ASSESSING ADVANCED MANUFACTURING IN TENNESSEE

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Executive Summary

Manufacturing is critically important to the Tennessee (TN) economy, representing 14.5 percent of the state's GDP, 13.3 percent of the state's private, non-farm employment, and paying an average annual wage that is above the statewide average. However, TN manufacturing employment has declined by more than 28 percent since 2000, mirroring the nationwide experience. In a similar period, national manufacturing output-per-worker (productivity) increased, revealing that the state and U.S. now manufactures more with fewer employees. This increase in productivity is a clear reflection of the effect and importance of what has become known as *advanced manufacturing (A-M)*.

What does it mean to be advanced in manufacturing? Are some manufacturing industries more advanced or differently advanced than others? Which states have the biggest share of manufacturing that is advanced? Which locales have or are developing the key attributes necessary to support a robust advanced manufacturing presence? We investigate these questions using input, output, productivity, and other data that are gathered at the national, state, and county levels.

With so many types of manufacturing and their multi-faceted heterogeneity, it is not surprising that these industries range in their average wages, capital-labor ratios, labor productivity, export volume, use of technology, etc. Though there is no universal agreement on what constitutes A-M, stakeholders agree that it is highly prized. Given the importance of manufacturing to the TN economy and a preference for developing well-paying A-M jobs, there is a need to critically evaluate the essence of A-M as well as assess the extent of our capabilities and recent progress in areas that can enhance our competitive position.

In this report, we develop metrics that allow us to rate NAICS four-digit industries on their level of advancedness, rank states on their manufacturing composition, and rank TN counties on attributes that define their competitive stance as a potential home for A-M industry. As TN competes with other states and foreign countries for a share of manufacturing jobs, these assessments can inform economic development policy and strategic decisions.

To be sure, the concept of "advanced" is in the eye of the beholder. Surely, every firm and every industry is advanced in some way, even if that is just relative to their own past experience. While the definitions of A-M vary in many respects, they share a common theme: *the presence of innovation and the integration of modern technology into the manufacturing process*. We build upon this literature by establishing a working definition in the form of a quantitative model. Specifically, we construct three separate but related models that incorporate elements aligned with the three key recommendations for competitive advantage (i.e., innovation, talent, and business climate, and additionally, where data permit, productivity).

Our three models include the following:

1. an **Advanced Manufacturing Index (A-MI)** for NAICS industries that allows us to rank all 50 states;
2. a **Readiness Index (RI)** for all 95 TN counties; and
3. a **Progress Index (PI)** for all 95 TN counties.

The first model uses industry-specific national data to place each NAICS manufacturing industry along an advanced continuum. Composite index values range from a high of 77.7 for Pharmaceutical and Medicine Manufacturing to a low of 20.0 for Coating, Engraving, Heat Treating, and Allied Activities.

We then combine our constructed nationwide A-M index with state-specific manufacturing intensity weights, which allows us to rank the states based on their composition and intensity of advanced manufacturing. Four rankings are provided, differentiated by our state-level weighting methods (by intensity of either manufacturing employment or manufacturing wages relative to national averages, and whether we include all manufacturing industries or just the 35 most advanced industries). **In all rankings, Tennessee appears in the top 10 among all U.S. states**, as shown in Table 7**.** This is due in large part to the state's strong presence in Motor Vehicle Manufacturing, Motor Vehicle Parts Manufacturing, Household Appliance Manufacturing, and Motor Vehicle Body and Trailer Manufacturing. More broadly, the state rankings indicate that advanced manufacturing is more heavily concentrated in states located in the Southeast and Midwest regions of the U.S.

Our second model uses county-specific data to assess the current state of readiness for attracting, supporting, and growing A-M industry in TN. Our Readiness Index (RI) assesses each of the 95 TN counties on their current ability to support A-M development. We use three indicators in each of the major categories of innovation, talent, and business climate. Similarly, our third model uses growth measures of several of the same indicators to assess the most recent (5-10 year) progress in A-M readiness for each TN county. Our Progress Index (PI) measures improvement in several indicators of readiness over time at the county level.

