in the index along with data sources and rationale for inclusion (i.e. supporting literature, stakeholder feedback) are also provided in that section.

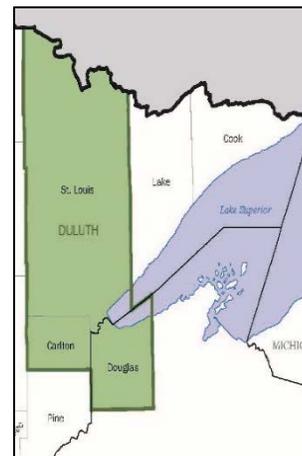
The results of the study evaluate Duluth-Superior's performance among its peers in the measure of GRP per labor force member and show how the area's performance has fluctuated over time. The results also compare how the MVI and its individual components correlate with GRP and labor force growth and which peer areas stand out, positively or negatively.

Lastly, the report provides profiles of each of the peer areas. For each community, we examine why it was chosen as a peer area, where it excels, where it could improve, and how it has performed on the various measures included in the analysis. Many of the communities included in the study could serve as models for our region. In contrast, low-performing communities can provide lessons in what not to do.

The geographic scope for this economic impact analysis was the Duluth-Superior MSA, which is comprised of St. Louis and Carlton Counties in Minnesota and Douglas County in Wisconsin. In addition, 24 peer MSAs were included for comparison.

Since this study focuses on metropolitan areas rather than the whole of the United States, this study will focus on GRP, or gross regional product. But GDP and GRP are calculated identically. Narratively, we will use GDP in references to economic research and use the term GRP when speaking about the output production on the metropolitan areas used in the report.

**Figure 2. Duluth-Superior MSA counties**



*SOURCE: U.S. Department of Commerce Economics and Statistics Administration U.S. Census Bureau*

## II. Literature Review

Economic theory states that increases in economic growth can happen through two means –increases in productivity in the supply of goods and increases in demand for goods. On the supply side, investment, labor productivity, the abundance of natural resources, labor force growth, and improved technology and production methods can all contribute to growth. On the aggregate demand side, increases through wage growth, government spending, tax cuts, and interest rate declines are typical causes (Investopedia, 2018).

In addition to the volumes of academic literature examining the theoretical basis for economic growth (Barro 1996; Hanushek and Kimko 2000), there are also thousands of studies which have attempted to compare economic growth across regions or nations in an effort to identify its determinants (Slaper, Harnon, and Rubin 2018). Firm clustering (Porter 1998, 2000), diversity and creativity (Florida 2003, 2014), and social capital (Putnam 1995) are some of the most famous and often cited theories used to explain regional economic growth and development. In addition, technological innovations, a well-educated workforce, and cultural amenities are all factors that have been examined as predictors of economic growth (Florida, 2003).

Many studies have utilized statistical regression, controlling for a wide variety of economic and social factors, to determine empirically the measures which have the greatest impact on economic growth and well-being (Barro 1996; Faggian, Partridge and Malecki 2010; Slaper, Harnon, and Rubin 2018), while others have created an index to compare regions (Medcalfe 2017).

Much research in this area uses real gross domestic product, or real GDP, often in per capita terms, as the primary indicator of economic growth (Doran and Fingleton (2018); Slaper, Harnon, and Rubin 2018; Medcalfe 2017). GDP is the increase in the inflation-adjusted market value of the goods and services produced by an economy over time.

But, while GDP per capita is one of the most common measures of economic growth and performance, there are some flaws with that measure that should be considered. Many economists have argued that narrowly focusing on GDP as an economic measure is not sufficient in measuring quality of life and other important factors regarding worker productivity and migration. Joseph Stiglitz, Nobel Prize winner, said “GDP is not a good measure of economic performance; it’s not a good measure of well-being” (Thomson, 2016). He also argues that GDP does not consider long-term sustainability. Other academics have cautioned against the idea that growth is sufficient for progress (Costanza, et al. 2009; Jones and Klenow 2010). Costanza suggested that GDP, by itself, is not necessarily a good indicator as it “is a measure of economic quantity, not economic quality or welfare, let alone social or environmental well-being.”

According to some economists, GDP per labor force member provides a more accurate picture. Fernando Martin of the St. Louis Federal Reserve (2014) claims using labor force figures rather than population “is a simple way to correct for the effects of changing demographics on output.” The main rationale for using labor force rather than population is that GDP per labor force can account for differences in demographics. The figure excludes individuals who are not participating in the labor force, whether due to age, health, family concerns, or school enrollment.

While there are criticisms of using GDP as the sole measure of economic well-being, that does not mean that GDP is not useful for comparing regions. Jones and Klenow (2010) from Stanford advocated for the use of GDP in a well-being analysis. Their findings concluded that GDP can be an excellent indicator of welfare, specifically between countries. They concluded that a combination of GDP and other standard of living statistics can provide valuable analysis, while accounting for the shortcomings that occur from solely using GDP. Therefore, much economic literature now includes the study of how quality of life might be used in place of, or in complement to, GDP as a measure of progress. An example of this type of research comes from Costanza et al. (2009), who looked at alternative indicators of economic progress. Other researchers have

looked at well-being as a measure of progress (Berenger, 2007) and at the links between social and environmental performance with economic variables (Cracolici, Cuffaro, and Nijkamp 2010; Slaper, Harnon, and Rubin 2018).

The most common topics examined in “quality of life” research include social factors, education, culture and recreation, and health (Berenger 2007; Morais and Camanho 2010; Lambiri, Biagi, and Royuela 2006). Common variables used in studies measuring quality of life include commuting times (Morais and Camanho 2011; Black, Kolesnikova, and Taylor 2014), art consumption (Morais and Camanho 2011), social participation rates (Alvarez-Diaz, Gonzalez, and Radcliff 2009), general health (Medcalfe 2017), air pollution (Lambiri, Biagi, and Royuela 2007; Medcalfe 2017), access to exercise activities (Norman et al 2016), and housing (Streimikiene 2015).

This study builds on the findings from previous research in a number of ways. First, for reasons stated above, this study uses the measure of GDP per labor force member rather than GDP per capita as the primary measure of economic growth. Second, the analysis uses an index to compare Metropolitan Statistical Areas (MSAs) throughout the country, utilizing many of the methods described by Medcalfe (2017) and others. The index includes measures shown empirically to predict economic growth and/or those commonly used as measures of the quality of life. Finally, the index was used to compare economic growth and well-being among peer areas that were deemed similar to the Duluth-Superior MSA, a method that is fairly unique, and is described in greater detail in the following section.

### III. Methodology and Data Sources

#### *Peer Area Selection*

This section of the report provides a summary of the process and data sources used in determining Duluth-Superior’s peer areas and the methods for creating the Metro Vitality Index – an index comprised of 24 indicators in eight categories. A complete list of all of the variables included in the index along with data sources and rationale for inclusion (i.e. supporting literature, stakeholder feedback) are also provided.

The 24 peer MSAs used in the analysis were selected from the 381 MSAs in the United States based on five key metrics. Those metrics are the size of the population (United States Census Bureau 2018), the size of the local economy (GRP) (Bureau of Economic Analysis 2016), geographic size (as measured in square miles) (United States Census Bureau 2010), industry mix (United States Census Bureau 2012-2016), and region within the U.S. These characteristics were chosen as they represent some of the most fundamental traits of a region and provide a diverse mix of areas throughout the country with varying levels of economic performance on which to compare the Duluth-Superior area.

For three of the five measures (size of population, size of economy, and geographic size), a score similar to a location quotient was calculated to represent the area’s similarity to Duluth-Superior. These scores were calculated by dividing the value for the MSA by the value for the Duluth-Superior MSA, subtracting 1, and then taking the absolute value.<sup>1</sup> For example, a community with a population of 200,000 (28% smaller than the Duluth-Superior MSA) would have a population score of 0.28, while a community with a population of 500,000 would have a population score of 0.74.

For the fourth measure, industry mix, a score was calculated using a similar method, but with the share of employment in each of the 11 North American Industry Classification System (NAICS) supersectors as the values for comparison.<sup>2</sup> Once scores were calculated for each sector, those 11 values were then summed to get one industry mix score.

For the final measure, region within the U.S., MSAs located in either Minnesota or Wisconsin were given a value of 0, MSAs located in Midwest (Iowa, Michigan, North Dakota, and South Dakota) were given a value of 1, and all other MSAs were given a value of 2.

Finally, all U.S. MSAs were ranked 1-381 on each of the five measures, and those five rankings were summed for each MSA. The 20 MSAs with the smallest total scores (i.e. the most similar to the Duluth-Superior MSA) were selected as peer areas, along with four additional areas that had been mentioned by local stakeholder groups as “peer cities.” Table 1 below shows the list of 25 peer areas,<sup>3</sup> the five measures, and the final “Duluth-Superior Score” given to each based on the method described.

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<sup>1</sup> Absolute value describes the distance of a number on the number line from 0 without considering which direction from zero the number lies. The absolute value of a number is never negative.

<sup>2</sup> The 11 NAICS supersectors are: natural resources & mining; construction; manufacturing; trade, transportation & utilities; information; financial activities; professional & business services; education & health services; leisure & Hospitality; other services; public administration

<sup>3</sup> A map of all 25 peer areas is included in Appendix B.

**Table 1. Peer MSAs Ranked by “Duluth-Superior Scores”**

<i>Metro Area</i>	<i>Population</i>	<i>GRP (Millions)</i>	<i>Size (Sq Mi)</i>	<i>Industry Mix</i>	<i>Region</i>	<i>Duluth Score</i>
Duluth-Superior, MN-WI	278,782	\$11,117	8,413	.00	MN / WI	14.5
Fargo, ND-MN	241,356	\$13,534	2,810	2.3	MN / WI	222.0
Amarillo, TX	264,925	\$11,906	3,649	1.6	Other	320.5
St. Cloud, MN	197,759	\$8,749	1,751	2.2	MN / WI	331.0
San Luis Obispo-Paso Robles, CA	283,405	\$12,437	3,299	2.0	Other	350.5
Fort Smith, AR-OK	282,086	\$9,097	3,996	2.6	Other	392.5
Rochester, MN	218,280	\$10,910	1,616	3.0	MN / WI	396.0
Rapid City, SD	146,850	\$5,637	6,248	2.5	Midwest	402.0
Utica-Rome, NY	293,572	\$9,372	2,624	2.4	Other	425.5
Eau Claire, WI	167,484	\$7,325	1,646	2.3	MN / WI	431.0
Lubbock, TX	316,983	\$11,858	1,796	1.8	Other	434.5
College Station-Bryan, TX	258,044	\$8,599	2,100	1.9	Other	441.5
Sioux Falls, SD	259,094	\$15,768	2,576	3.2	Midwest	443.0
Medford, OR	217,479	\$7,022	2,784	1.4	Other	456.5
Eugene-Springfield, OR	374,748	\$13,501	4,553	2.5	Other	462.5
Lake Charles, LA	209,357	\$13,532	2,349	1.9	Other	464.5
Tuscaloosa, AL	242,799	\$9,666	2,613	2.7	Other	469.5
Bellingham, WA	221,404	\$8,539	2,107	2.0	Other	471.5
Green Bay, WI	320,050	\$16,321	1,870	3.1	MN / WI	483.0
Roanoke, VA	314,128	\$13,418	1,869	2.3	Other	490.5
Prescott, AZ	228,168	\$5,138	8,123	2.5	Other	493.5
Burlington-South Burlington, VT*	218,395	\$12,140	1,252	3.1	Other	667.5
Erie, PA*	274,541	\$9,825	799	3.0	Other	688.5
Asheville, NC*	456,145	\$15,898	2,033	2.8	Other	808.5
Lansing-East Lansing, MI*	477,656	\$19,375	1,698	3.4	Midwest	927.0

\*Included based on local stakeholder feedback

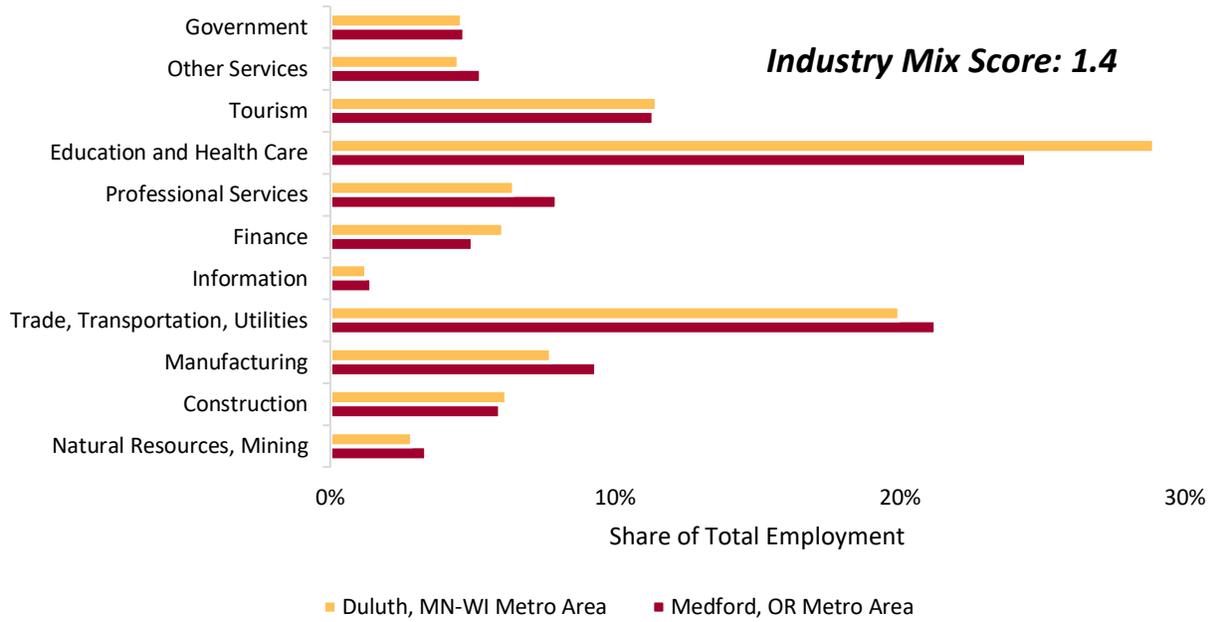
Source: BBER

As shown in Table 1, the 20 communities most similar to Duluth-Superior all have Duluth-Superior Scores of less than 500. And the four additional communities, which were included based on local stakeholder feedback, have scores of less than 1,000. With some exceptions, most of the communities on the list have populations between 200,000 and 400,000 and GRP values between \$8 and \$15 billion. In addition, they tend to be larger geographically (i.e. land area), and nine of them are located in the Midwest.

For context, the largest Duluth-Superior Score found among the 381 MSAs was 1,574.5, attributed to the Bridgeport-Stamford-Norwalk, CT metro area. Bridgeport is a very densely populated community, with a population of roughly 950,000 people in only 625 square miles. Moreover, Bridgeport’s GRP was \$88 billion in 2016, roughly eight times that of the Duluth-Superior area.

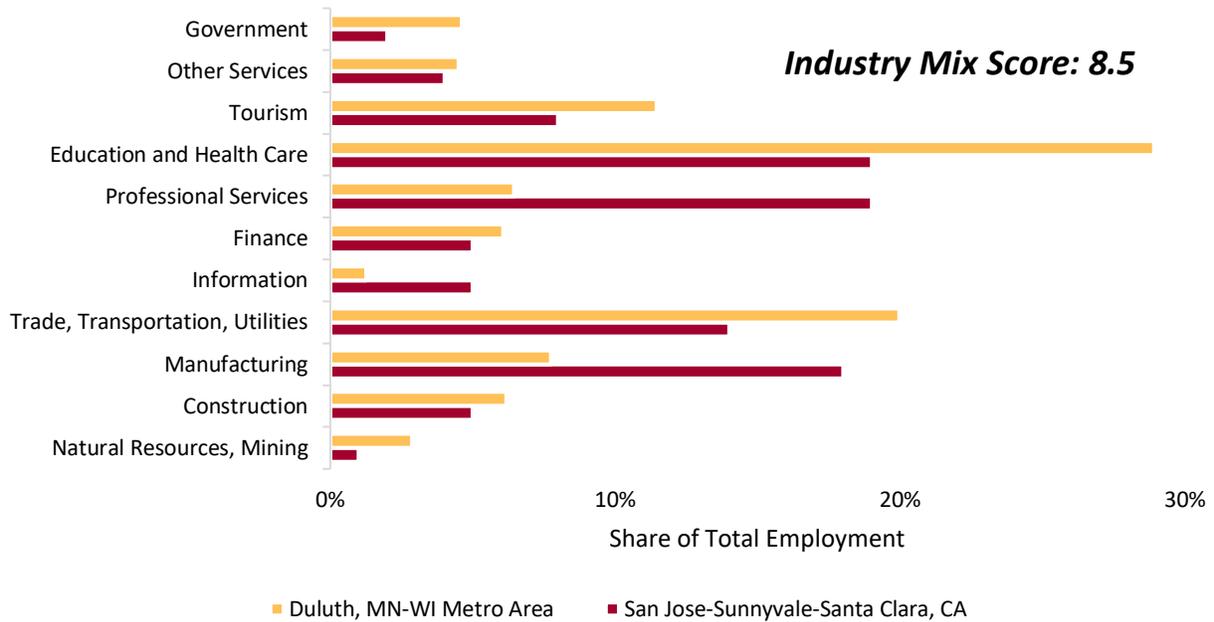
One of the measures in the table, industry mix, is explained as follows: The values shown for that measure represent the sum of the difference in employment share for each super-sector in the MSA, as compared with Duluth-Superior. This makes the values in themselves difficult to grasp. To help illustrate the concept,

**Figure 3. Share of Employment by Industry, Duluth-Superior and Medford, OR**



Source: American Community Survey 2012-2016

**Figure 4. Share of Employment by Industry, Duluth-Superior and San Jose, CA**



Source: American Community Survey 2012-2016

Figures 3 and 4 show employment by industry for Medford, OR (one of Duluth-Superior’s peer areas), and San Jose, CA (not a peer area). Medford has a very similar industry mix to Duluth-Superior, while San Jose’s industry mix score (8.5) is the largest among all 381 MSAs in the U.S., indicating it has an industry mix that is very different than Duluth-Superior.

From the figures, it is clear to see that Duluth-Superior and Medford have roughly the same percentage of employment in nearly every industry, with some minor differences in education and health care (Duluth-Superior has a slightly larger share of employment) and manufacturing (Medford has a slightly larger share of employment). On the other hand, Duluth-Superior and San Jose have very different levels of employment, particularly in manufacturing, information, and professional services.

## ***Metro Vitality Index***

This section describes the methods for creating the Metro Vitality Index (MVI) – an index comprised of 24 indicators in eight categories that was created by the BBER for this study. The purpose of the index is to provide insight on economic well-being, quality of life, and livability in the Duluth-Superior MSA as compared with its peer MSAs. In addition, this analysis looks at the relationship between the index components and growth in labor force (Bureau of Labor Statistics 2018) and GRP (Bureau of Economic Analysis 2016) to determine which factors have the strongest relationship with the two primary variables of interest — GRP and labor force size.

In his 2017 paper, Medcalfe conducted a thorough review of the literature related to measuring and comparing economic well-being across regions and summarized some of the best practices to consider when developing any type of index. According to his findings, the number of categories (e.g. health, environment, education) should be no less than five and no more than ten. Each category should have an equal number of indicators (i.e. measures) so as not to give weight to any particular category. Indicators must be “directional,” meaning they should be clear to all which direction is best. Lastly, data must be uniformly available for all communities in the sample and readily available at regular time intervals (annually, biannually). This ensures comparability across locations as well as longitudinally for one particular location. Medcalfe’s recommendations were used as the basis for developing this Metro Vitality Index.