The county-level data generally reveal that most of the top readiness counties also have larger populations and many of the top ranked counties are located in Middle Tennessee. Specifically, the five counties most ready for A-M are Williamson, Sumner, Davidson, Wilson, and Coffee. By comparison, a number of smaller counties rank in the top ten for progress. For example, Wayne and Perry were ranked first and third in the progress index respectively, and both have population sizes in the bottom half of the state's distribution. Higher progress rankings in these two smaller counties was driven by a strong innovation component.[1]

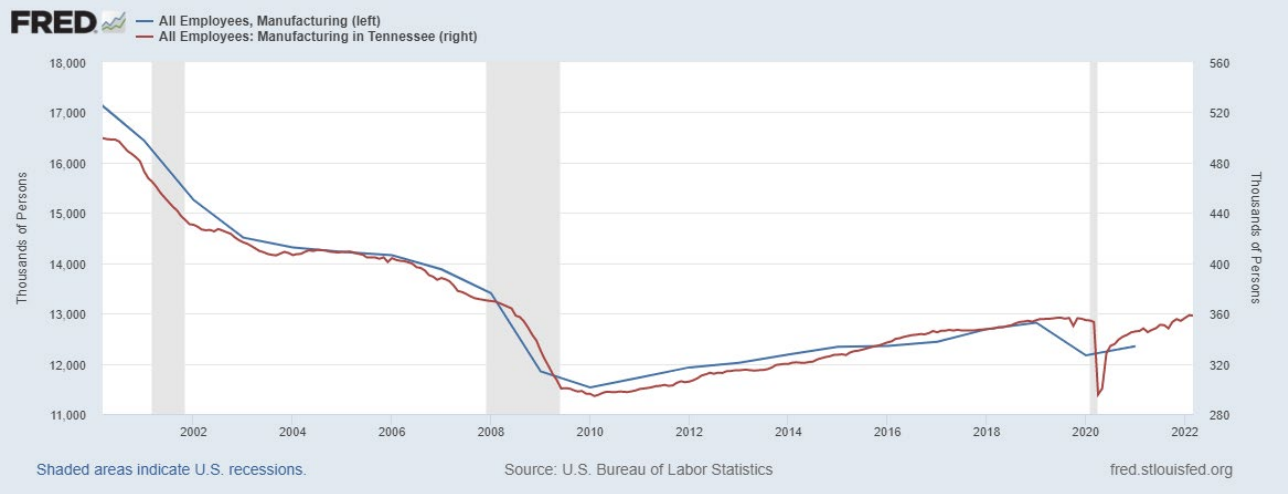
[1] We include a separate Appendix document with detailed data for each county.

Section 1. Introduction

Manufacturing is critically important to the Tennessee (TN) economy. In 2019, manufacturing represented $54.5 billion (14.5 percent) of TN GDP.[2] In 2020, TN manufacturers employed 334,000 workers or 13.3 percent of the state's private, non-farm employment. The 2020 average manufacturing annual wage was $63,100. This compares favorably to the state's private, all-industry average of $55,600.[3]

Figure 1 shows that TN manufacturing employment has declined by more than 28 percent or about 140,000 workers since the year 2000. The long-run TN trend mirrors the nationwide experience. In a similar period (see Figure 2), national manufacturing output-per-worker (productivity) increased significantly if not consistently. In 2000, the Total Factor Productivity Index was less than 90 then rose sharply to values over 100 before falling slightly in recent years. In 2020, the index stood at 98.6. Despite the small but slow and steady growth in manufacturing employment since 2010, there is no question that the U.S. now manufactures more with fewer employees. This increase in productivity can be explained, to some extent by the effect and importance of what has become known as *advanced manufacturing*.