The process for developing the index was as follows: First, an initial list of indicators shown to be related to either GDP or labor force growth was developed. That list was vetted with local stakeholders, including local government officials and a regional economic development organization. In these meetings, stakeholders provided insight and input on which indicators would be most valuable and useful, and additional indicators were added based on their feedback. The resulting list was reduced to 24 indicators based on the following criteria:

- Importance to GRP and/or labor force growth
- Importance to stakeholders
- Availability of data at MSA level/annually
- Directionality

**Table 2. Key Indicators Used in Development of Metro Vitality Index**

<i>Category</i>	<i>Indicator</i>	<i>Definition</i>	<i>Rank Direction</i>	<i>Data source</i>	<i>Rationale/Literature Sources</i>
Amenities	Broadband access	The percent of the population with access to high speed (10Mbps download / 1 Mbps Upload) internet connection (score from 1-5)	High to low	Federal Communications Commission	Duluth Mayor's Group
	Access to childcare	The number of licensed childcare facilities per 1,000 children under the age of 5	High to low	American Community Survey	Duluth Mayor's Group; Economic Development agency feedback
	Commuting times	The mean travel time to work in minutes	Low to high	American Community Survey	Morais; Black
Education	Higher educational attainment	The percent of individuals with a bachelor's or more advanced degree	High to low	American Community Survey	Shapiro; Slaper; Medcalfe, Larson; Aaronson
	High school graduation	The percent of individuals who have completed high school (or equivalent)	High to low	American Community Survey	Lambiri; Medcalfe
	Degrees awarded	The number of degrees and certificates awarded from degree granting, non-for-profit colleges and universities, per 1,000 residents	High to low	Integrated Postsecondary Education Data System	Shapiro; Slaper; Medcalfe; Larson; Aaronson
Demographics	Median age	The median age of the population in years	Low to high	American Community Survey	Rupasingha; Maestas; Aaronson
	Net migration	The difference between people immigrating and emigrating from the region	High to low	American Community Survey	Fairlie
	Natural population change	The difference between births and deaths in the region	High to low	American Community Survey	Morais; Slaper
Economics	Unemployment rate	The unemployment rate for those in the labor force	Low to high	American Community Survey	Lambiri; Morais; Rupasingha; Aaronson
	Real personal income	The real per capita personal income	High to low	Bureau of Economic Analysis	Medcalfe
	Employment in STEM	The number of jobs per 1,000 that require education in science, technology, engineering, and mathematics (STEM) disciplines	High to low	O*NET, Bureau of Labor Statistics, Occupational Employment Statistics	Wolf and Terrell
Business environment	Small enterprises	The percentage of businesses that employ fewer than 20 workers	High to low	County Business Patterns	Ayyagari

	Establishment growth	The change in the number of establishments from the previous year	High to low	Bureau of Labor Statistics, Quarterly Census of Employment and Wages	Superior Mayor's group
	Building permits	The number of new building permits (privately owned housing units)	High to low	Building Permits Survey	Duluth and Superior Mayor's Groups
	Art consumption	The estimated per capita spending by residents on all arts expenditures, including admission, media, books, photography and others	High to low	National Archive of Data on Arts and Culture	Morais
Social factors	Poverty rates	The percentage of persons under the poverty level	Low to high	American Community Survey	Medcalfe
	Social participation rates	The number of membership associations per 10,000 population	High to low	County Health Rankings	Alvarez-Diaz
Health factors	Health insurance rates	The percent of individuals who have health insurance	High to low	American Community Survey	Sommers et al.
	Premature death	Years of potential lost life before age 75 per 100,000 population (age-adjusted)	Low to high	County Health Rankings	Barro, Berenger
	General health	The percentage of adults who report fair or poor health	Low to high	County Health Rankings	Medcalfe
Physical environment	Air pollution	The average daily density of fine particulate matter in micrograms per cubic meter, averaged by county	Low to high	County Health Rankings	Lambiri, Medcalfe
	Access to exercise opportunities	The percentage of the population with access to places for physical activity	High to low	County Health Rankings	Norman et al.
	Severe housing problems	The number of households with one of four housing problems: overcrowding, high housing costs, or lack of kitchen or plumbing facilities	Low to high	County Health Rankings	Streimikiene

Source: BBER

The 24 indicators were grouped into eight categories: amenities, business environment, demographics, education, economics, health factors, physical environment, and social factors. For each of the 24 indicators, MSAs were ranked 1-381 (with lower numbers indicating better performance), then those values were summed. Finally, the values for the MVI and each sub-index were recalculated based on a range of possible values from 80-120,<sup>4</sup> with a score of 100 representing the median value and higher scores indicating better performance. The index allows for comparisons between communities, using the current year score, as well as longitudinal comparisons. Over time, as communities improve in various areas (e.g. poverty, air pollution, real personal income) their MVI score will increase or decrease based on their position among all other MSAs.

Table 2 on the previous page includes a list of the eight categories and 24 indicators used in the development of the MVI. Also included in the table are the definition, direction, data source, and rationale for inclusion in the analysis (based on relevant literature or stakeholder feedback).

Rank direction, either “high to low” or “low to high,” describes the order by which the variable was ranked among the MSAs. A “high to low” rank direction means that higher scores are considered better (e.g. real personal income, STEM occupations), and the MSA with the highest value would receive a rank of 1, while a “low to high” rank direction (e.g. poverty rates, air pollution) means the opposite.

The most common data sources used in the analysis were the U.S. Census Bureau’s American Community Survey 2012-2016 Five-Year Estimates and the 2018 County Health Rankings, which is a program developed by the University of Wisconsin Population Health Institute. Other data sources included the Bureau of Economic Analysis, Bureau of Labor Statistics, and County Business Patterns.

Rationale and literature sources refers the academic research, as cited in the literature review, which supports the inclusion of the measure or to any local stakeholder groups that suggested the measure as an important measure locally.

The methodology in this study could be useful in many additional ways. For example, the index that was developed allows for multivariate comparisons of any group of regions, beyond the peer MSAs that were identified. Additionally, the methods used in the survey could be applied to develop another index with a slightly different set of variables. If new or different variables were shown to be more useful, then the framework allows for easily changing variables. Finally, the method used in determining other peer areas could be useful for other metro areas or other regions to creating their own peer areas and conduct a similar analysis for a different area. The methods used to define peer areas was made in such a way that other areas could use this method, while only needed to change the “comparison region” to a different MSA.

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<sup>4</sup> The values of 80 and 120 were arbitrary selected to provide a finite range of values for the MVI with 100 as a mid-point.

## IV. Results

This section summarizes the results of the study and focuses on three key areas. First, the results highlight Duluth-Superior's performance in the measure of GRP per labor force member and show how the area stacks up with other U.S. cities, particularly the peer areas selected as part of this study. Second, the Metro Vitality Index (MVI) is discussed in greater detail. Specifically, the findings show how the MVI and its individual components correlate with GRP and/or labor force growth. Finally, notable peer areas (those with exceptionally high or low economic performance) are examined.

### ***GRP and Labor Force Performance***

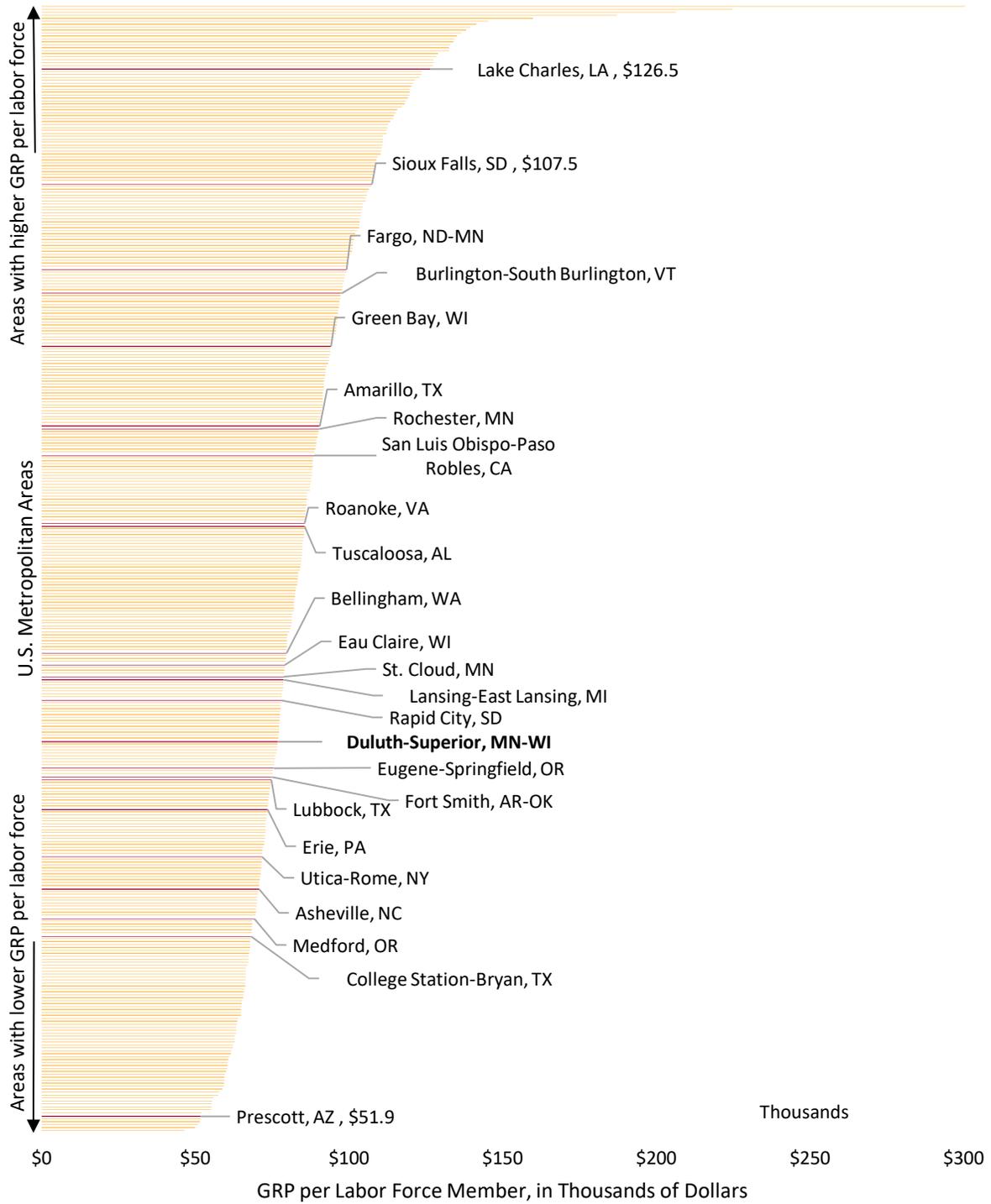
As noted previously, this analysis uses the economic indicator of gross regional product (GRP) per labor force member as its primary variable of interest, as the measure provides better insight into the effects of changing demographics on output than does the more common GRP per capita. GRP per labor force member captures the overall productive output of a region compared to other metropolitan statistical areas.

Figure 5 on the following page, shows GRP per labor force member for all 381 MSAs in the country. The peer areas selected for the analysis are highlighted in red. The average value for the measure among all U.S. metro areas is \$87,836 in GRP per labor force member. However, as shown in the figure, there is a very large range of values for this measure nationwide, with some communities having more than \$300,000 in GRP per every labor force member and others with less than \$50,000.

Among the communities with the highest GRP per labor force, there is considerable variance in terms of industry mix. For example, Midland, TX, is the community with the largest value, at \$338,690. This is likely due to the area's relatively small population and its wealth of oil resources. In 2016, more than 70% of the area's GRP came from the natural resources and mining sector. Other communities with very high values for GRP per labor force include San Jose, CA; Manchester, NH; Bridgeport, CT; and San Francisco, CA. But unlike Midland, these communities saw higher contributions to GRP from the information, professional services, finance, and manufacturing sectors and lower contributions from the natural resources sector.

Looking specifically at the peer areas, the communities with the highest GRP per labor force member were Lake Charles, LA, with a values of \$126,535 and Sioux Falls, SD (\$107,511). Lake Charles's high value is likely the result of a strong manufacturing sector. In 2016, more than 40% of the region's GRP came from that sector. Sioux Falls, meanwhile, was very strong in finance.

Figure 5. GRP per Labor Force for All Metropolitan Areas, 2016



Source: BBER

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At the other end of the spectrum, there are a number of MSAs with values for GRP per labor force member of around \$50,000 (i.e. relatively small economies compared with the size of their labor force). Of all 381 MSAs in the U.S., Lake Havasu City, AZ (\$46,494), Sebring, FL (\$49,889), and Gettysburg, PA (\$51,036) had the smallest values, while Prescott, AZ (\$51,861) and College Station, TX (\$68,139) were the lowest performers among the peer areas included in this analysis. Interestingly, the majority of these communities had higher than average contributions to GRP from the natural resources and mining sector and lower than average contributions from the manufacturing, information, finance, and professional services sectors.

One interesting finding regarding those communities at the bottom of the list: many are home to older than average populations. In fact, eight of the ten communities with the lowest GRP per labor force values in the country had a median age of more than 40 years, and three had a median age higher than 50. While the GRP per labor force measure only includes those in the labor force, and not retirees, it is likely that many older individuals still work part-time or seasonal jobs and may, therefore, still be included in the denominator.

**Table 3. Selected Characteristics of Peer MSAs**

<i>Metro Area</i>	<i>GRP (millions, 2016)</i>	<i>Labor Force (2016)</i>	<i>GRP/Labor Force</i>
Lake Charles, LA	\$13,532	106,943	\$126,535
Sioux Falls, SD	\$15,768	146,664	\$107,511
Fargo, ND-MN	\$13,534	136,392	\$99,229
Burlington-South Burlington, VT	\$12,140	124,308	\$97,661
Green Bay, WI	\$16,321	173,300	\$94,178
Amarillo, TX	\$11,906	131,518	\$90,528
Rochester, MN	\$10,910	120,735	\$90,363
San Luis Obispo-Paso Robles, CA	\$12,437	140,300	\$88,646
Roanoke, VA	\$13,418	156,806	\$85,571
Tuscaloosa, AL	\$9,666	112,976	\$85,558
Bellingham, WA	\$8,539	107,124	\$79,711
Eau Claire, WI	\$7,325	92,576	\$79,124
St. Cloud, MN	\$8,749	111,135	\$78,724
Lansing-East Lansing, MI	\$19,375	246,149	\$78,712
Rapid City, SD	\$5,637	72,237	\$78,035
Duluth-Superior, MN-WI	\$11,117	144,455	\$76,958
Eugene-Springfield, OR	\$13,501	178,622	\$75,584
Fort Smith, AR-OK	\$9,097	121,299	\$74,996
Lubbock, TX	\$11,858	158,632	\$74,752
Erie, PA	\$9,825	133,626	\$73,526
Utica-Rome, NY	\$9,372	130,689	\$71,712
Asheville, NC	\$15,898	224,613	\$70,780
Medford, OR	\$7,022	101,475	\$69,199
College Station-Bryan, TX	\$8,599	126,198	\$68,139
Prescott, AZ	\$5,138	99,073	\$51,861

Source: BBER

To explain better how each component influences the overall measure, GRP and labor force growth are examined individually. Table 3, on the previous page, shows Duluth-Superior and the 24 peer MSAs, ranked from highest to lowest GRP per labor force value along with each MSA's GRP and labor force estimates for 2016. Duluth-Superior sits in the middle with a 2016 GRP value of \$11.1 billion and a labor force of roughly 144,000. Lansing, MI, and Asheville, NC, are the largest communities in the group in terms of GRP and labor force, while Prescott, AZ; Rapid City, SD; and Eau Claire, WI are the smallest.

Of course, the static measure of GRP per labor force member doesn't tell us much regarding which communities are growing, which are shrinking, and which are becoming more productive in the overall measure. To compare performance among the 25 peer areas, short-term growth (2015-2016) in GRP and labor force was calculated, and each community was placed on a scale based on its performance.

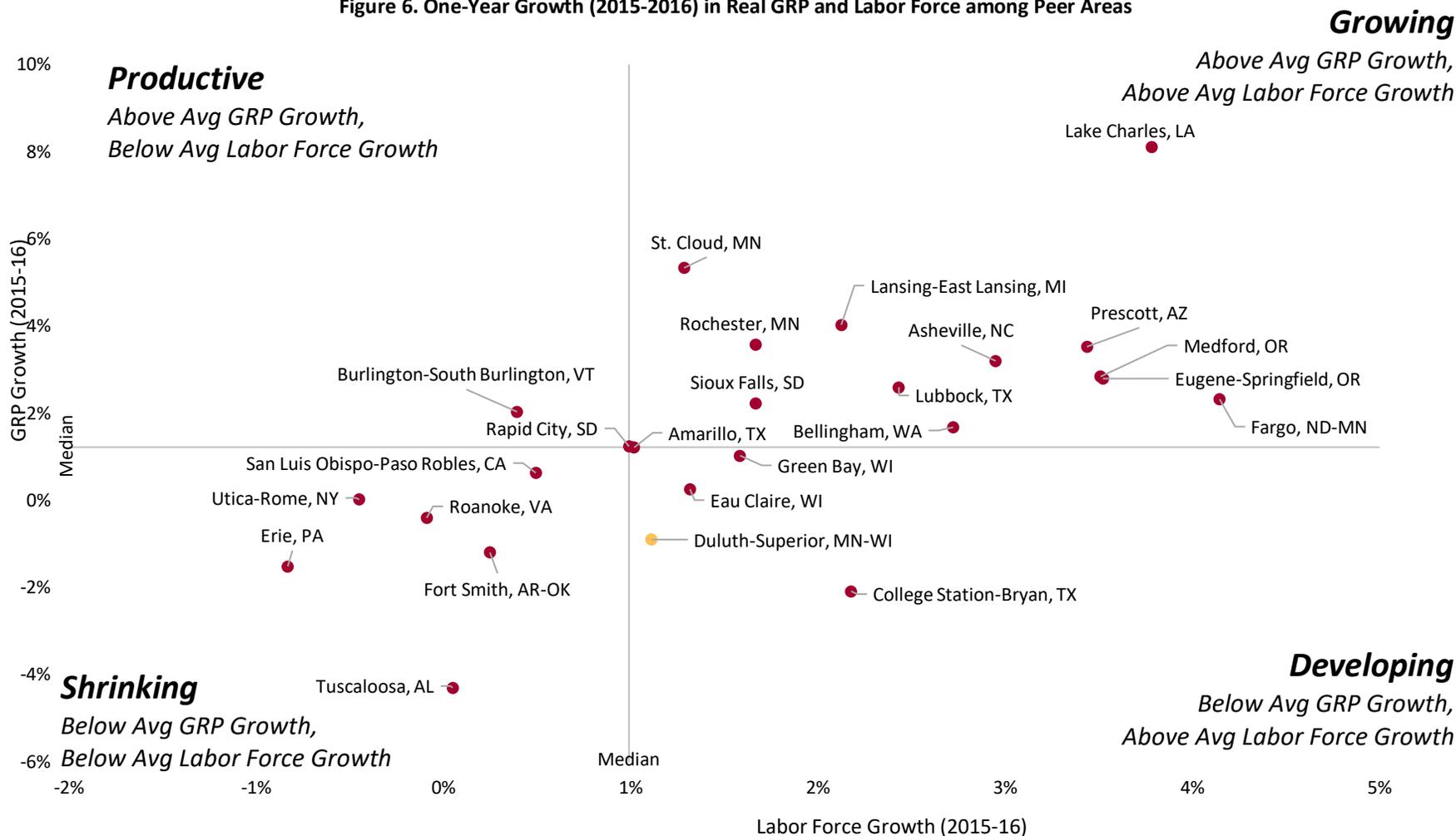
Figure 6, on the following page, shows short-term GRP growth on the vertical axis and short-term labor force growth on the horizontal axis. The median growth rate for all MSAs in the U.S. was roughly 1% between 2015 and 2016 for both measures. Those median values are shown as dividing lines on the graph so that communities with above average GRP growth are above the midline, and communities with above average labor force growth are to the right of the midline. This essentially divides the peer areas into four quadrants: communities that grew in both measures between 2015 and 2016, those that declined in both measures, those that saw growth in their GRP but a decline in the size of their labor force, and those that increased the size of their labor force but declined in GRP.

In the lower center of Figure 6, Duluth-Superior is shown in yellow in the quadrant labeled "Developing." Between 2015 and 2016, Duluth-Superior's labor force grew by just over 1%, while GRP declined by about 1%. Much of that decline was due to a drop in the price of iron ore that occurred during that period.

A number of Duluth-Superior's peer areas had seen strong growth in GRP and labor force between 2015 and 2016. One notable community is Lake Charles, LA. Lake Charles was previously mentioned for its high GRP per labor force value. In addition to its high performance in that measure, it saw significant growth in both of the measure's components between 2015 and 2016. Three communities in the upper Midwest (Fargo, ND; St. Cloud, MN; and Rochester, MN) were also included in the "Growing" quadrant of the graph, indicating above average growth in both areas.

Some of the other peer areas shown in the figure have not fared well. Tuscaloosa, AL; Fort Smith, AK; and Erie, PA are all peer areas that saw declines in GRP and labor force between 2015 and 2016. And many other communities have seen above average growth in one area but below average growth in another.

Figure 6. One-Year Growth (2015-2016) in Real GRP and Labor Force among Peer Areas



Source: BBER

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Figure 7. Ten-Year Growth (2006-2016) in Real GRP and Labor Force among Peer Areas



Source: BBER

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In addition to short-term trends in GRP and labor force, it is helpful to look also at long-term growth rates. Figure 7 shows long-term GRP growth (2006-2016) on the vertical axis and long-term labor force growth (2006-2016) on the horizontal axis. During that time, the median U.S. MSA saw GRP growth of about 6% and labor force growth of about 3%. Again, those values are shown as dividing lines on the graph.