Figure 1. U.S. and Tennessee Historical Manufacturing Employment

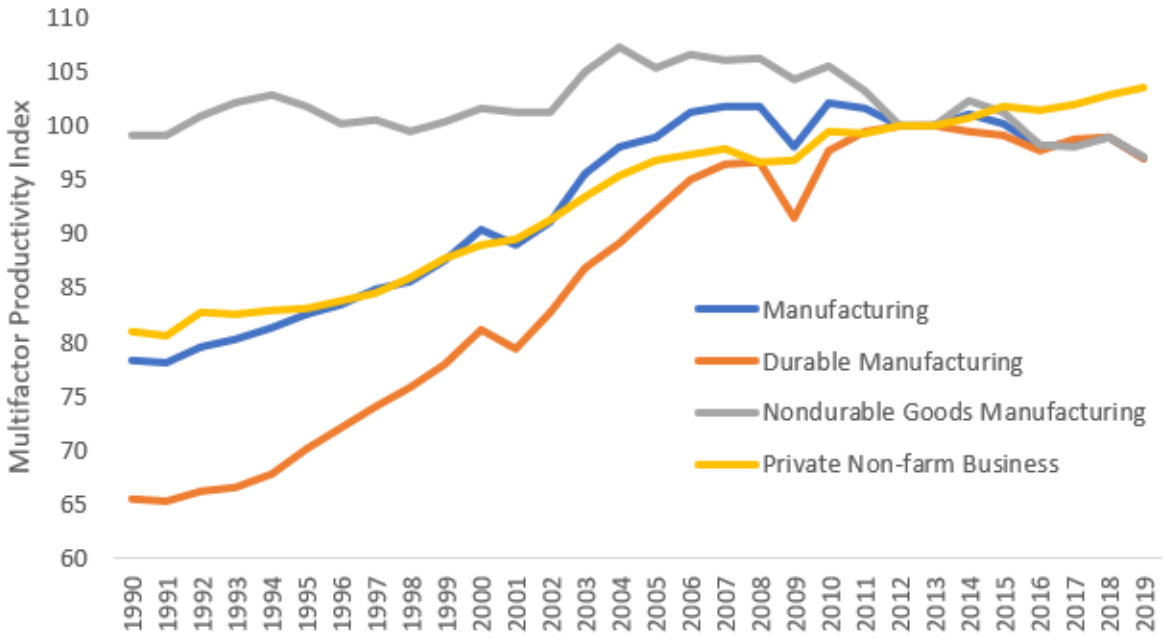


Source: U.S. Bureau of Labor Statistics (FRED).

[2] National Association of Manufacturers, https://www.nam.org/state-manufacturing-data/2021-tennessee-manufacturing-facts/.

[3] Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2020 annual data for Tennessee.

Figure 2. U.S. Manufacturing Multifactor Productivity Index (1990-2019)



Source: National Institute of Standards and Technology American Manufacturing Series.[4]

What does it mean to be advanced in manufacturing? Are some manufacturing industries more advanced or differently advanced than others? Which states have the biggest share of manufacturing that is advanced? Which locales have or are developing the key attributes necessary to support a robust manufacturing presence? We investigate these questions using a variety of economic data, measured at the national, state, and county levels. These data are gathered from a number of sources including the U.S. Census Bureau, the Bureau of Labor Statistics (BLS), and the Bureau of Economic Analysis (BEA).[5]

An extensive classification system supports the use of the manufacturing industry data in this analysis. The 2017 North American Industrial Classification System (NAICS), a two to six-digit hierarchical system, categorizes 86 separate four-digit manufacturing industries. There are 51 durable goods manufacturing categories (e.g., motor vehicle parts) and 35 categories for nondurable goods manufacturing (e.g., paper products) industries. This large number of manufacturing categories reflects the fact that manufacturing is a broad sector that includes industries of various types and these industries differ across many dimensions. As a result, manufacturing industries range in their average wages, capital-labor ratios,

[4] https://nvlpubs.nist.gov/nistpubs/ams/NIST.AMS.100-42.pdf.

[5] These data are most detailed at the national level and generally diminish in availability as the geographic region becomes smaller.

labor productivity, export volume, use of technology, etc. That is, they exhibit much variation and various degrees of 'advancedness.'

At some point, the phrase 'advanced manufacturing' (A-M) entered the lexicon. Though there is no universal agreement on what constitutes A-M, stakeholders agree that it is highly prized. Given the importance of manufacturing to the TN economy and a preference for developing well-paying A-M jobs, there is a need to critically evaluate the essence of A-M as well as assess the extent of our capabilities and recent progress in areas that can enhance our competitive position.

In this report, we develop metrics that allow us to rate NAICS four-digit industries on their level of advancedness, rank states on their manufacturing composition, and rank TN counties on attributes that define their competitive stance as a potential home for A-M industry. As TN competes with other states and foreign countries for a share of manufacturing jobs, these assessments can inform economic development policy and strategic decisions.

Section 2. What is Advanced Manufacturing?

Extensive research has evolved on the topic of advanced manufacturing, yielding an equally extensive set of both written definitions and quantitative models of A-M. We briefly summarize those definitions here before developing our own conceptual model. To be sure, the concept of "advanced" is in the eye of the beholder. Surely every firm and every industry are advanced in some way, even if that is just relative to their own past experience. C. B. Adams said in a *St. Louis Commerce Magazine* article that "Advanced manufacturing is like a chameleon. It changes in response to needs of whichever company has incorporated it into its manufacturing process."

Pahuja (2019) listed multiple definitions found in the literature, as shown in Table 1. While the definitions vary in many respects, they share a common theme: *the presence of innovation and the integration of modern technology into the manufacturing process*.

In 2012, a seminal report by the Advanced Manufacturing Partnership (AMP) issued to and accepted by the President's Council of Advisors on Science and Technology (PCAST) adopted the simple but broad definition listed in Table 1, repeated here for emphasis:

> "Advanced manufacturing is not limited to emerging technologies; rather, it is composed of **efficient, productive,** (emphasis added) highly integrated, tightly controlled processes across a spectrum of globally competitive U.S. manufacturers and suppliers."

To secure competitive advantage, the report recommended action in three key areas: enabling innovation, securing the talent pipeline, and improving the business climate. Sixteen additional sub-recommendations are listed in the report.[6]

[6] See pgs. 12-13 of Holdren, J. P., et al. "Report to the president on capturing domestic competitive advantage in advanced manufacturing." US President's Council of Advisors on Science and Technology: Washington, DC, USA (2012).

Later, the Brookings Institution (Rothwell and Kulkami 2015) took a different approach with a quantitative definition. They categorized 50 industries as advanced (35 in manufacturing) by virtue of:

- having industry R&D spending (i.e., innovation) at the 78th percentile or higher ($450 per worker at time of the study); and
- having a greater share of the workforce being STEM-oriented (i.e., talent) than the U.S. average (21 percent at time of the study). Since being first proposed, the Brookings methodology was used by others (Devaraj and Hicks, 2016; Gascon and Spewak, 2017; Richter, et al., n.d). The fact that the Brookings definition incorporated AMP-recommended measures for talent and innovation in its quantitative definition emphasizes their fundamental importance.