Of the peer areas identified for this study, Fargo, ND, saw the largest percentage increase in its real GRP – roughly 40% between 2006 and 2016. Fargo also saw strong growth in the size of its labor force (11%), making it one of a few communities that saw stronger than average growth in real GRP and the size of its labor force, both in the short-term and long-term. The others listed in the “Growing” categories in both Figure 6 and Figure 7 include Sioux Falls, SD; Lubbock, TX; Rochester, MN; and St. Cloud, MN.

A handful of communities were in the opposite category: areas that saw below average growth in both real GRP and the size of their labor forces over a ten-year and one-year period. Those communities, part of the “Shrinking” category in Figure 6 and Figure 7, include Fort Smith, AR-OK; Erie, PA; Roanoke, VA; and Utica-Rome, NY.

While Duluth-Superior (highlighted in gold) saw short-term growth in the size of its labor force coupled with decline in real GRP, the long-term results were actually reversed. Real GRP in the Duluth-Superior MSA grew by about 10% between 2006 and 2016, while labor force grew by only 1%, which is less than the average nationwide. Note that Eugene-Springfield, OR, has the same GRP and labor force growth rates as Duluth-Superior.

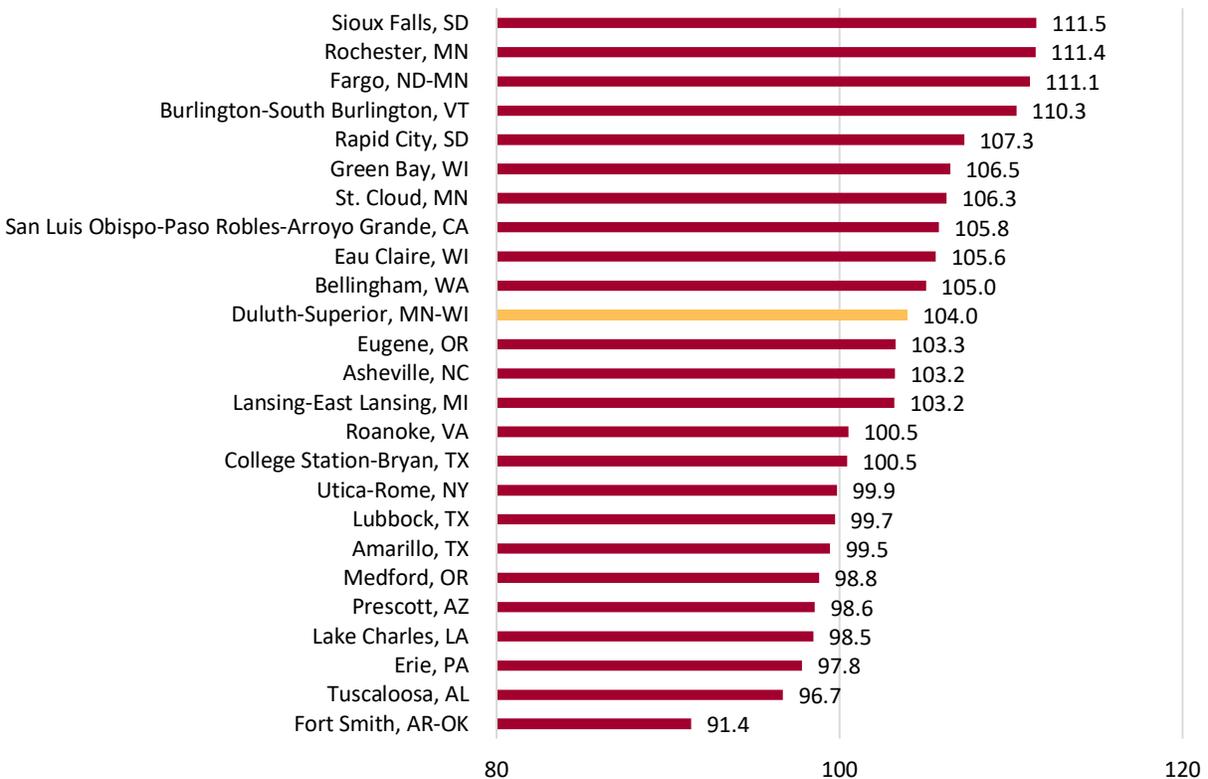
One notable area shown in Figure 7 is Lake Charles, LA. As mentioned previously, Lake Charles had one of the highest values for GRP per labor force member and one of the highest rates of growth in real GRP between 2015 and 2016. However, the region’s ten-year GRP growth rate was very negative: real GRP declined by about 11% between 2006 and 2016.

## Metro Vitality Index

This section provides more details on the Metro Vitality Index, including a summary of the index components and an analysis of the relationship between the Index and the key variable of interest: GRP per labor force member. The purpose of the index is to provide a broader look at economic well-being in the peer areas and to identify factors that tend to correlate with GRP and labor force growth.

As described in the methodology portion of the study, each U.S. MSA was ranked 1-381 on each of the variables shown in Table 5. Then, rankings were summed to achieve an overall score for the MVI and eight sub-scores for each index component. Finally, the values for the MVI and each sub-index were recalculated based on a range of possible values from 80-120, with a score of 100 representing the median value and higher scores indicating better performance.

**Figure 8. Metro Vitality Index Scores**



Source: BBER

Figure 8 shows the MVI scores for Duluth-Superior and its 24 peer areas. Sioux Falls, SD, has the highest overall MVI score at 111.5 out of a possible 120. On the other hand, Fort Smith, AR-OK, has the lowest score at 91.4 out of a possible score of 80.

Meanwhile, Duluth-Superior earned an overall score of 104.0, eleventh among the 25 peer cities included in the study. Keep in mind that a score of 100 is what a community would receive if it had the median value for every variable in the index, so Duluth-Superior's score indicates that it performs slightly above average compared with other MSAs nationally.

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Many of the peer areas that perform well on the MVI also have higher than average values for GRP per labor force member or have experienced above average GRP and labor force growth since 2006. For example, Sioux Falls, SD; Rochester, MN; and Fargo, ND – the three cities with the highest scores on the MVI – were also some of the cities with the highest GRP and labor force growth rates. In contrast, Fort Smith has the lowest MVI score at 91.4 and has had negative GRP and labor force growth since 2006.

These results imply that there might be a relationship between the MVI and the primary indicators of GRP and labor force. To test that relationship, the MVI and its components were correlated with three measures: GRP per labor force member, ten-year GRP growth, and ten-year labor force growth. The results are shown below, in Table 4.

**Table 4. Correlations between Index Components, GRP, and Labor Force**

<i>Index Component</i>	<i>Ten-Year GRP Growth</i>	<i>Ten-Year Labor Force Growth</i>	<i>GRP per Labor Force Member</i>
Metro Vitality Index	.371**	.351**	.387**
Amenities	.122*	-0.013	.220**
Business environment	.186**	.497**	0.065
Demographics	.469**	.695**	.235**
Economics	.375**	.307**	.542**
Education	.233**	.160**	.212**
Health factors	.225**	.136**	.234**
Physical environment	0.095	0.022	.191**
Social factors	.180**	-0.042	.304**

*\*Statistically significant at the 5% level*

*\*\*Statistically significant at the 1% level*

*Source: BBER*

As shown in the table, the MVI is positively correlated with all three measures related to GRP and labor force. The strongest relationship is with GRP per labor force member. The two values have a correlation of 0.387, and the result is statistically significant. This suggests that there is a positive relationship between the MVI and the key measures of interest: as the index score increases, so does the ten-year GRP growth rate, the ten-year labor force growth rate, and the static ratio of GRP per labor force member.

Of the sub-index categories, the demographics, economics, education, and health factors categories are all positively and significantly correlated with the three GRP and labor force measures. The strongest correlation of any two measures in the table is between the demographics sub-index and the ten-year labor force growth rate (correlation 0.695\*\*). This is not surprising, considering two of the variables included in the demographics sub-index are natural population change and net migration, the primary drivers of population growth. Other measures that are strongly correlated include the economics sub-index with GRP per labor force member (correlation 0.542\*\*) as well as the business environment sub-index with ten-year labor force growth (correlation 0.497\*\*).

Other index components do not bear as strong of a relationship between the GRP and labor force variables. For example, the amenities and social factors sub-indices are negatively correlated with ten-year labor force growth. Likewise, the business environment sub-index has a positive but weak correlation with GRP per labor force member, as does the physical environment sub-index with ten-year GRP growth.

Of the 24 variables included in the index, those most strongly correlated with the economic growth measures are real personal income, natural population change, the share of the population with a bachelor's degree or

higher, poverty rates, employment in STEM, broadband access, access to exercise opportunities, number of building permits, art consumption, the share of residents reporting fair or poor health, premature death rates, unemployment rates, and median age. Of course, correlation does not imply causation. Many of these correlations may be the result of interactions between variables. For example, arts spending is positively correlated with real personal income, meaning individuals who have higher incomes are also more likely to spend money on arts and entertainment. The correlation between arts spending and economic growth does not necessarily mean that higher arts spending causes economic growth. But higher art spending might be reflective of the availability of arts and culture in a region, a factor that is shown to be related to livability.

In all cases, the negative and/or weak correlations seen in Table 4 are driven by variables included in the index that are also weakly correlated with the economic growth measures or correlated in the opposite direction from what we would expect. For example, average commuting times, availability of childcare, and severe housing problems are components in the amenities and physical environment sub-indices. This analysis considers lower commuting times, better access to childcare, and lower rates of severe housing problems to be indicative of improved quality of life. However, all three factors have a negative relationship with labor force growth. This could be due to the fact that MSAs with high labor force may be more likely to have childcare shortages, traffic congestion, and high rents. Therefore, while these factors may be of benefit to residents, it is not surprising that the amenities and physical environment sub-indices have negative and weak relationships, respectively, with the labor force growth rate.

The correlations between the small business variable (in the business environment sub-index) and the three economic growth measures are also negative: MSAs with fewer small businesses tend to have higher GRP and labor force growth rates and higher values of GRP per labor force member. According to the literature (Ayyagari 2011), small businesses are an important driver of economic growth and innovation. Therefore, our analysis considered higher shares of small businesses to be a positive signal of an area's business environment. However, it may be that employers with more than 20 workers have a greater impact on an area's economic growth and productivity.

Finally, social participation rates, or the number of member associations<sup>5</sup> per 10,000 residents, are negatively correlated with the economic growth measures. The data show that areas with a higher number of social associations tend to have lower GRP and labor force growth rates. However, this could be due to a confounding relationship, such as age. Areas with older populations may be more likely to have more member associations and are more likely to have lower levels of growth.

Despite some of the variables being weakly correlated or correlated in the opposite direction from what we would expect, there may still be value to including them in the Metro Vitality Index. The variables mentioned (commuting time, access to childcare, lack of severe housing problems, share of small businesses, and social participations rates) represent livability, entrepreneurship, and social connections. Understanding which variables are weakly or negatively correlated and why is important in evaluating the strengths and weaknesses of the index as it relates to economic growth.

## ***Area Profiles***

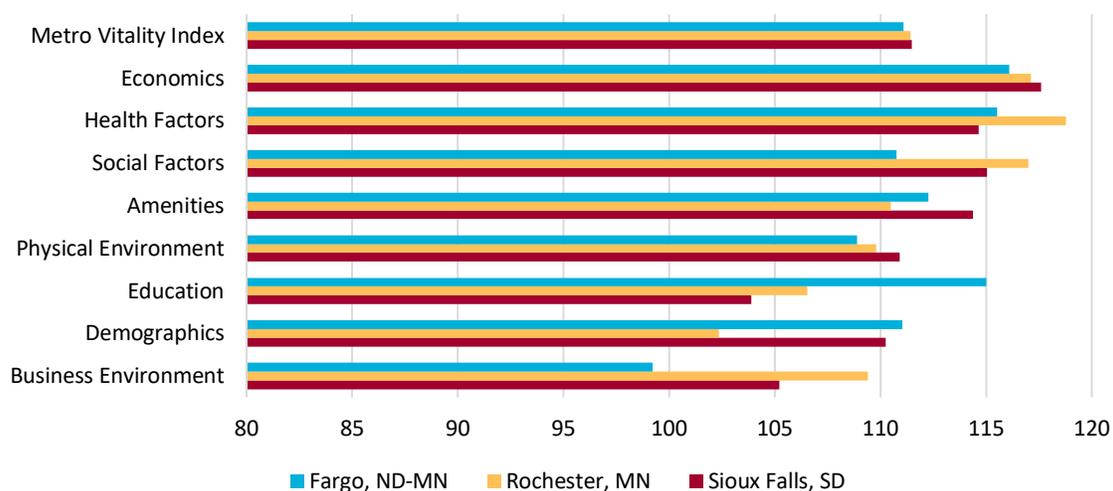
This section begins with an examination of three peer areas that have demonstrated above average economic growth and well-being, followed by a similar focus on three areas that have exhibited below average growth and livability. Finally, three other notable peer areas are discussed. Through this

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<sup>5</sup>Examples of member organizations include professional associations, trade associations, voluntary associations, political parties, clubs, and a wide range of others.

examination, commonalities shared by the high- and low- performing communities (as well as some that are particularly unique) are discussed along with the implications for Duluth-Superior.

**Figure 9. Metro Vitality Index and Sub-Index Scores for Fargo, Rochester, and Sioux Falls**



Source: BBER

Three of the peer areas selected for this study – Sioux Falls, SD; Fargo, ND; and Rochester, MN – have all experienced above average labor force and GRP growth rates, have very high levels of productivity (GRP per labor force member), and have high MVI scores. A closer look at the performances of these three peer areas (see Figure 9) shows that all three communities perform very well in the economics, health factors, social factors, and amenities sub-indices. All three MSAs had index scores of more than 110 in those sub-index categories.

More specifically, these three MSAs all had low unemployment rates, high levels of STEM employment, and high levels of real personal income per capita (the three components of the economics sub-index). All three areas had low levels of premature death and low rates of residents reporting fair or poor health (two of the three components of the health factors index). The areas had low poverty rates (social index), good access to childcare, and low commuting times (amenities).

In each area, the story behind its success is different. Much of Fargo’s growth began when Doug Burgum started his own software company, Great Plains Software, and sold the company to Microsoft about a decade ago. He then used the time and resources he gained from that sale to help revitalize Fargo’s downtown district. (Brooks 2014) Beyond the five-block core of downtown, Fargo is a sprawl of neighborhoods and businesses; more than 1,800 new building permits were issued in 2016. Fargo’s other major employers are the local health care companies, universities, banks, and the tech companies, led by Microsoft.<sup>6</sup>

Growth in Sioux Falls has been driven largely by the financial services sectors. In 1980, South Dakota enacted some business-friendly financial reforms, which attracted Citibank and others. According to a 2014 article in the *Economist*, the state had more bank assets than any other, including New York. In addition, South Dakota has no corporate or personal income taxes. These reforms have also attracted a number of manufacturing, telecom, and biotech companies. In 2018, six Sioux Falls companies earned spots on the *Inc.* 5000 list of

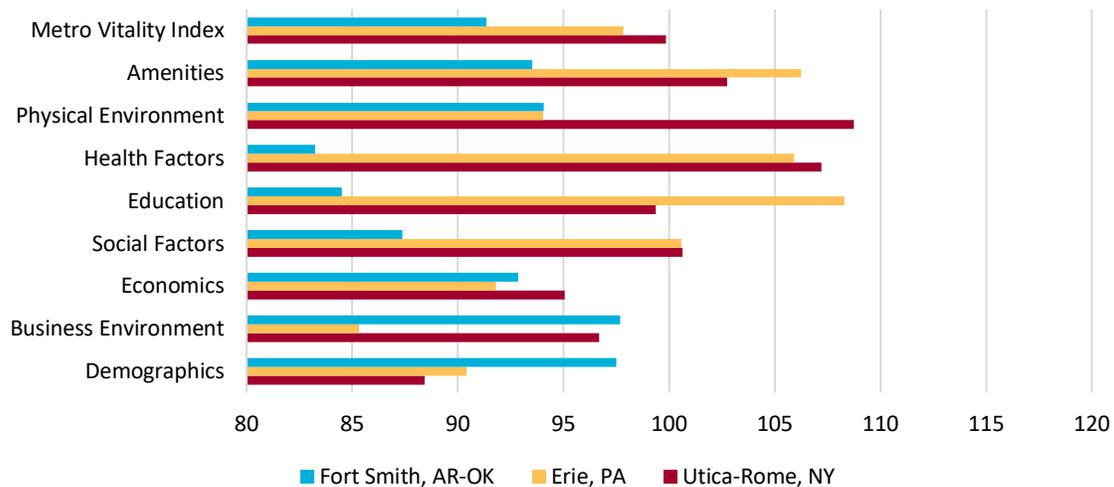
<sup>6</sup> <http://www.startribune.com/fargo-reinvents-itself-as-magnet-for-creative-types-entrepreneurs/261393961/>

fastest-growing private companies, based on revenue gains over the past three years. (*Inc. 5000 2018*)

Rochester’s growth has been due in large part to the development of its Destination Medical Center – a multi-billion dollar project funded in part by the Mayo Clinic, the Minnesota state government, and private partners in the hopes of turning the city into a global biotech hub. Some predict the project is likely to double the city’s population (Ungerleider 2015) which, at 116,000 in 2018, has already grown by nearly 40,000 over the past twenty years. (Kaul 2018)

Among the communities with lower than average performance on the MVI and economic growth measures were Fort Smith, AK-OK; Erie, PA; and Utica-Rome, NY. Each of these three areas saw below average labor force and GRP growth, lower than average values for GRP per labor force member, and relatively low MVI scores. Figure 10 shows their performance in the MVI and its eight sub-indices. What is interesting about this figure is how different each community fared on each sub-index score. While all three peer areas had overall MVI scores of less than 100, their performance on each individual sub-index varies widely. Fort Smith has very low scores on health factors, education, and social factors; while Erie and Utica had very low scores in the demographics sub-index.

**Figure 10. Metro Vitality Index and Sub-Index Scores for Fort Smith, Erie, and Utica**



Source: BBER

However, some commonalities existed among the three communities. Fort Smith, Utica, and Erie all had low rates of natural population change, and high median age (two of the three components of the demographic sub-index index), low values for real personal income (economic sub-index), very low or negative establishment growth rates, small numbers of building permits (business sub-index), and low levels of arts spending per capita, (social sub-index).

In researching the reasons for the lower-than-average economic performance in the communities, it appears that there are some commonalities there as well. Erie and Utica are both located in the United States’ Rust Belt region, an area that has been historically dependent on manufacturing. And not surprisingly, both communities have suffered as a result of the move toward automation and overseas manufacturing. While Fort Smith is geographically separate from the other two communities, it appears that much of its economic decline may also due to the loss of manufacturing jobs. According to the U.S. Bureau of Labor Statistics, annual average manufacturing employment in Fort Smith was at its peak in 1999 with more than 30,000 jobs.

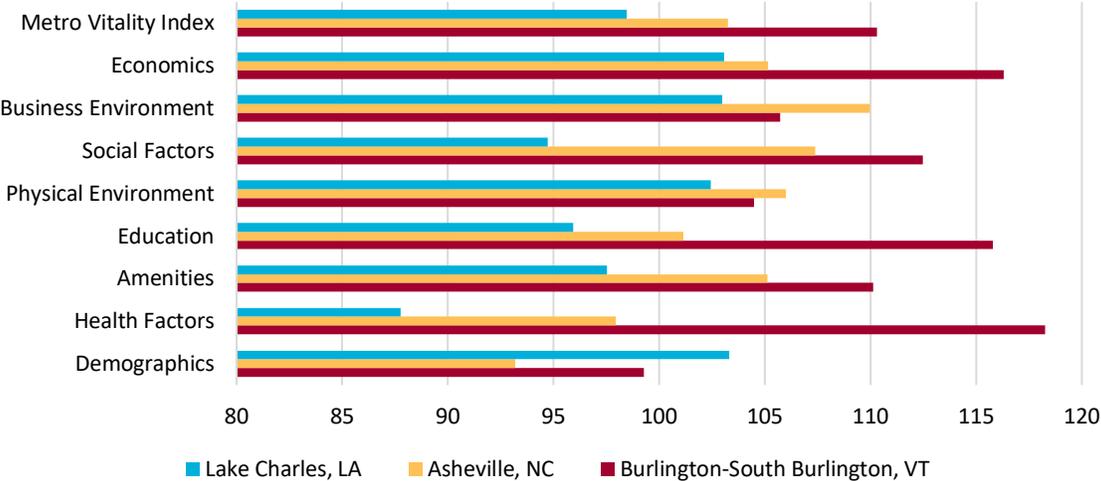
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That annual average has fallen rapidly since, leveling off at about 18,000 in 2013. Despite the losses in manufacturing jobs, all three communities still had above average employment in the manufacturing sector in 2016, as compared with what is typical nationwide, and below average employment in the information, finance, and professional services sectors (Bureau of Labor Statistics 2016).

One interesting point to note is in searching for the causes of Utica’s economic decline, a number of articles pointed to a resurgence in population due to the area’s hospitality toward refugees. Apparently, the city has coined itself “the town that loves refugees” and has used refugee resettlement as an economic development tool. After decades of decline, Utica has been able to retain some smaller industries due to the new highly motivated labor force.