Table 1. Stakeholders' Definitions of Advanced Manufacturing

National Science and Technology Council (NSTC)
"Advanced manufacturing is a family of activities that (a) depend on the use and coordination of information, automation, computation, software, sensing, and networking, and/or (b) make use of cutting-edge materials and emerging capabilities enabled by the physical and biological sciences, for example nanotechnology, chemistry, and biology. It involves both new ways to manufacture existing products, and the manufacture of new products emerging from new advanced technologies."
"Advanced manufacturing includes both new manufacturing methods and production of new products enabled by innovation."
President's Council of Advisors on Science and Technology (PCAST).
"Advanced manufacturing is the manufacture of conventional or novel products through processes that depend on the coordination of information, automation, computation, software, sensing, and networking, and/or make use of cutting-edge materials and emerging scientific capabilities."
"Advanced manufacturing is not limited to emerging technologies; rather, it is composed of efficient, productive, highly integrated, tightly controlled processes across a spectrum of globally competitive U.S. manufacturers and suppliers."
Advanced manufacturing includes "all aspects of manufacturing, including the ability to quickly respond to customer needs, through innovations in production processes and innovations in the supply chain," which are increasingly "knowledge intensive, relying on information technologies, modeling, and simulation."

Source: What is Advanced Manufacturing? Exploring the Topography of Definitions, Pahuja, D. (2019).

In consideration of the multitude of reasonable definitions offered by governmental, industry, and academic entities, we follow Waldman and Murray (2013) by establishing a working definition in the form of a quantitative model, described in detail below.[7]

Section 3. Conceptual Models of Advanced Manufacturing

In this report, we construct three separate but related models that incorporate elements aligned with the three key AMP recommendations for competitive advantage (i.e., innovation, talent, and business climate, and additionally, where data permit, productivity). Our three models include the following:

1. an **Advanced Manufacturing Index (A-MI)** for NAICS industries that allows us to rank all 50 states;
2. a **Readiness Index (RI)** for all 95 TN counties; and
3. a **Progress Index (PI)** for all 95 TN counties.

The first model uses industry-specific national data to place each NAICS manufacturing industry along an advanced continuum. We use national rather than state data due to data availability, as many of the key metrics are not available at the state level for disaggregated industries. While TN data might be preferred for this analysis, we have no reason to believe that TN manufacturing at the industry level is systematically more or less advanced than the same industries in other areas. A more complete analysis of this assumption would require individual firm-level data, which is beyond the scope of this report.

We then combine our constructed national-level advanced manufacturing index with state-specific manufacturing intensity weights, which allows us to rank the states on their composition and intensity of advanced manufacturing. Our second model uses county-specific data to assess the current state of readiness for attracting, supporting, and growing A-M industry in TN. Similarly, our third model uses growth measures of several of the same indicators to assess the most recent (5-10 year) progress in A-M readiness for each TN county.

Section 4. Data and Methodology

Part 1. Advanced Manufacturing Index (A-MI)

To recall, the AMP report recommended action in three key areas - enabling innovation, securing the talent pipeline, and improving the business climate. We also include productivity in the industry index in

[7] Waldman, C., & Murray, M. N. (2013). Advanced Manufacturing in the American South: An Economic Analysis Supporting Regional Development. *Manufacturers Alliance for Productivity and Innovation*.

the belief that results matter.[8] National metrics and their sources appear in Table 2, and more details on these measures can be found in Appendix 7.1.[9]

Table 2. Industry-specific A-M Indicators

Indicator	Definition	Component Measured	Sources
Research & Development Spending	R&D costs/total employment	Innovation	U.S. Census-BERD, QCEW
Average Annual Wages	Total wages/average annual employment	Talent	BLS-QCEW
STEM Share	STEM employment/total employment	Talent	BLS, U.S. DOL-O*NET
Export Volume	Export value/total employment	Business Climate	U.S. Census-USA Trade Online, QCEW
Capital Productivity	Output/capital cost	Productivity	BLS-LPC
Capital Intensity	Capital inputs/hours worked	Productivity	BLS-LPC
Dispersion Index Change	Difference between the 75th and 25th percentile of the within-industry distribution of log-productivity in a given year: log ($prod_{75th}$ / $prod_{25th}$)	Productivity	U.S. Census & BLS-DiSP
Labor Cost Share	Labor cost/input costs	Productivity	BLS-LPC
Labor Productivity	Output/hours worked	Productivity	BLS-LPC