Other notable peer areas include Lake Charles, LA; Burlington, VT; and Asheville, NC. These three communities are unique in that they performed very well in some areas but not in others. For example, Lake Charles has, by far, the highest GRP per labor force member value of any of the 25 peer areas and saw large positive growth in both real GRP and labor force between 2015 and 2016. However, the region has a very low MVI score and has experienced GRP and labor force declines between 2006 and 2016. Burlington, VT, on the other hand, has a very high MVI score and has experienced a large increase in GRP since 2006 but has struggled to grow its labor force. Finally, Asheville, NC, has a very low value for GRP per labor force member but has a higher than average MVI score and higher than average GRP and labor force growth since 2006.

**Figure 11. Metro Vitality Index and Sub-Index Scores for Lake Charles, Asheville, and Burlington**



Source: BBER

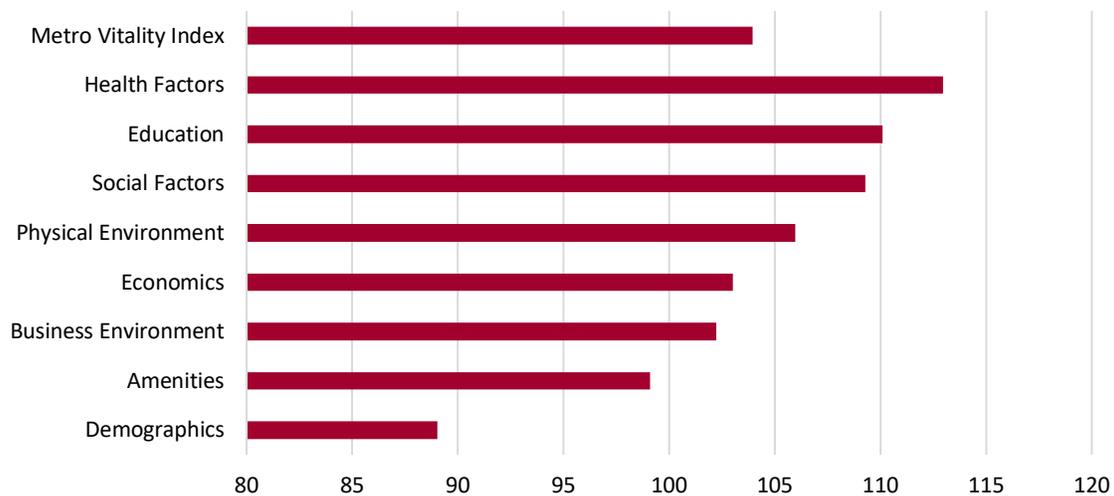
Figure 11 highlights the differences between the three communities. Based on the MVI, Burlington is by far the strongest of the three areas with very high scores in the health factors, economics, and education sub-indices. Meanwhile, Lake Charles has a score of less than 100 with lower than average values in the health, social factors, education, and amenities sub-indices. Asheville performs somewhere between the two with high performance in the business environment, social factors, and amenities sub-indices, but lower than average in demographics.

So where does the Duluth-Superior MSA fit in among its peers? As mentioned previously, Duluth-Superior has a GRP per labor force value of \$76,958, which puts it slightly below the national average – the MSA ranks #250 out of 381 on the measure. Duluth-Superior’s GRP has declined in the short-term, due to a decline in

output from the mining industry. However, real GRP has grown by more than 10% over the long term, placing Duluth-Superior above the national average in that respect. Meanwhile, labor force growth in the area has been relatively unchanged since 2006. In fact, the region was experiencing an uptick in the size of its labor force up until about 2009 (and the Great Recession), at which time many people began exiting the labor force. Only recently has the area recovered to its pre-recession levels, growing about 1% between 2015 and 2016.

With respect to the MVI, Duluth-Superior ranks #96 out of 381 with a score of 104 out of 120, suggesting it is better than average in terms of economic well-being and livability. Among its peers, Duluth-Superior ranks #11 out of 25. It performs best in the health factors, education, and social factors sub-indices and worst in demographics, amenities, and business environment. Specifically, the variables on which Duluth-Superior ranks highest are high school graduation rates and number of degrees and certificates granted (two of the three education sub-index components), the percent of residents with health insurance, the percent reporting fair or poor health (health sub-index), and the number of member associations (social index). Conversely, Duluth-Superior performs poorly in natural population change, median age, net migration (the three components of the demographics sub-index), access to broadband (amenities), and unemployment rate (economics).

**Figure 12. Metro Vitality Index and Sub-Index Scores for Duluth-Superior**



Source: BBER

These results paint Duluth-Superior as a healthy community that is socially connected and values education but struggles with an aging population and poorer than average access to technology. Unfortunately, Duluth-Superior did not perform particularly well in the economics sub-index, which is the index component most closely correlated with economic growth and productivity. While it had a fairly high value for STEM employment – with 120 STEM jobs per every 1,000, it had a higher than average unemployment rate (4.6%) and lower than average real personal income (\$42,055). And despite the high number of degrees and certificates awarded annually in the MSA, the actual share of residents with a bachelor’s degree was on the lower side – 26% in 2016.

For more information on all of the peer areas selected for the study, including why each was selected as a peer area, trends in GRP and labor force growth, MVI scores, and areas of high and low performance, see Appendix A.

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## V. Conclusions

The results of the peer MSA analysis highlighted some interesting trends among Duluth-Superior and its peers. First, the results shed light on which communities have the highest and lowest performance in some of the more typical economic growth measures – GRP growth and labor force growth – as well as the study’s primary indicator of interest, GRP per labor force member. Second, the findings show the rankings for the Metro Vitality Index – an index measuring economic well-being and livability among all 381 U.S. MSAs. The results show how each of the peer areas perform on the MVI and examines the correlation between the MVI and economic growth. Finally, the findings provided more details into some of the highest and lowest performing peer areas.

GRP per labor force member varies widely among the 381 MSAs in the U.S. – with some communities having more than \$300,000 in GRP per every labor force member and others with less than \$50,000. While a few of the areas with the highest values for GRP per labor force member are heavily reliant on the mining and natural resources sector, most of those at the top of the list had higher contributions to GRP from the information, professional services, finance, and manufacturing sectors and lower contributions from the natural resources sector.

Of the peer areas selected for the analysis, there are a number that have very high values for GRP per labor force member. Lake Charles, LA; Sioux Falls, SD; Fargo ND-MN; and Burlington-South Burlington, VT, are the areas with the highest reported values for that measure. Some of these communities also experienced very high GRP and labor force growth rates between 2006 and 2016. For example, Fargo’s real GRP grew by more than 40% between 2006 and 2016, while Sioux Falls’ grew by 24%. Both areas experienced labor force growth rates of more than 10%.

The Duluth-Superior MSA has a GRP per labor force value of roughly \$77,000, which puts it slightly below the national average – the MSA ranks #250 out of 381 on the measure and #16 out of the 25 peer areas. And while Duluth-Superior saw short-term (2015-2016) growth in the size of its labor force coupled with decline in real GRP, the long-term results were actually reversed. Real GRP in the Duluth-Superior MSA grew by about 10% between 2006 and 2016 (higher than the median value of 6%), while labor force grew by only 1%, which is less than the median value nationwide.

The Metro Vitality Index (MVI) – an index comprised of 24 indicators in eight categories was developed by the BBER for this study to provide insight on economic well-being, quality of life, and livability in the Duluth-Superior MSA as compared with its peer MSAs. According to the study’s findings, there is a positive relationship between the Metro Vitality Index (MVI) and the key economic growth measures: as the index score increases so does the ten-year GRP growth rate, the ten-year labor force growth rate, and the static ratio of GRP per labor force member. The same is true for most of the sub-indices.

Among the peer areas selected for the analysis, Sioux Falls, Rochester, and Fargo had the highest scores on the MVI. All three areas had low unemployment rates, high levels of STEM employment, and high levels of real personal income per capita – the three components of the economic sub-index. In addition, the areas had low levels of premature death, low rates of residents reporting fair or poor health, low poverty rates, good access to childcare, and low commuting times. All three areas also had high values of GRP per labor force member, above average GRP growth, and above average labor force growth.

Three peer areas, Fort Smith, AR-OK; Utica-Rome, NY; and Erie, PA, all had MVI scores of less than 100 and lower than average growth in their GRP and labor force. Unlike the three top-performing areas, there was not a clear pattern among their sub-index scores. Fort Smith had very low scores in health and education, while Erie scored poorly in business environment and Utica in demographics. There were, however, some commonalities among them: Fort Smith, Utica, and Erie all had low rates of natural population change, and

high median age, low values for real personal income, very low or negative establishment growth rates, small numbers of building permits, and low levels of arts spending per capita.

With respect to the MVI, Duluth-Superior had an overall MVI score of 104 and ranked #96 out of 381, suggesting it is better than average in terms of economic well-being and livability. Among its peers, Duluth-Superior ranked #11 out of 25. It performed best in the health factors, education, and social factors sub-indices, and worst in demographics, amenities, and business environment. Specifically, the variables on which Duluth-Superior ranks highest are high school graduation rates and number of degrees and certificates granted (two of the three education sub-index components), the percent of residents with health insurance, the percent reporting fair or poor health (health sub-index), and the number of member associations (social index). Conversely, Duluth-Superior performs poorly in natural population change, median age, net migration (the three components of the demographics sub-index), access to broadband (amenities), and unemployment rate (economics).

To summarize, there are some common themes among the findings. First, in examining all U.S. MSAs, those that have the highest values for GRP per labor force member tend to have more specialization in information, professional services, finance, and manufacturing sectors. Interestingly, manufacturing and natural resources sectors can be either a great advantage to an MSA (Midland, TX's, oil wealth) or a disadvantage (Erie, PA's, loss of manufacturing jobs). Age also appears to play a major role in an area's GRP per labor force value. For example, eight of the ten communities with the lowest GRP per labor force values in the country had a median age of more than 40 years, and three had a median age higher than 50. Finally, the demographics, economics, education, and health sub-indices appear to be most correlated with economic growth. Among those, the individual variables of real personal income, natural population change, higher educational attainment, poverty rates, STEM employment, and broadband access having the strongest correlations to the GRP and labor force.

### ***Policy Considerations***

The results of this study could be used in a number of ways to help drive policy or action locally. First, the peer cities identified in this study could be used by local decision makers in a number of ways. Some examples might include: visits to a particular high-performing city, a comparison of Duluth-Superior and its peer areas on other data not included in this report (e.g. crime statistics, degree offerings, race and ethnicity), or a deeper investigation into city or state policies in high-performing areas. Second, the MVI factors on which Duluth-Superior performed most poorly may benefit from investment or policy initiatives. For example, broadband access is an area where Duluth-Superior ranked very low compared with other MSAs. That information could assist local stakeholders as they apply for grants to improve broadband access in the region. Third, areas in which Duluth-Superior performed the best (e.g. education, health, social participation) could be marketing opportunities for the community – a way in which to celebrate the strengths of the Duluth-Superior community. Finally, as the information in this report is updated, policy makers can monitor Duluth-Superior's improvement or decline on various factors.

### ***Future Research***

Future research might include some modifications to the MVI and its components. For example, there were a handful of variables that were not strongly correlated with the key economic growth measures. While there are still reasons to include them in the index, a future iteration of this analysis might try to identify other measures that are more positively correlated. Similarly, this analysis found that some of the variables included in the index were highly correlated with each other (e.g. building permits and natural change). Any adjustments to the index could include a thorough analysis of the relationships between each variable to

ensure multicollinearity is minimized.

In addition, a follow-up to this analysis might include a more qualitative look at the peer areas included in the study. The follow-up analysis might focus on identifying policies and strategies that have worked for the high-growth areas and that could be enacted locally or identifying peer areas that have experienced slow or negative growth but have been able to turn their situation around.

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## Appendix A. Peer Areas

This section provides a one-page snapshot of each of the peer areas included in the analysis. Duluth-Superior is shown first, followed by each of the remaining peer areas, listed alphabetically. Each page includes the area's value and rank (1-381) for GRP per labor force member, the reasons why it was selected as a peer area (e.g. similar population, industry mix, region within the U.S.), and the factors on which it performs best and worst. Figures highlighting ten-year trends in GRP and labor force are also included, along with the area's scores on the Metro Vitality Index (MVI) and sub-indices.

**Table 4. Descriptive Statistics for Variables Included in Index**

<i>Category</i>	<i>Indicator</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Std Dev</i>	<i>Duluth Value</i>
Amenities	Broadband access	1.42	4.93	3.55	0.58	2.72
	Access to childcare	1.0	12.7	3.8	1.60	3.8
	Commuting times	15.4	38.6	22.6	3.44	20.1
Education	Bachelor's or higher	11.9%	59.3%	27.2%	8.2%	26.2%
	High school graduation	63.3%	96.3%	87.7%	5.2%	93.6%
	Degrees awarded	1.2	103.8	17.4	15.1	23.2
Demographics	Median Age	24.5	66.0	37.9	4.9	41.1
	Net migration	(56,875)	89,627	2,920	10,759	(56)
	Natural population change	(3,825)	93,496	3,064	8,925	(104)
Economics	Unemployment rate	2.0%	19.1%	4.5%	1.6%	4.6%
	Real personal income	\$26,640	\$93,204	\$42,186	\$6,427	\$42,055
	Employment in STEM	33.6	276.3	99.3	32.8	119.4
Business Environment	Small enterprises	78.3%	93.4%	84.8%	2.2%	85.0%
	Establishment growth	-9.2%	11.7%	1.0%	2.8%	2.3%
	Building permits	15	62,524	3,115	6,730	665
Social Factors	Art consumption	\$162	\$561	\$360	\$58	\$390
	Poverty rates	7.8%	33.0%	15.9%	4.1%	15.2%
	Social participation rates	1.9	19.7	10.5	3.1	15.1
Health Factors	Health insurance rates	67.1%	97.0%	88.8%	4.2%	94.0%
	Premature death	3,656	11,921	7,205	1,554	6,644
	General health	9.4%	35.9%	16.7%	3.6%	12%
Physical Environment	Air pollution	5.50	14.80	9.30	1.58	8.50
	Access to exercise opportunities	32.9%	97.5%	77.9%	13.1%	82.0%
	Severe housing problems	9.0%	32.9%	17.1%	4.1%	15.0%

Source: BBER

Table 6 includes a list of the 24 variables included in the development of the Metro Vitality Index (MVI) along with descriptive statistics for each (number of cases, minimum value, maximum value, mean, and standard deviation). For additional context, the final column shows the value for the Duluth-Superior metro area. These values provide a helpful reference for interpreting the results on the following pages. In particular, the minimum, mean, and maximum values can help provide a point of reference for areas where a community is doing well or poorly.

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## Duluth-Superior, MN-WI

GRP per labor force: \$76,958 (Rank #250)

Where is it doing well?

- #25 in health insurance – 94% of residents are insured
- #27 in high school graduation – 94% of residents
- #30 in social participation rates – 15 member associations per 10,000 residents
- #40 in general health – 12% of residents report fair or poor health
- #68 in degrees awarded – 23 higher education degrees/certificates per 1,000 residents
- #85 in commuting times – 20 minutes to work (average)
- #87 in employment in STEM – 120 STEM jobs per 1,000

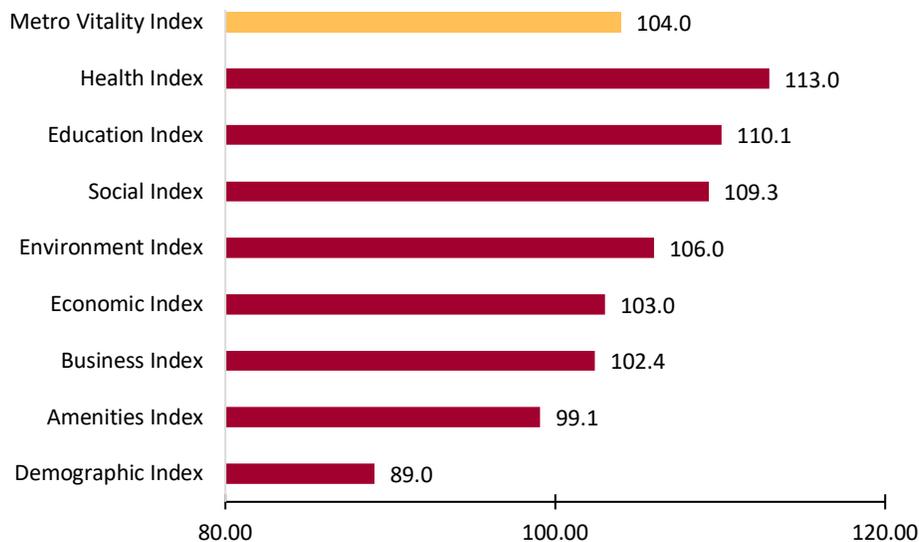
Where is it doing poorly?

- #351 in broadband access – Less than 60% of residents have high speed
- #333 in natural population change – 104 more deaths than births in 2016
- #307 in median age – 41.1 years

Figure 13. Duluth-Superior, MN-WI GRP and LF Growth



Figure 14. Duluth-Superior, MN-WI Metro Vitality Index and Sub-Indices



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## Amarillo, TX

GRP per labor force: \$90,528 (Rank #143)

Why is it a Peer Area?

- Similar industry mix (above average employment in natural resources and mining; trade, transportation, and utilities; below average in professional services; information)
- Similar population (264,925)
- Similar-sized economy (\$11.9 billion)

Where is it doing well?

- #25 in real GRP growth – 29% since 2006
- #35 in air pollution – average daily amount of fine particulate matter is 7.10 PPM
- #36 in unemployment rate – 3.0%
- #44 in commuting times – 19 minutes to work (average)
- #81 in median age – 34.5 years

Where is it doing poorly?

- #355 in health insurance – 17% of residents are uninsured
- #344 in access to childcare – 2.1 childcare centers per 1,000 children under age 5
- #315 in high school graduation – 84% of residents
- #305 in art consumption – arts spending per capita of \$314

Figure 15. Amarillo, TX GRP and LF Growth

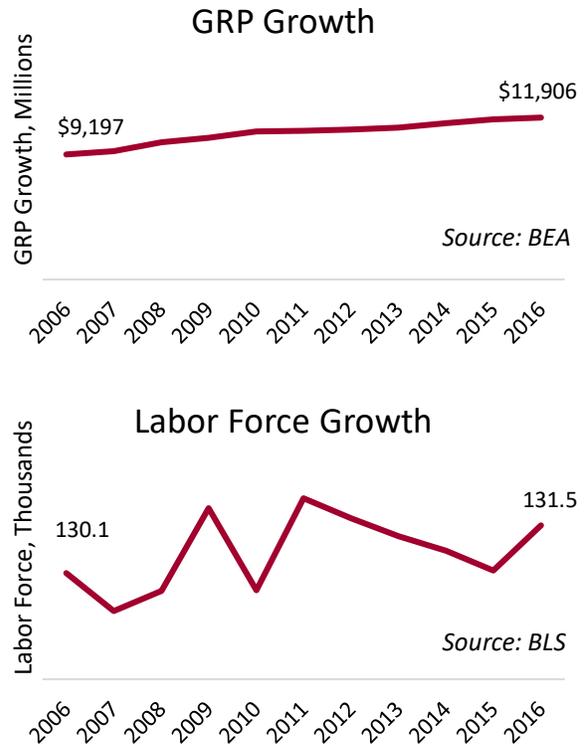
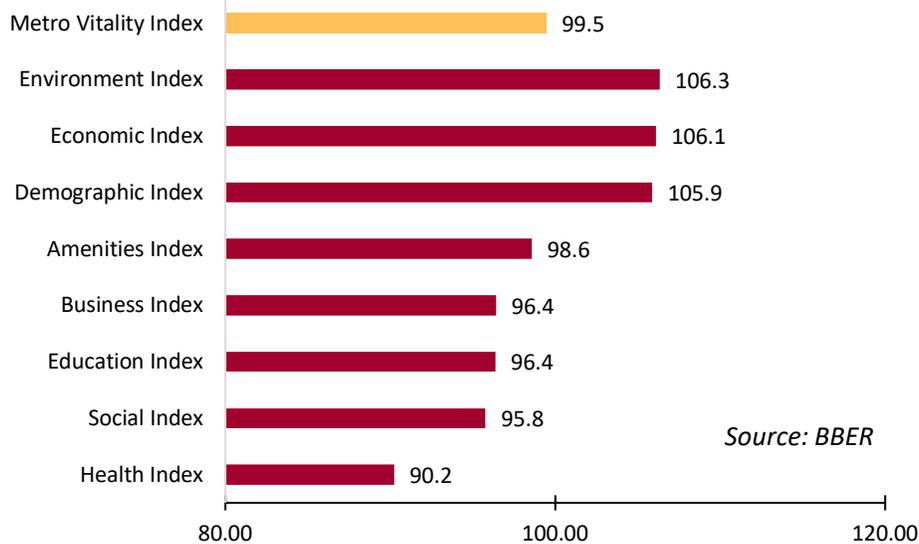


Figure 16. Amarillo, TX Metro Vitality Index and Sub-Indices



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## Asheville, NC

GRP per labor force: \$70,780 (Rank #300)

Why is it a Peer Area?

- Similar industry mix (above average employment in tourism; education and health care; below average in Information; finance)
- Larger geographic region (2,033 sq mi)
- Similar-sized economy (\$15.9 billion)

Where is it doing well?

- #57 in net migration – gain of 5,650 residents
- #67 in social participation rates – 13.1 member associations per 10,000 residents
- #73 in small enterprises – 87% employ fewer than 20 workers
- #77 in labor force growth – 10% since 2006

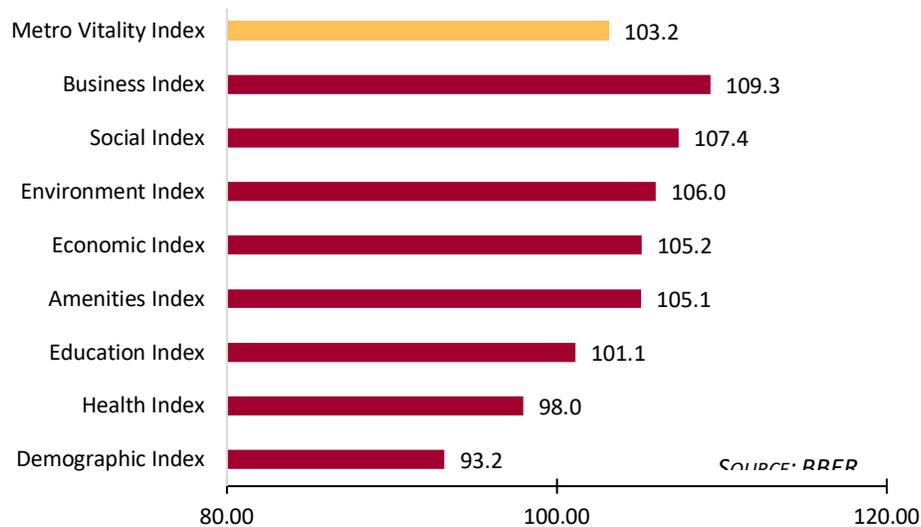
Where is it doing poorly?

- #358 in natural population change – 447 more deaths than births
- #354 in median age – 43.8 years
- #274 in health insurance rates – 13% of residents are uninsured
- #270 in degrees awarded – 9.1 higher education degrees/certificates per 1,000 residents

Figure 17. Asheville, NC GRP and LF Growth



Figure 18. Asheville, NC Metro Vitality Index and Sub-Indices



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## Bellingham, WA

GRP per labor force: \$79,711 (Rank #220)

Why is it a Peer Area?

- Population (221,404)
- Industry mix (above average employment in trade, transportation, and utilities; tourism; natural resources and mining)
- Economy (\$8.5 billion)

Where is it doing well?

- #28 in broadband access – more than 80% of residents have access to high speed
- #29 in art consumption – arts spending per capita of \$447
- #33 in small enterprises – 88% employ fewer than 20 workers
- #35 in premature death – 5,095 years of lost life prior to age 75
- #49 in degrees awarded – 28 higher education degrees/certificates per 1,000 residents

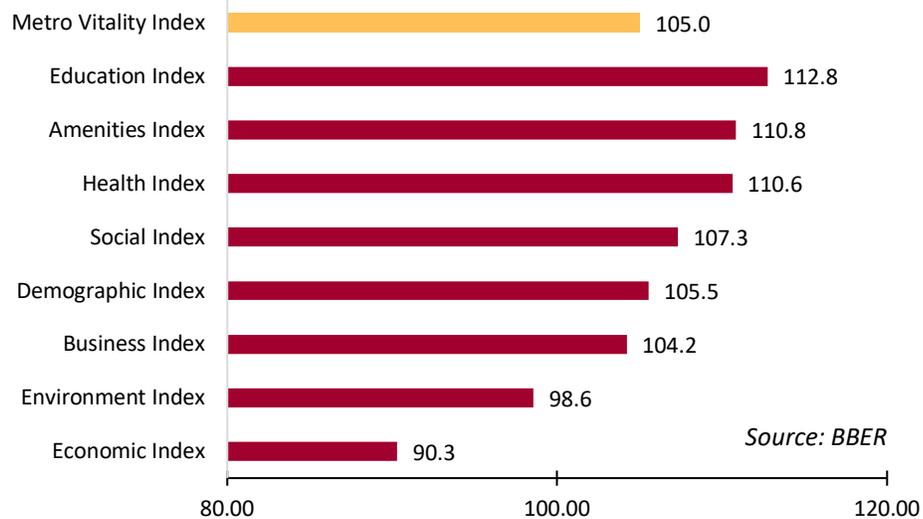
Where is it doing poorly?

- #359 in employment in STEM – 55 STEM jobs per 1,000
- #321 in severe housing problems – more than 20% of households
- #274 in unemployment rate – 5.0%

Figure 19. Bellingham, WA GRP and LF Growth



Figure 20. Bellingham, WA Metro Vitality Index and Sub-Indices



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## Burlington-South Burlington, VT

GRP per labor force: \$97,661 (Rank #98)

Why is it a Peer Area?

- Population (218,395)
- Economy (\$12.1 billion)
- Used as a peer area by local stakeholders

Where is it doing well?

- #4 in unemployment rate – 2.4%
- #5 in general health – 11% of residents report fair or poor health
- #6 in health insurance rates – 96% of residents are insured
- #10 in access to childcare – Roughly 8 childcare centers per 1,000 children under age 5
- #18 in higher educational attainment – Nearly 43% of residents have a bachelor's degree or higher
- #32 in employment in STEM - 140 STEM jobs per 1,000
- #85 in real GRP growth –15% since 2006

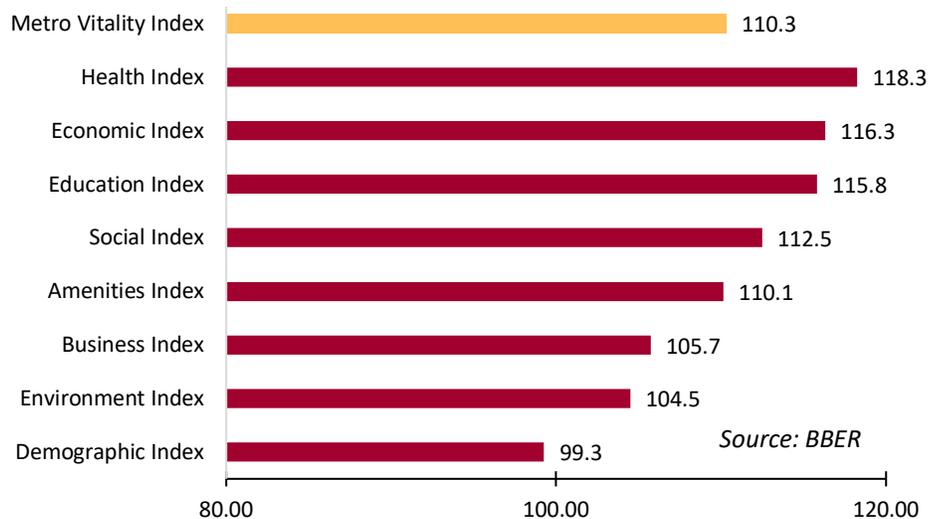
Where is it doing poorly?

- #223 in severe housing problems – 17% of households
- #219 in net migration – 303 residents added from migration

Figure 21. Burlington, VT GRP and LF Growth



Figure 22. Burlington-South Burlington, VT Metro Vitality Index and Sub-Indices



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## College Station-Bryan, TX

GRP per labor force: \$68,139 (Rank #316)

Why is it a Peer Area?

- Industry mix (above average employment in education and health care; tourism; below average in manufacturing, information, other services)
- Population (258,044)
- Economy (\$8.6 billion)

Where is it doing well?

- #6 in median age – 26.8 years
- #10 in labor force growth – 23% since 2006
- #11 in degrees awarded – 62.7 higher education degrees/certificates awarded per 1,000 residents
- #17 in real GRP growth – 33% since 2006

Where is it doing poorly?

- #372 in poverty rates – 25% of residents are in poverty
- #367 in severe housing problems – 27% of households
- #366 in real personal income – \$34,440
- #317 in broadband access – Less than 60% of residents with high speed

Figure 24. College Station-Bryan, TX GRP and LF Growth

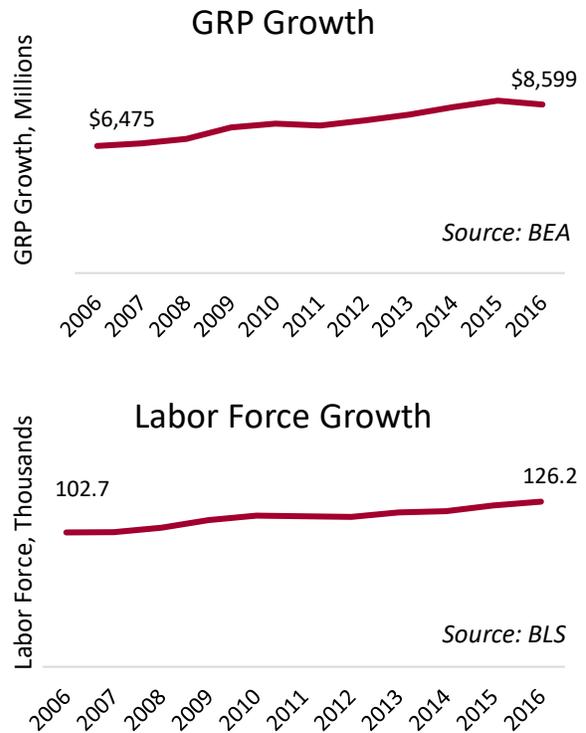
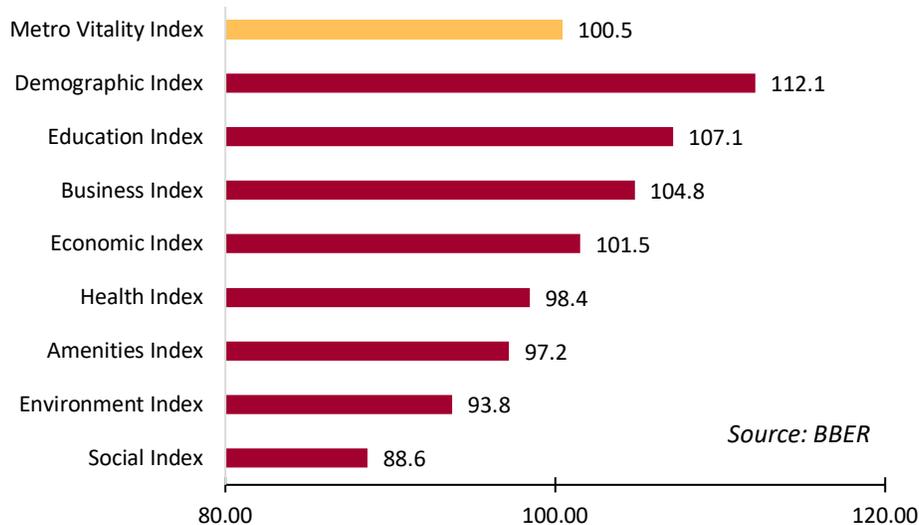


Figure 23. College Station-Bryan, TX Metro Vitality Index and Sub-Indices



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## Eau Claire, WI

GRP per labor force: \$79,124 (Rank #224)

Why is it a Peer Area?

- Midwest city
- Industry mix (above average employment in trade, transportation, and utilities; education and health care; below average in information; professional services)
- Economy (\$7.3 billion)

Where is it doing well?

- #44 in unemployment rate – 3.1%
- #46 in high school graduation – 92.7% of residents
- #55 in degrees awarded – 26 higher education degrees/certificates awarded per 1,000 residents
- #64 in commuting time – less than 20 minutes to work (average)
- #71 in real GRP growth – 17% since 2006

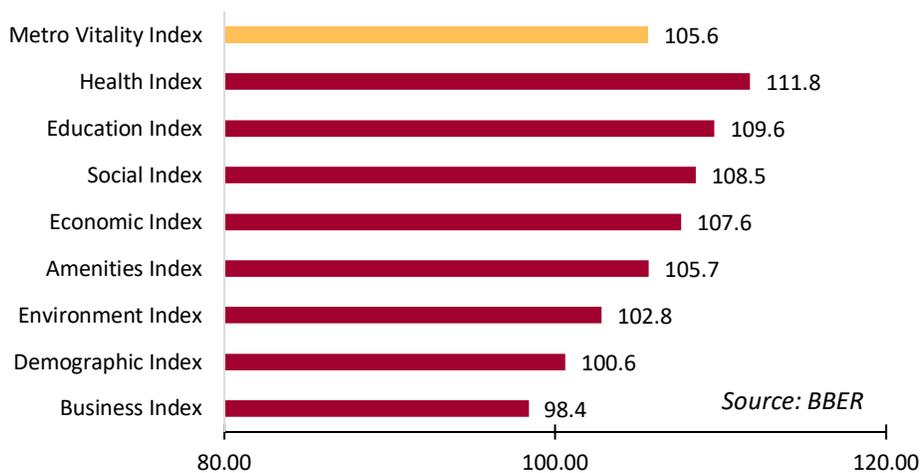
Where is it doing poorly?

- #272 in small enterprises – 84% employ fewer than 20 workers
- #236 in access to exercise opportunities – 24% of residents without
- #215 in access to childcare – 3.4 childcare centers per 1,000 children under age 5

Figure 26. Eau Claire, WI GRP and LF Growth



Figure 25. Eau Claire, WI Metro Vitality Index and Sub-Indices



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## Erie, PA

GRP per labor force: \$73,526 (Rank #224)

Why is it a Peer Area?

- Population (274,541)
- Economy (\$9.8 billion)
- Mentioned as peer area by stakeholders

Where is it doing well?

- #50 in health insurance rates – 93% of residents are insured
- #55 in commuting time – less than 20 minutes to work (average)
- #73 in social participation rates – 12.9 member associations per 10,000 residents

Where is it doing poorly?

- #379 in access to exercise opportunities – 37% of residents without
- #360 in small enterprises – 82% employ fewer than 20 workers
- #350 in net migration – loss of 2,066 residents
- #344 in unemployment rate – 5.8%
- #325 in establishment growth – decline of 0.5%
- #311 in labor force growth – 5% decline

Figure 27. Erie, PA GRP and LF Growth

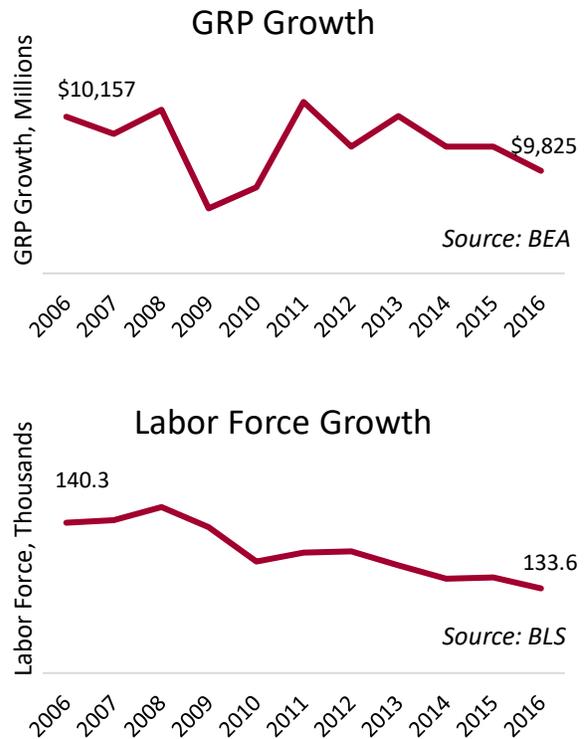
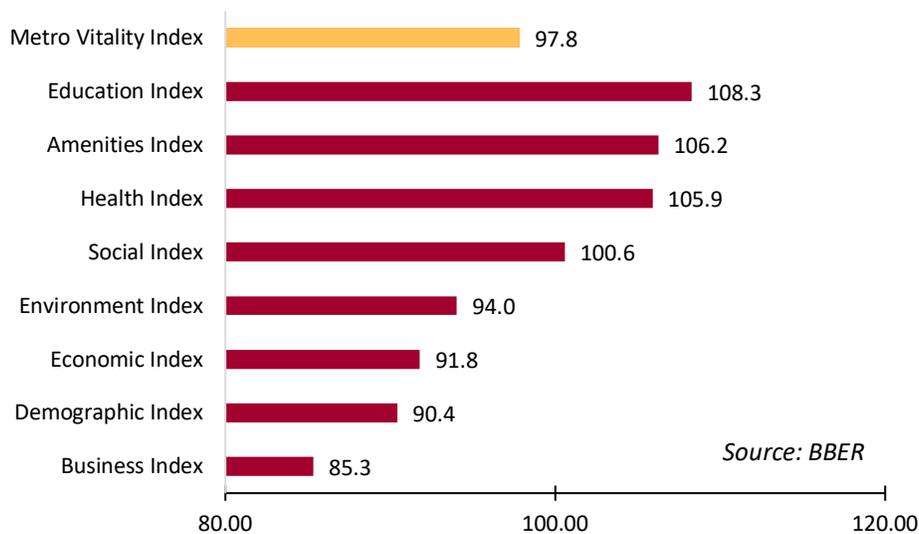


Figure 28. Erie, PA Metro Vitality Index and Sub-Indices



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## Eugene-Springfield, OR

GRP per labor force: \$68,139 (Rank #316)

Why is it a Peer Area?

- Larger geographic region (4,553 sq mi)
- Economy (\$13.5 billion)
- Similar industry mix (above average employment in trade, transportation, and utilities; education and health care; tourism)

Where is it doing well?

- #27 in access to childcare – 6 childcare centers per 1,000 children under age 5
- #49 in net migration – gain of 6,240 residents
- #65 in establishment growth – 3.1%
- #66 in art consumption – arts spending per capita of \$410

Where is it doing poorly?

- #334 in severe housing problems – 22% of households
- #327 in poverty rates – 19.7% of residents are in poverty
- #299 in real personal income – \$38,070
- #248 in median age – 39.3 years
- #236 in labor force growth – 1% since 2006

Figure 30. Eugene-Springfield, OR GRP and LF Growth

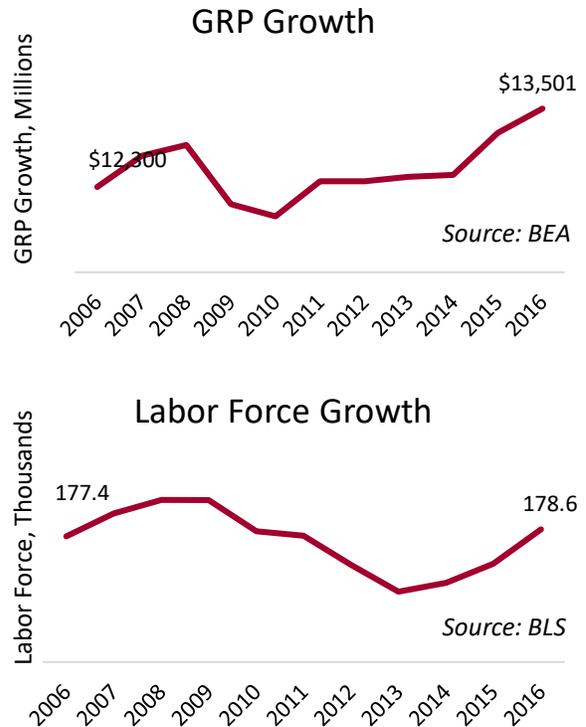
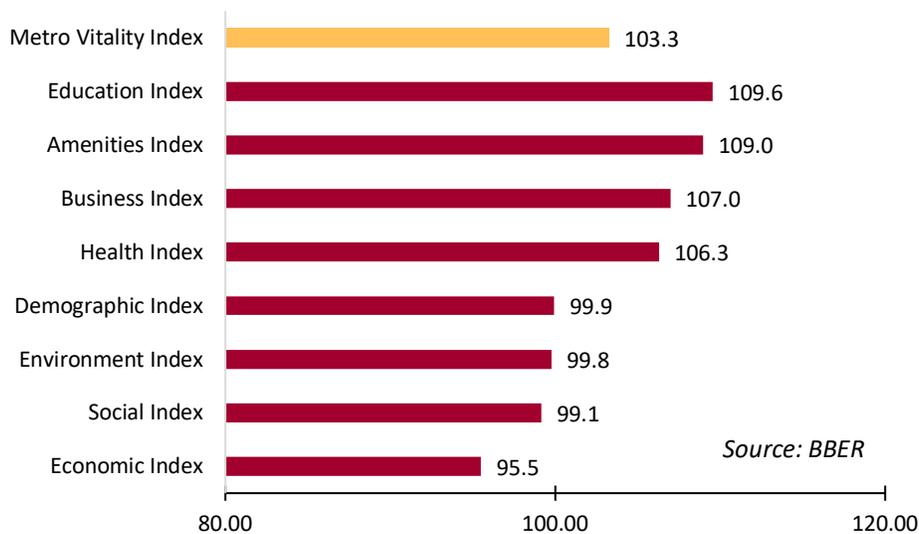


Figure 29. Eugene-Springfield, OR Metro Vitality Index and Sub-Indices



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## Fargo, ND

GRP per labor force (2016): \$99,228 (Rank #90)

Why is it a Peer Area?

- Midwest City
- Similar industry mix (above average employment in trade, transportation, and utilities; education and health care; natural resources and mining; below average in information; manufacturing)
- Similar population (241,356)
- Similar-sized economy (\$13.5 billion)

Where is it doing well?

- #4 in unemployment rate – 2.4%
- #10 in real GRP growth – 41%
- #10 in commuting times – 17 minutes to work (average)
- #12 in high school graduation – 94.5% of residents
- #22 in access to childcare – 6.4 childcare centers per 1,000 children under age 5
- #24 in labor force growth – 18%

Where is it doing poorly?

- #368 in small enterprises – 81% employ fewer than 20 workers
- #192 in broadband access – More than 20% of residents without high speed

Figure 31. Fargo, ND GRP and LF Growth

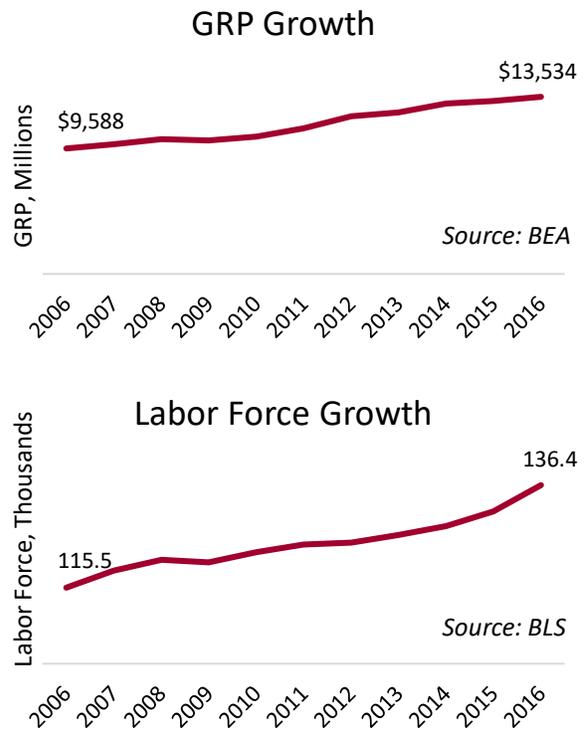
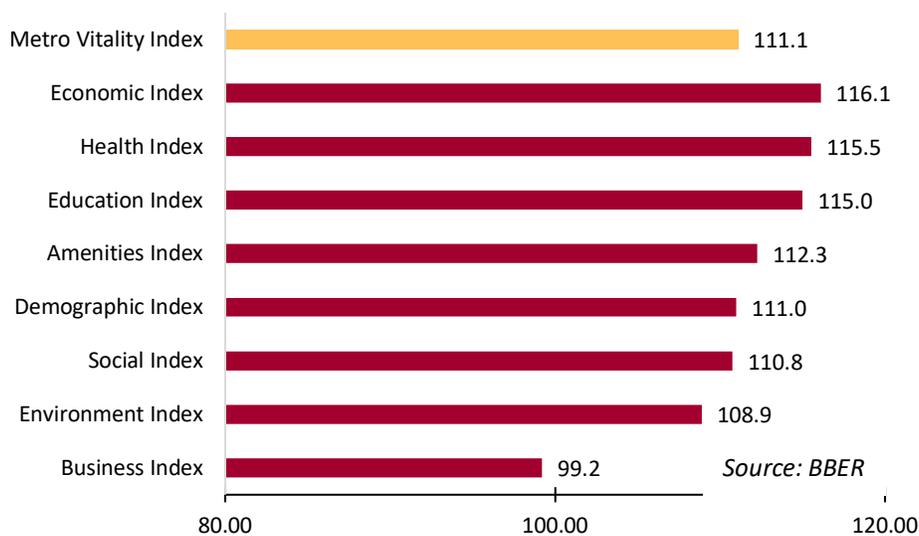


Figure 32. Fargo, ND Metro Vitality Index and Sub-Indices



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## Fort Smith, AR

GRP per labor force: \$74,997 (Rank #262)

Why is it a Peer Area?

- Larger geographic region (3,996 sq mi)
- Similar population (282,086)
- Similar sized economy (\$9.1 billion)

Where is it doing well?

- #131 in severe housing problems – 15% of households
- #133 in commuting times – 21 minutes to work (average)

Where is it doing poorly?

- #362 in higher educational attainment – 16% population has a bachelor's degree or higher
- #361 in real GRP growth – declined by 10% since 2006
- #360 in broadband access – Less than 60% of residents have access to high speed
- #359 in general health – 22% of residents report fair or poor health
- #354 in poverty rates – 21.9% of residents are in poverty
- #353 in premature death – 9,541 years of potential lost life
- #352 in access to exercise opportunities – more than 40% without

Figure 34. Fort Smith, AR GRP and LF Growth

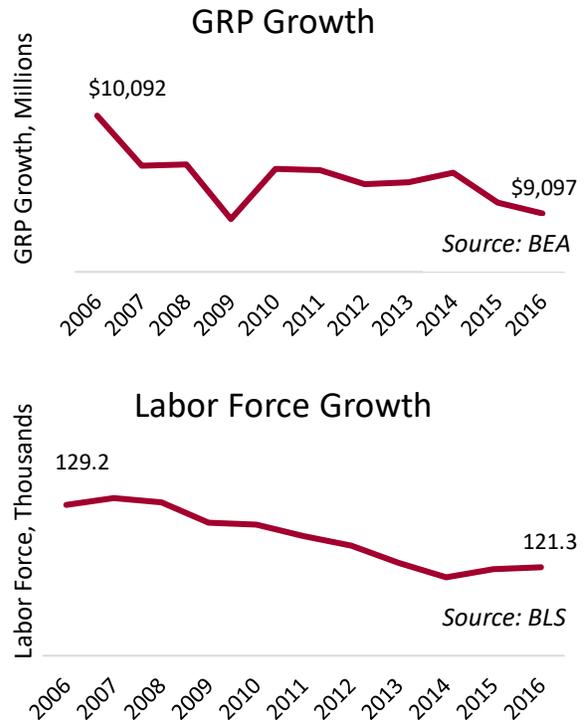
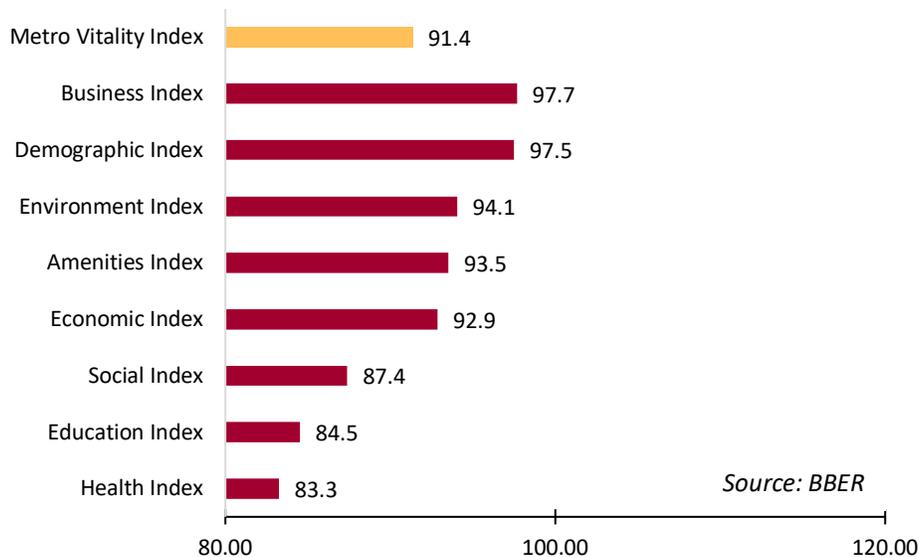


Figure 33. Fort Smith, AK Metro Vitality Index and Sub-Indices



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## Green Bay, WI

GRP per labor force: \$94,178 (Rank #116)

Why is it a Peer Area?

- Midwest City
- Similar population (320,050)
- Mentioned as a peer area by local stakeholders

Where is it doing well?

- #36 in unemployment rate – 3.0%
- #46 in health insurance rates – 93% of residents are insured
- #51 in poverty rates – 11.2% are in poverty
- #53 in general health – 13% of residents report fair or poor health
- #58 in premature death – 5,515 years of potential lost life

Where is it doing poorly?

- #358 in small enterprises – 82% employ fewer than 20 workers
- #249 in social participation rates – 9.4 member associations per 10,000 residents
- #214 in median age – 38.3 years
- #202 in higher educational attainment – 25.9% have a bachelor's degree or higher

Figure 35. Green Bay, WI GRP and LF Growth

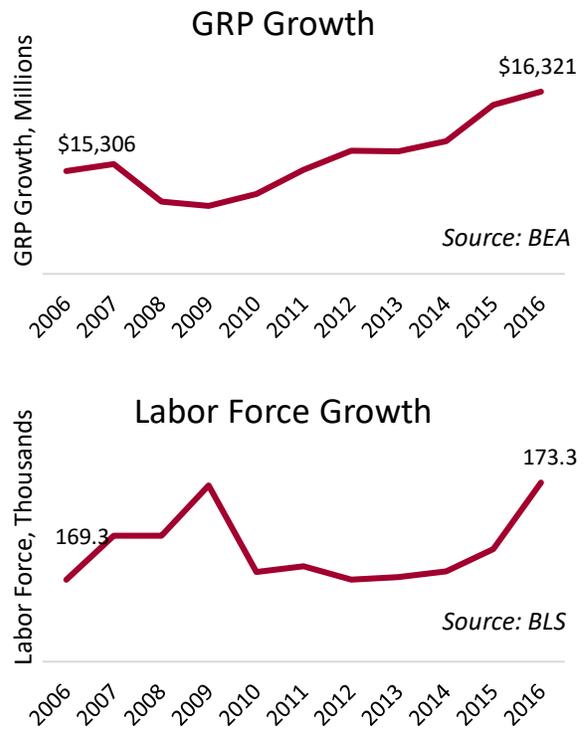
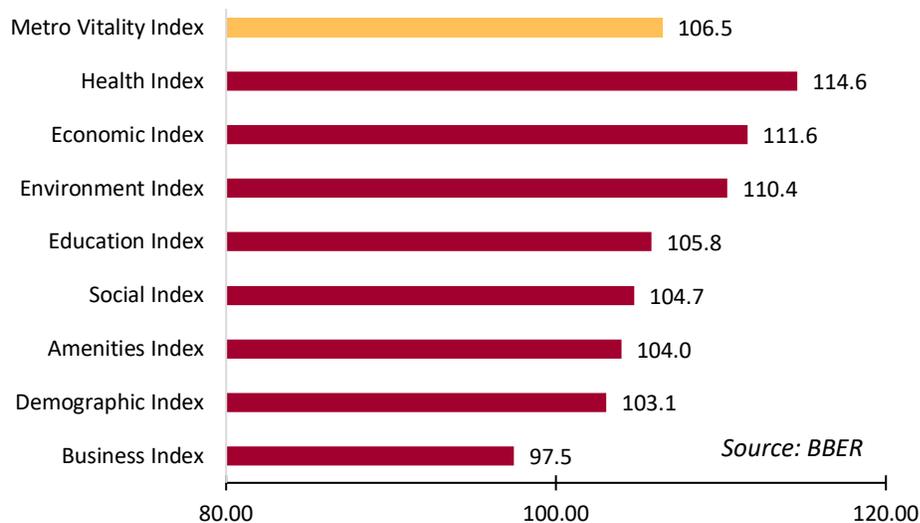


Figure 36. Green Bay, WI Metro Vitality Index and Sub-Indices



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## Lake Charles, LA

GRP per labor force: \$126,535 (Rank #22)

Why is it a Peer Area?

- Similar industry mix (above average employment in natural resources and mining; trade and transportation; below average in IT; professional services)
- Similar population (209,357)
- Similar sized economy (\$13.5 billion)
- Port city

Where is it doing well?

- #44 in severe housing problems – 13% of households
- #45 in labor force growth – 14% since 2006
- #65 in establishment growth – 3.1%
- #74 in real personal income – \$46,070

Where is it doing poorly?

- #311 in access to childcare – 2.7 childcare centers per 1,000 children under age 5
- #316 in art consumption – arts spending per capita of \$309
- #306 in health insurance rates – 14% of residents are uninsured
- #366 in real GRP growth – declined by 11% since 2006

Figure 37. Lake Charles, LA GRP and LF Growth

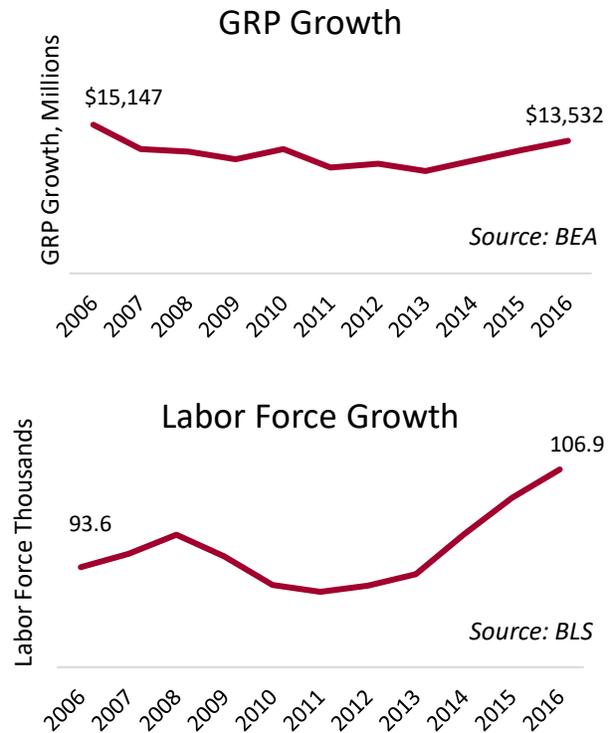
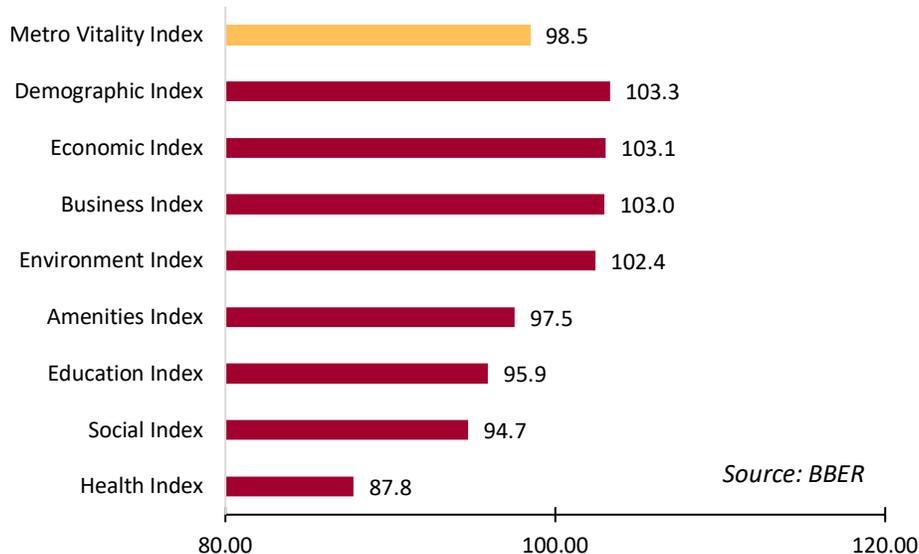


Figure 38. Lake Charles, LA Metro Vitality Index and Sub-Indices



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## Lansing-East Lansing, MI

GRP per labor force: \$78,712 (Rank #267)

Why is it a Peer Area?

- Midwest City
- Mentioned as a peer area by local stakeholders

Where is it doing well?

- #35 in degrees awarded – 35 higher education degrees/certificates awarded per 1,000 residents
- #40 in high school graduation – 93% of residents
- #57 in health insurance rates – 93% of residents are insured

Where is it doing poorly?

- #303 in establishment growth – decline of 0.1%
- #298 in real GRP growth – declined by 2% since 2006
- #294 in real personal income – \$38,138
- #273 in broadband access – less than 60% of residents have access to high speed
- #272 in labor force growth – 2% decline since 2006
- #263 in air pollution – average daily amount of fine particulate matter is 10.1 PPM

Figure 39. Lansing-East Lansing, MI GRP and LF Growth

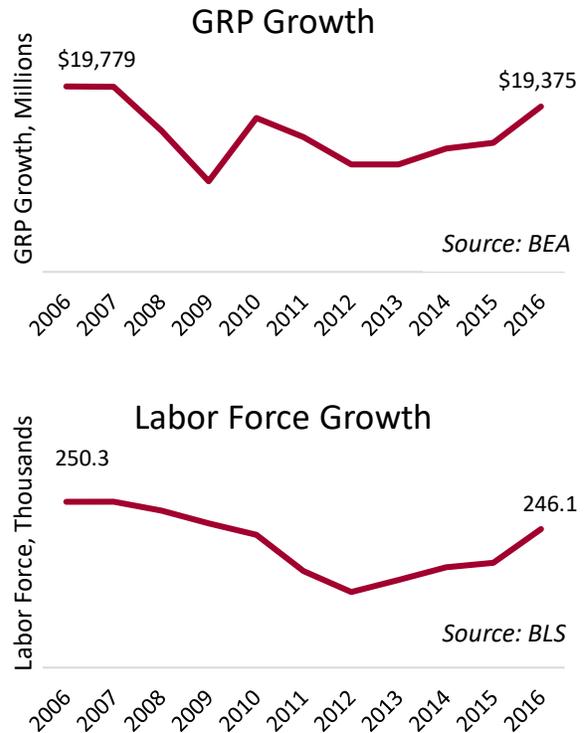
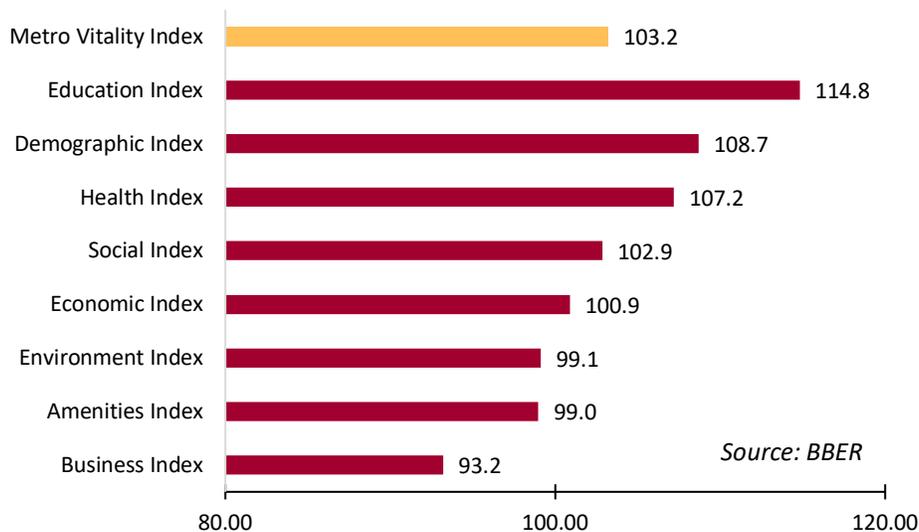


Figure 40. Lansing-East Lansing, MI Metro Vitality Index and Sub-Indices



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## Lubbock, TX

GRP per labor force: \$74,752 (Rank #263)

Why is it a Peer Area?

- Similar industry mix (above average in natural resources and mining; trade, transportation, and utilities; education and health care; tourism; below average in professional services)
- Similar population (316,893)
- Similar sized economy (\$11.9 billion)

Where is it doing well?

- #14 in commuting time – 17 minutes (average)
- #24 in median age – 31 years
- #39 in degrees awarded – 33 higher education degrees/certificates awarded per 1,000 residents
- #49 in real GRP growth – 20% since 2006

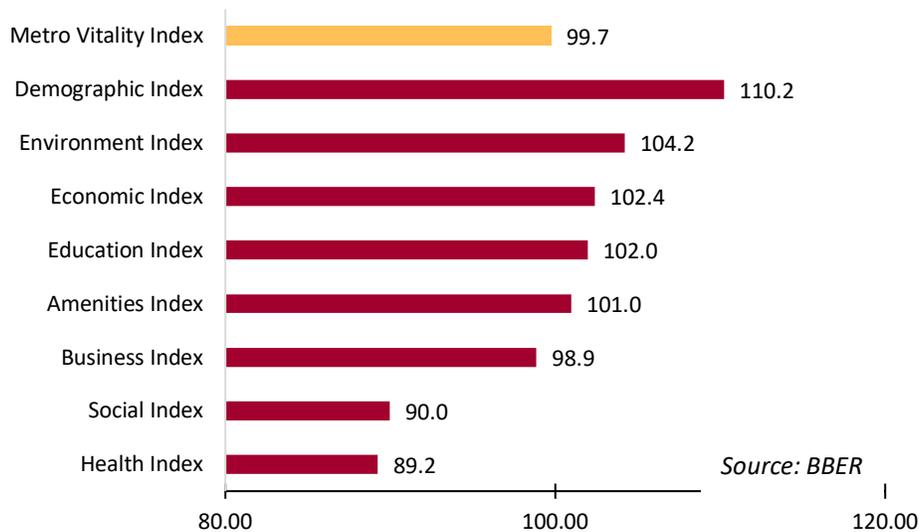
Where is it doing poorly?

- #345 in health insurance rates – 16% of residents are uninsured
- #318 in poverty rates – 19.5% of residents are in poverty
- #310 in real personal income – \$37,626
- #309 in high school graduation – 85% of residents
- #309 in art consumption – arts spending per capita of \$312

Figure 42. Lubbock, TX GRP and LF Growth



Figure 41. Lubbock, TX Metro Vitality Index and Sub-Indices



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## Medford, OR

GRP per labor force: \$69,199 (Rank #310)

Why is it a Peer Area?

- Similar industry mix (above average employment in trade, transportation, and utilities; tourism; natural resources and mining; below average in information)
- Similar population (217,479)
- Similar sized economy (\$7.0 billion)

Where is it doing well?

- #32 in small enterprises – 88% employ fewer than 20 workers
- #41 in establishment growth – increase 3.7%
- #41 in commuting times – 19 minutes to work (average)
- #57 in art consumption – arts spending per capita of \$415

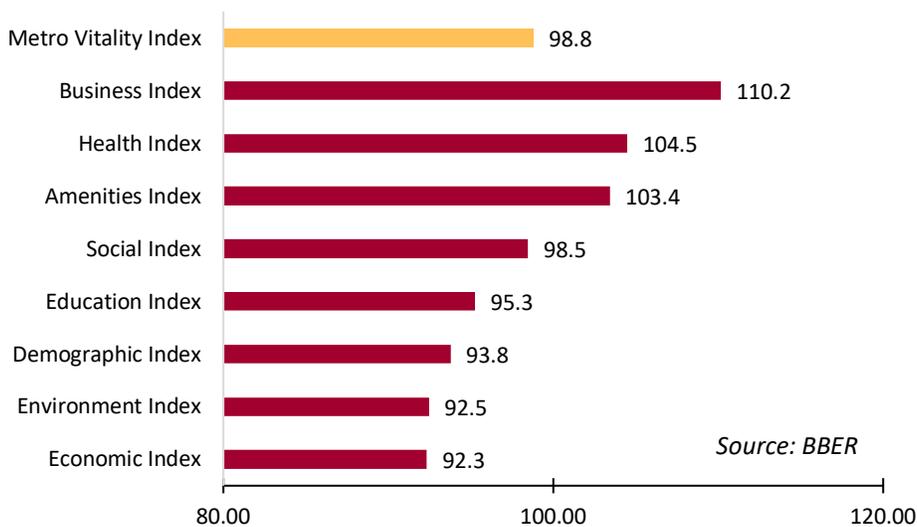
Where is it doing poorly?

- #378 in access to exercise opportunities – 37% of residents without
- #348 in severe housing problems – 24% of households
- #345 in median age – 43 years
- #333 in degree awarded – 5.6 higher education degrees/certificates awarded per 1,000 residents

Figure 44. Medford, OR GRP and LF Growth



Figure 43. Medford, OR Metro Vitality Index and Sub-Indices



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## Prescott, AZ

GRP per labor force: \$51,861 (Rank #377)

Why is it a Peer Area?

- Similar geographic size (8,123 sq mi)
- Similar industry mix (above average employment in tourism; natural resources and mining; below average in Information)
- Similar population (228,168)

Where is it doing well?

- #3 in air pollution – average daily amount of fine particulate matter is 5.9 PPM
- #13 in small enterprises – 89% employ fewer than 20 workers
- #15 in art consumption – arts spending per capita of \$466
- #72 in net migration – gain of 4,792 resident:

Where is it doing poorly?

- #377 in median age – 52 years
- #369 in natural population change –1,000 more deaths than births
- #365 in real personal income – \$34,505
- #351 in access to childcare –1.9 centers per 1,000 children under age 5
- #339 in real GRP growth – declined by 6%
- #331 in broadband access – 40% of residents without high speed

Figure 46. Prescott, AZ GRP and LF Growth

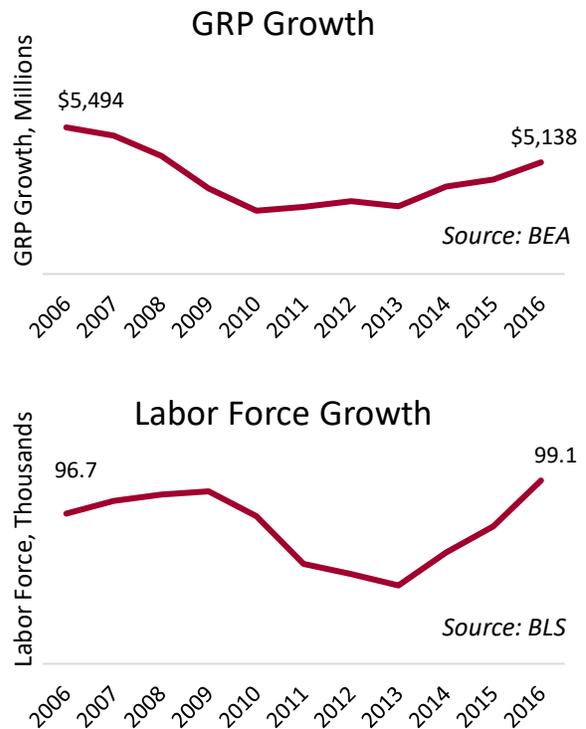
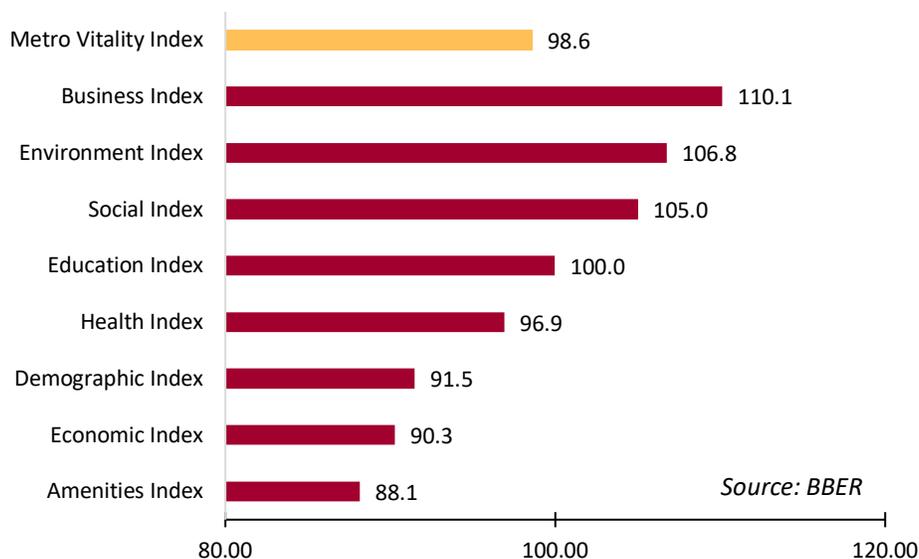


Figure 45. Prescott, AZ Metro Vitality Index and Sub-Indices



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## Rapid City, SD

GRP per labor force: \$78,035 (Rank #228)

Why is it a Peer Area?

- Midwest City
- Larger geographic area (6,248 sq mi)
- Similar industry mix (above average employment in tourism; trade, transportation, and utilities; below average in manufacturing)

Where is it doing well?

- #13 in air pollution – average daily amount of fine particulate matter is 6.5 PPM
- #36 in commuting times – 18.5 minutes to work (average)
- #37 in high school graduation – 93% of residents
- #48 in general health – 13% of residents report fair or poor health
- #48 in severe housing problems – 13% of households

Where is it doing poorly?

- #343 in degrees awarded – 5.2 higher education degrees/certificates awarded per 1,000 residents
- #208 in health insurance rates – 11% of residents are uninsured

Figure 48. Rapid City, SD GRP and LF Growth

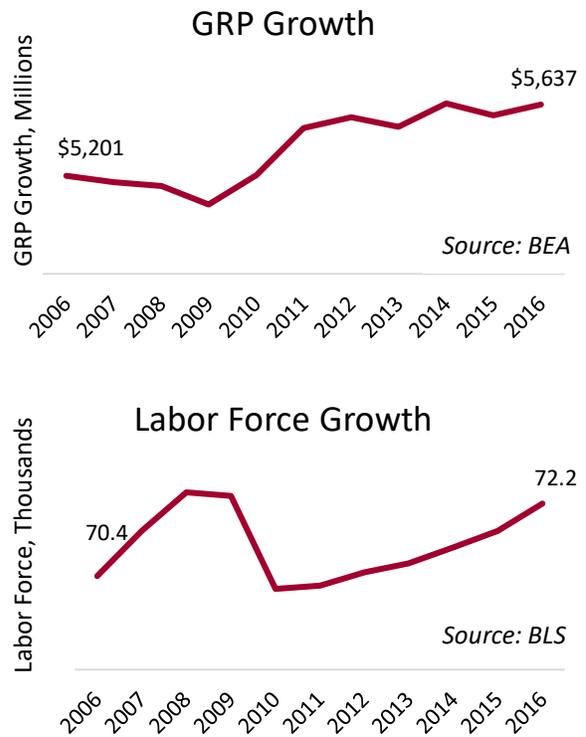
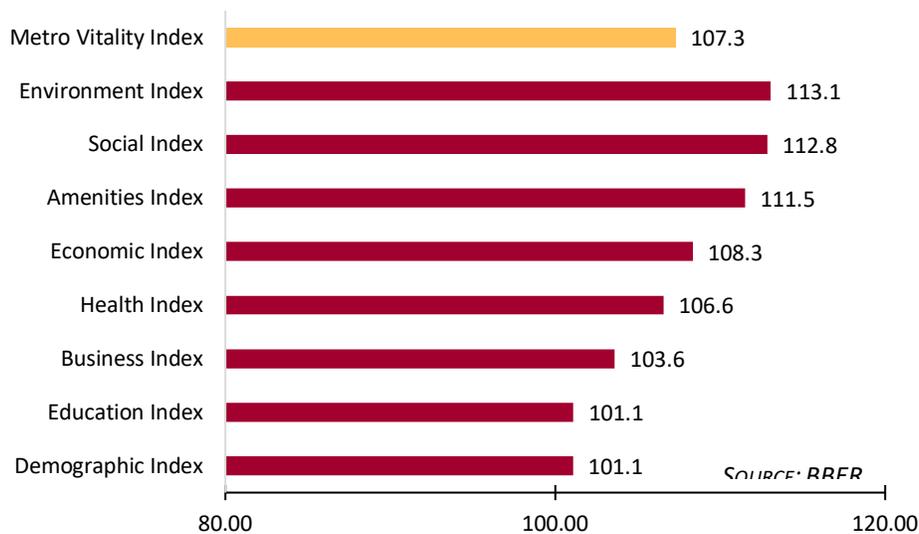


Figure 47. Rapid City, SD Metro Vitality Index and Sub-Indices



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## Roanoke, VA

GRP per labor force: \$85,571 (Rank #176)

Why is it a Peer Area?

- Similar industry mix (above average employment in trade, transportation, and utilities; below average in information)
- Similar population (314,128)
- Similar sized economy (\$13.4 billion)

Where is it doing well?

- #32 in social participation rates – 15 member associations per 10,000 residents
- #109 in real personal income – \$44,258

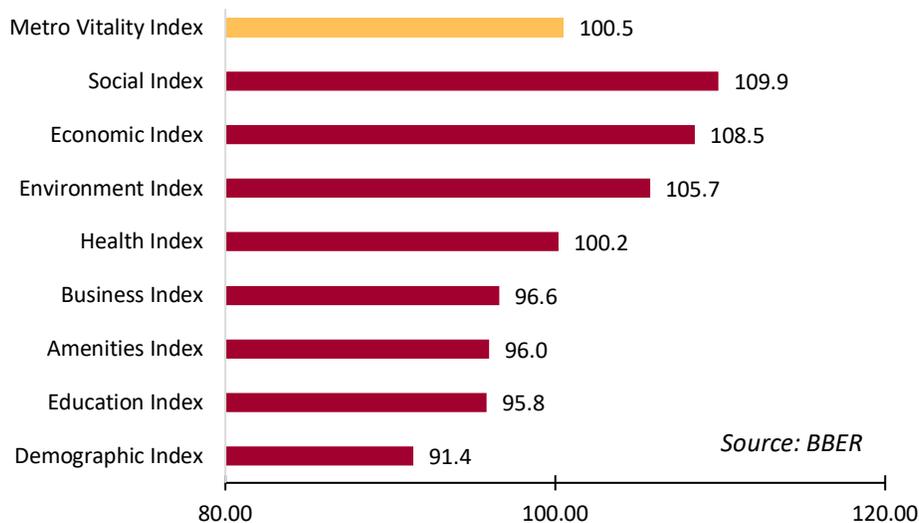
Where is it doing poorly?

- #336 in median age – 42.3 years
- #323 in natural population change – 2 more deaths than births
- #291 in degrees awarded – 8.2 higher education degrees/certificates awarded per 1,000 residents
- #267 in real GRP growth – 0% since 2006
- #240 in commuting time – 23.3 minutes to work (average)

Figure 49. Roanoke, VA GRP and LF Growth



Figure 50. Roanoke, VA Metro Vitality Index and Sub-Indices



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## Rochester, MN

GRP per labor force: \$90,363 (Rank #144)

Why is it a Peer Area?

- Midwest City
- Similar population (218,280)
- Similar sized economy (\$10.9 billion)

Where is it doing well?

- #7 in severe housing problems – 11% of households
- #8 in premature death – 4,309 years of potential lost life
- #9 in general health – 11% of residents report fair or poor health
- #11 in employment in STEM – 163 STEM jobs per 1,000
- #13 in poverty rates – 9% of residents are in poverty
- #21 in health insurance rates – 94% of residents are insured

Where is it doing poorly?

- #314 in degrees awarded – 6.9 higher education degrees/certificates awarded per 1,000 residents
- #241 in air pollution – average daily amount of fine particulate matter is 9.9 PPM
- #207 in median age – 38.2 years

Figure 52. Rochester, MN GRP and LF Growth

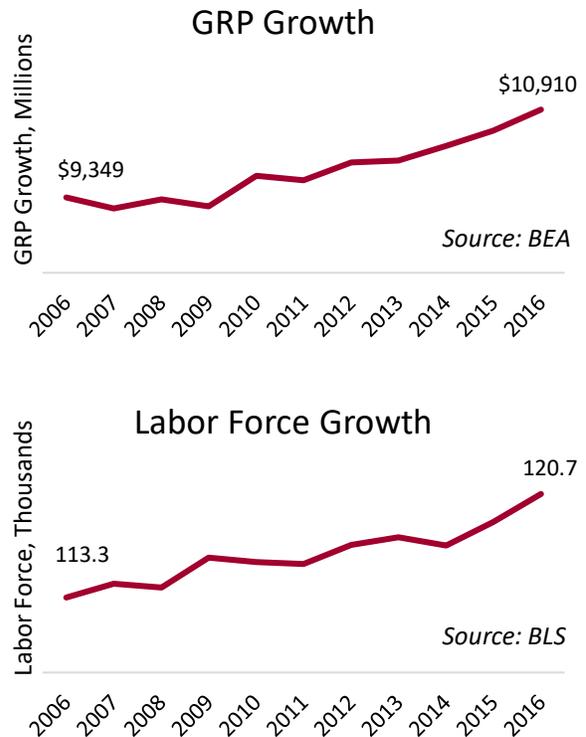
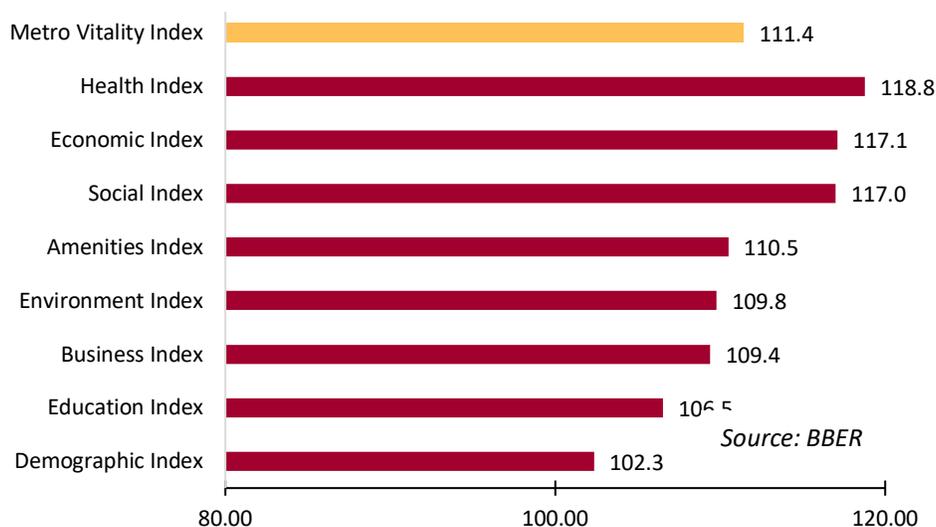


Figure 51. Rochester, MN Metro Vitality Index and Sub-Indices



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## St. Cloud, MN

GRP per labor force: \$78,724 (Rank #228)

Why is it a Peer Area?

- Midwest City
- Similar industry mix (above average employment in natural resources and mining; trade, transportation, and utilities; education and health care; below average in information; professional services; finance)
- Similar population (197,759)
- Similar sized economy (\$8.7 billion)

Where is it doing well?

- #16 in health insurance rates – 95% of residents are insured
- #36 in social participation rates – 14.6 member associations per 10,000 residents
- #43 in establishment growth – increased by 3.6%
- #45 in general health – 13% of residents report fair or poor health

Where is it doing poorly?

- #302 in small enterprises – 83% employ fewer than 20 workers
- #228 in access to exercise opportunities – 24% of residents without

Figure 53. St. Cloud, MN GRP and LF Growth

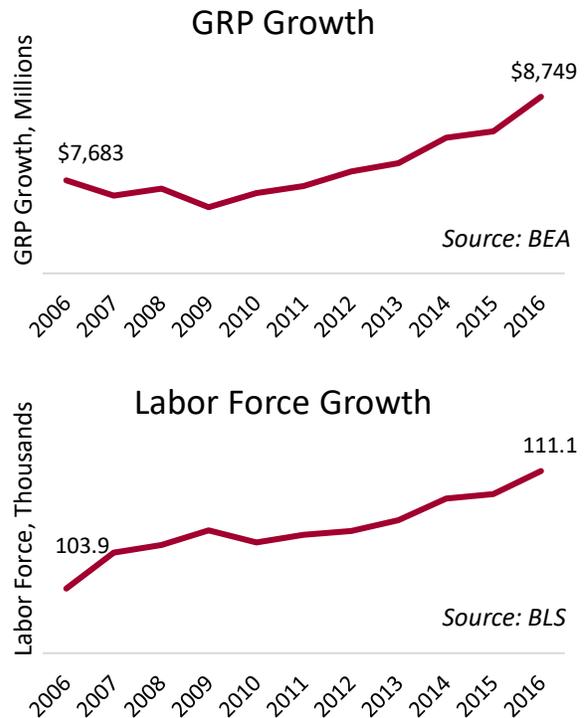
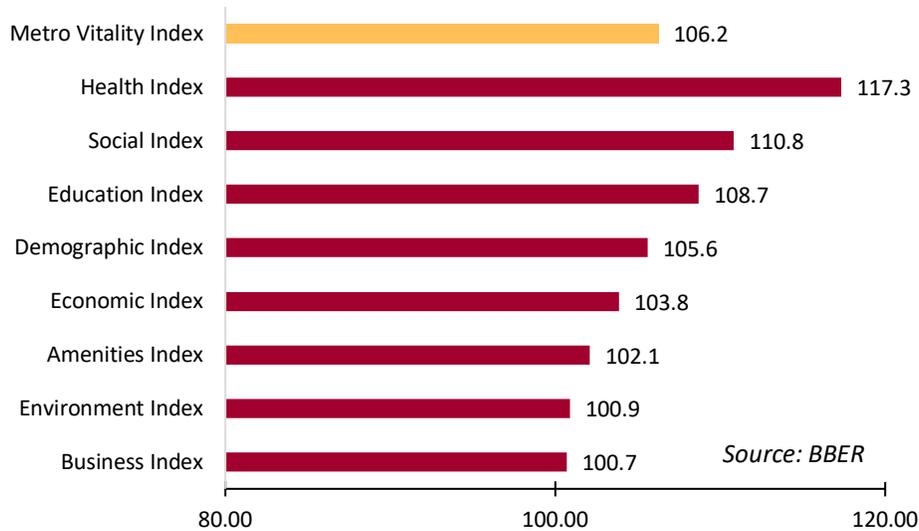


Figure 54. St. Cloud Metro Vitality Index and Sub-Indices



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## San Luis Obispo-Paso Robles, CA

GRP per labor force: \$88,646 (Rank #153)

Why is it a Peer Area?

- Similar population (259,094)
- Similar sized economy (\$12.4 billion)
- Similar industry mix (above average employment in tourism; natural resources and mining; trade, transportation, and utilities; below average in manufacturing)
- Larger geographic region (3,299 sq mi)

Where is it doing well?

- #16 in art consumption – arts spending per capita of \$466
- #23 in access to childcare – 6.3 childcare centers per 1,000 children under age 5
- #31 in small enterprises – 88% employ fewer than 20 workers
- #61 in general health – 13% of residents report fair or poor health

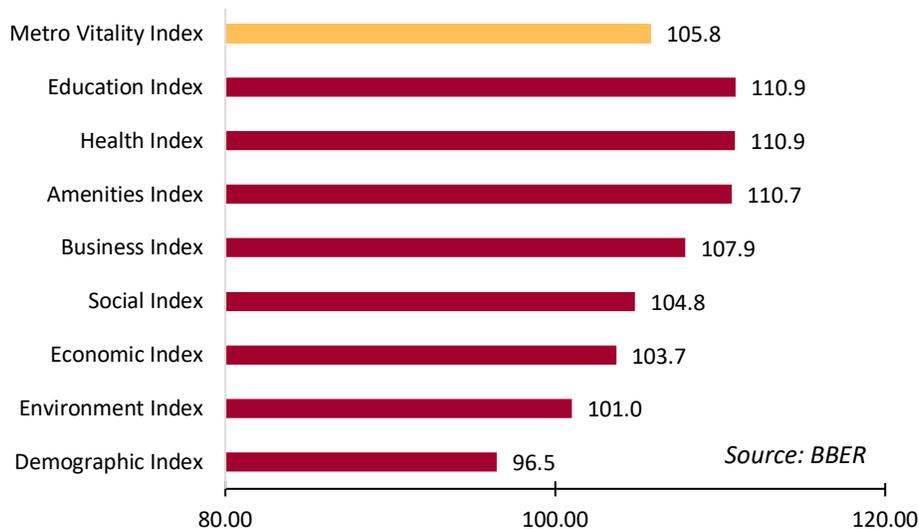
Where is it doing poorly?

- #349 in severe housing problems – 24% of households
- #255 in employment in STEM – 85 STEM jobs per 1,000

Figure 55. San Luis Obispo-Paso Robles, CA  
GRP and LF Growth



Figure 56. San Luis Obispo-Paso Robles, CA Metro Vitality Index and Sub-Indices



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## Sioux Falls, SD

GRP per labor force: \$107,511 (Rank #61)

Why is it a Peer Area?

- Midwest City
- Similar population (259,094)
- Similar sized economy (\$15,768 billion)

Where is it doing well?

- #2 in general health – 10% of residents report fair or poor health
- #11 in real personal income – \$53,464
- #20 in labor force growth – 19%
- #33 in real GRP growth – 24%
- #34 in social participation rates – 14.7 member associations per 10,000 residents
- #36 in commuting time – 18 minutes (average)
- #37 in employment in STEM – 137 STEM jobs per 1,000

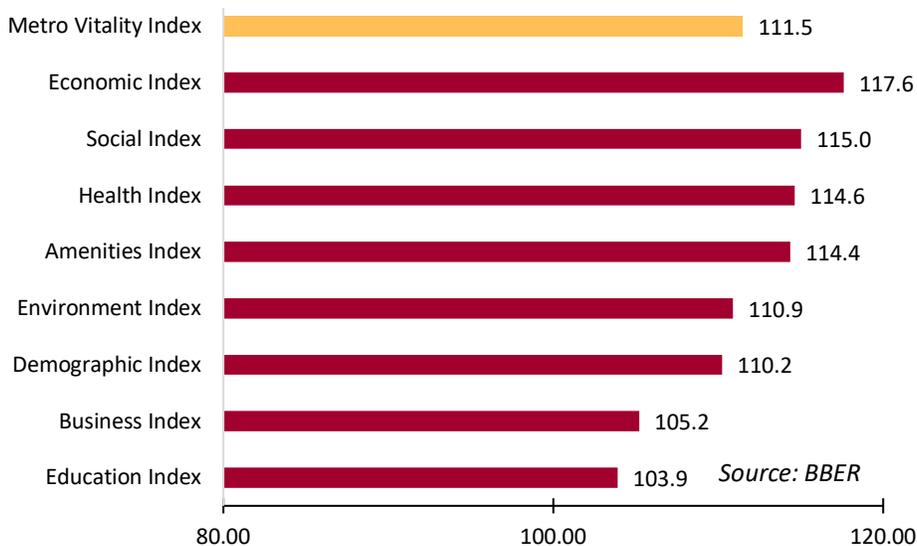
Where is it doing poorly?

- #311 in degrees awarded – 7 higher education degrees/certificates awarded per 1,000 residents
- #238 in small enterprises – 84% employ fewer than 20 workers
- #164 in air pollution – average daily amount of fine particulate matter is 9.10 PPM

Figure 57. Sioux Falls, SD GRP and LF Growth



Figure 58. Sioux Falls, SD Metro Vitality Index and Sub-Indices



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## Tuscaloosa, AL

GRP per labor force: \$85,558 (Rank #177)

Why is it a Peer Area?

- Similar population (242,799)
- Similar sized economy (\$9.6 billion)
- Similar industry mix (above average employment in education and health care; below average in professional services)

Where is it doing well?

- #30 in degrees awarded – 38.6 higher education degrees/certificates awarded per 1,000 residents
- #57 in median age – 33.4 years
- #79 in labor force growth – 10% since 2006

Where is it doing poorly?

- #351 in general health – 22% of residents report fair or poor health
- #341 in real personal income – \$36,321
- #341 in access to exercise opportunities – 39% of residents without
- #302 in poverty rates – 19% of residents are in poverty

Figure 59. Tuscaloosa, AL GRP and LF Growth

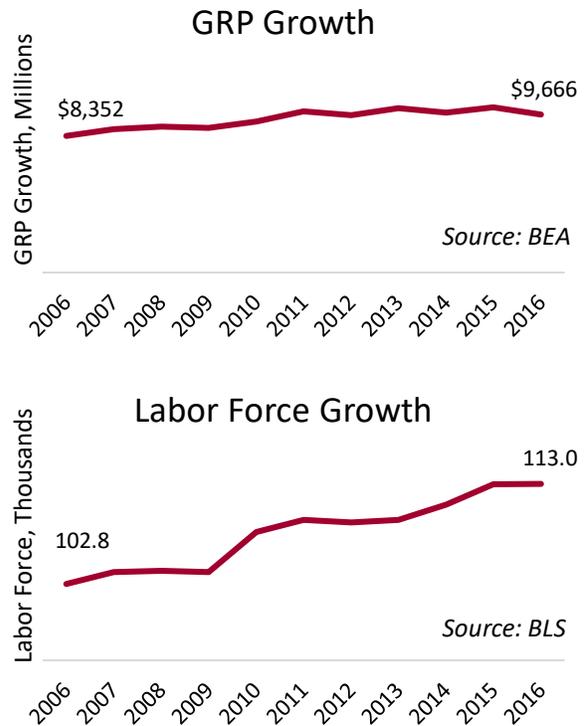
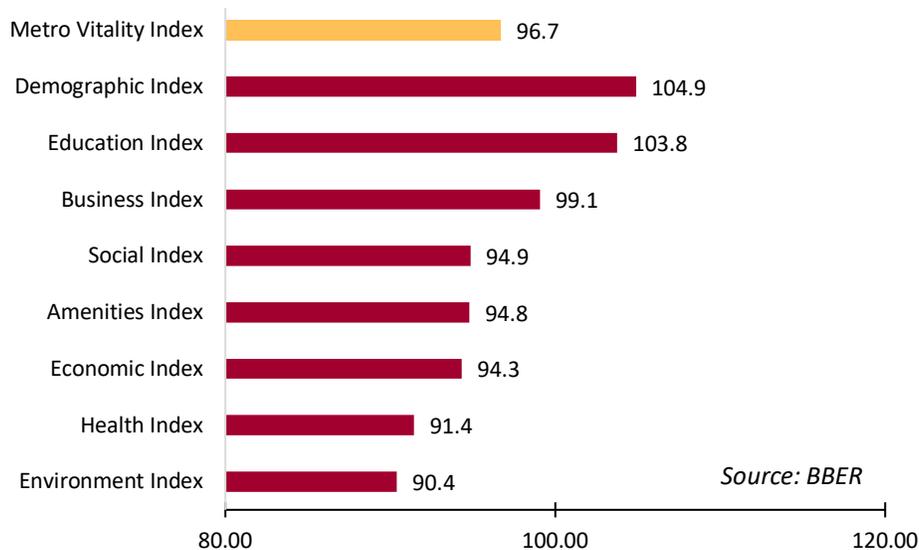


Figure 60. Tuscaloosa, AL Metro Vitality Index and Sub-Indices



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## Utica-Rome, NY

GRP per labor force: \$71,712 (Rank #289)

Why is it a Peer Area?

- Similar population (293,572)
- Similar sized economy (\$9.4 billion)
- Similar industry mix (above average employment in education and health care; below average in information; professional services)

Where is it doing well?

- #38 in health insurance rates – 94% of residents are insured
- #88 in air pollution – average daily amount of fine particulate matter is 8.2 PPM
- #95 in small enterprises –86% employ fewer than 20 workers

Where is it doing poorly?

- #342 in labor force growth – declined by 8% since 2006
- #328 in natural population change – 68 more deaths than births in 2016
- #312 in real GRP growth – declined by 4% since 2006
- #296 in unemployment rate – 5.2%
- #283 in real personal income – \$38,434

Figure 61. Utica-Rome, NY GRP and LF Growth

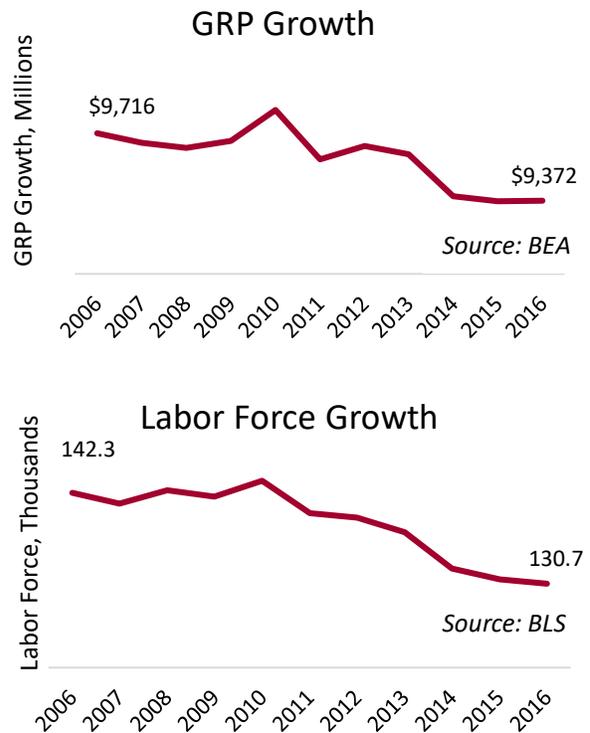
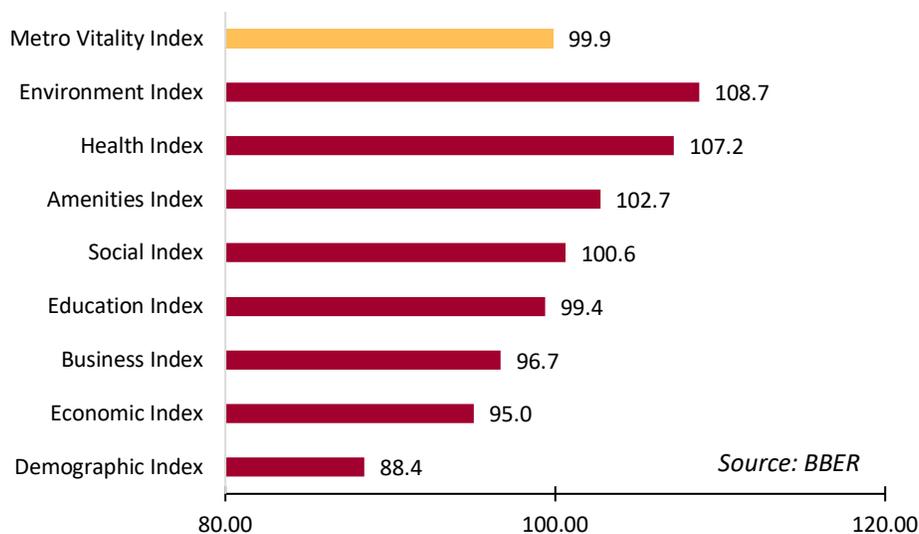


Figure 62. Utica-Rome, NY Metro Vitality Index and Sub-Indices



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## **Appendix B. Abbreviations and Definitions used in this Report**

### **Access to childcare**

The number of licensed childcare facilities per 1,000 children under the age of 5

### **Access to exercise opportunities**

The percentage of the population with access to places for physical activity

### **Air pollution**

The average daily density of fine particulate matter in micrograms per cubic meter, averaged by county

### **Art consumption**

The estimated per capita spending by residents on all arts expenditures, including admission, media, books, photography and others

### **Broadband access**

The percent of the population with access to high speed (10Mbps download / 1 Mbps Upload) internet connection (score from 1-5)

### **Building permits**

The number of new building permits (privately owned housing units)

### **Commuting times**

The mean travel time to work in minutes

### **Degrees awarded**

The number of degrees and certificates awarded from degree granting, non-for-profit colleges and universities, per 1,000 residents

### **Employment in STEM**

The number of jobs per 1,000 that require education in science, technology, engineering, and mathematics (STEM) disciplines

### **Establishment growth**

The change in the number of establishments from the previous year

### **General health**

The percentage of adults who report fair or poor health

### **Gross Domestic Product (GDP)**

The market value of all goods and services produced in a nation in a certain time frame (typically a year)

### **Gross Regional Product (GRP)**

The market value of all goods and services produced in a region in a certain time frame (typically a year)

### **Growth Rates**

The change in the measure of a variable, over time, compared to a previous measure of the variable

**Health insurance rates**

The percent of individuals who have health insurance

**High school graduation**

The percent of individuals who have completed high school (or equivalent)

**Higher educational attainment**

The percent of individuals with a bachelor's or more advanced degree

**Industry**

A group of businesses based on their related primary business activities

**Industry Mix**

A profile of all industries in a region (either in terms of GDP % share, or employment % share) used as a tool of comparison between two or more regions or economies

**Labor Force**

The amount of employed people and unemployed people who are looking for work, in a certain area

**Location Quotient (LQ)**

A measure industry concentration compared to another geographic location (e.g. the nation). A LQ of less than 1 indicates that the industry is less concentrated in a region as compared to the national economy, and a LQ higher than 1 means that it is more concentrated

**Median Age**

The median age of the population in years

**Metro Vitality Index (MVI)**

An index created by the Bureau of Business and Economic Research (BBER) to compare economic well-being and livability between metropolitan statistical areas

**Metropolitan Statistical Area (MSA)**

A geographical region with a relatively high population density at its core and close economic ties throughout the area. MSAs are defined by the U.S. Census Bureau

**Natural population change**

The difference between births and deaths in the region

**Net migration**

The difference between people immigrating and emigrating from the region

**Poverty rates**

The percentage of persons under the poverty level

**Premature death**

The years of potential lost life before age 75 per 100,000 population (age-adjusted)

**Real Personal Income (RPI)**

The pre-tax income of an individual adjusted for inflation

**Real GRP / GDP**

The market value of all goods and services produced in a region, adjusted for inflation

**Severe housing problems**

The number of households with one of four housing problems: overcrowding, high housing costs, or lack of kitchen or plumbing facilities

**Small enterprises**

The percentage of businesses that employ fewer than 20 workers

**Social participation rates**

The number of membership associations per 10,000 population

**STEM**

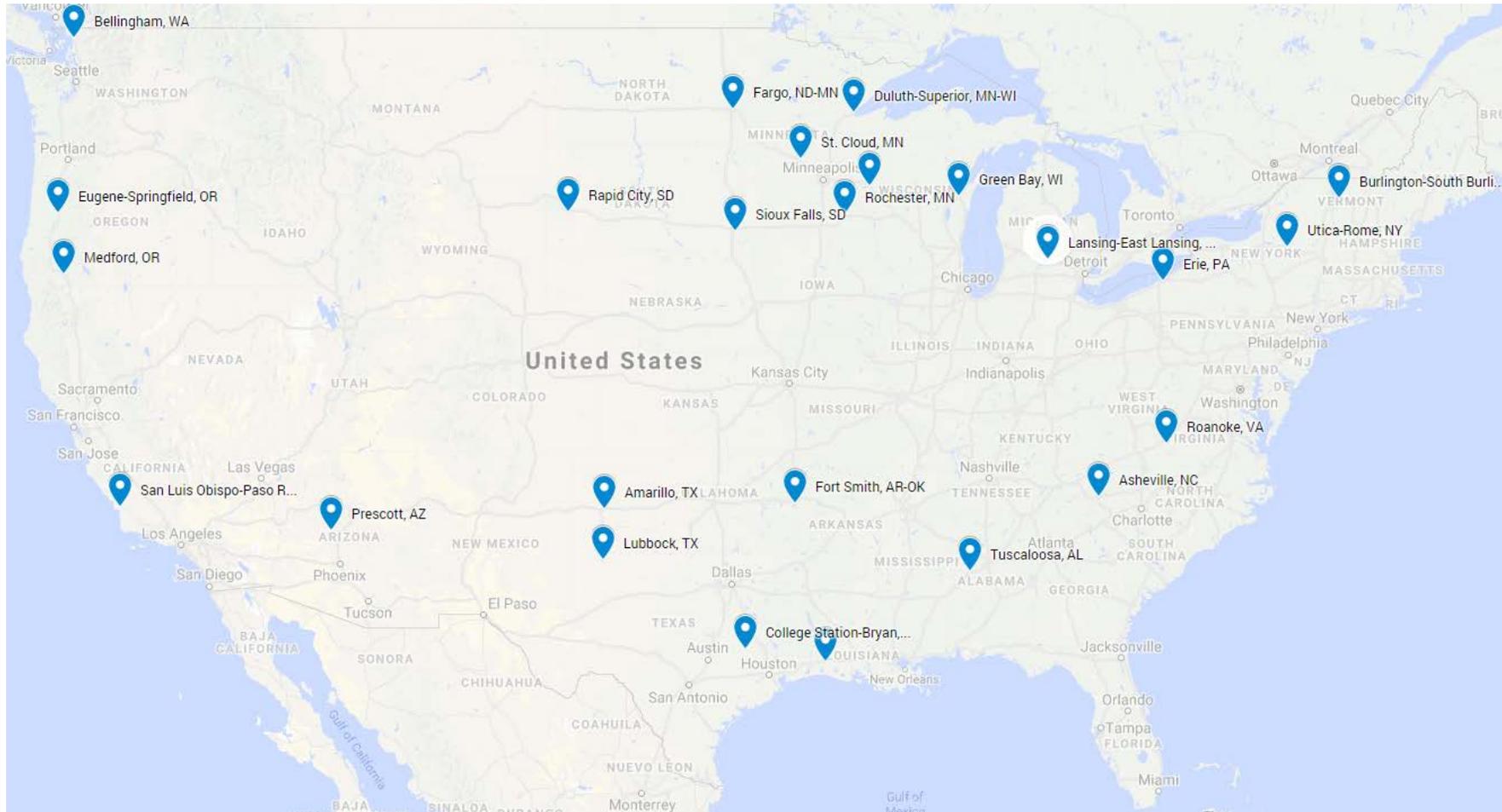
Science, Technology, Engineering, and Mathematics

**Unemployment rate**

The number of unemployed persons divided by all individuals in the labor force

## Appendix C. Map of Peer Areas

Figure 63. Peer Areas



Source: Google

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