Data Source Acronyms:
BEA – Bureau of Economic Analysis
BERD – Business Enterprise Research and Development Survey (and its predecessors)
BLS – Bureau of Labor Statistics
DiSP – Dispersion Statistics on Productivity (jointly from BLS and Census)
LPC – Labor, Productivity, and Costs
QCEW – Quarterly Census of Employment and Wages[10, 11]
U.S. DOL – United States Department of Labor

[8] Our hypothesis is that an advanced industry should have high (or increasing) productivity from its integration of scientific and technological innovation. Also, the PCAST definition for advanced manufacturing included '…efficient, productive…'.

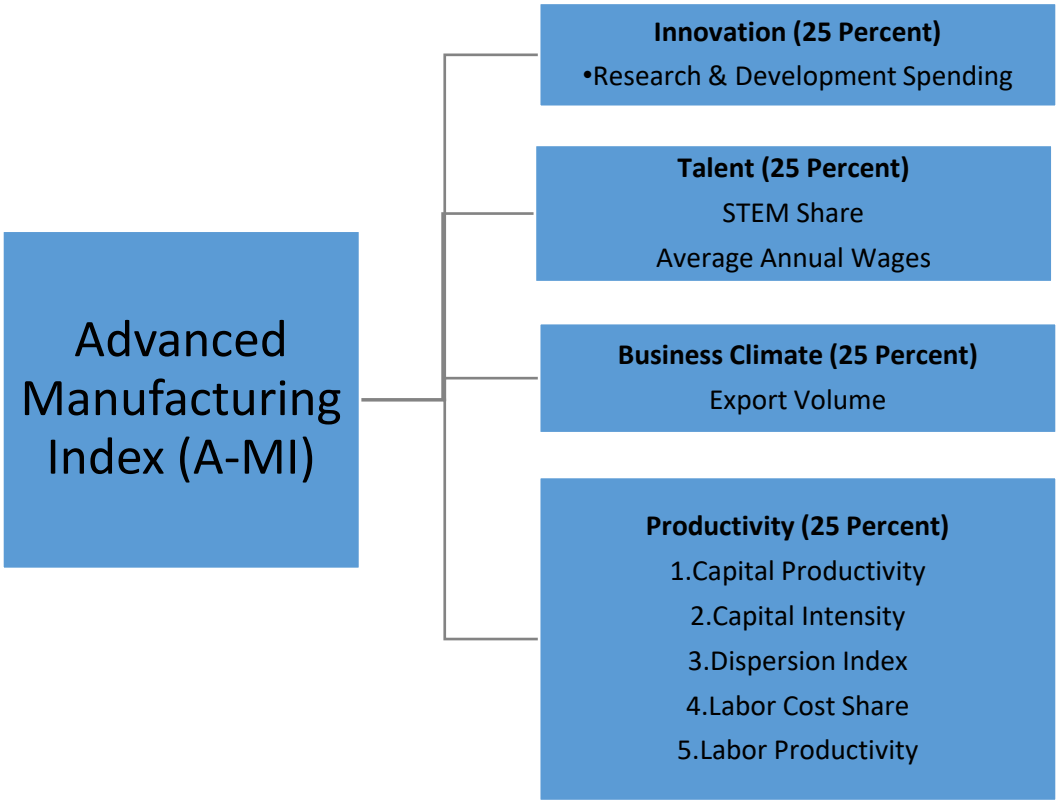
[9] Additional indicators were considered, but inevitably omitted for a variety of reasons. For example, a multifactor productivity index was eliminated from consideration because of its generality, and capital cost share because it had a significant negative correlation with labor cost share (-0.50). Patent activity was not chosen because there is no reliable crosswalk between patent activity and NAICS industries. We thank Professor Deborah Strumsky, the originator and curator of the Strumsky Patent database, for her input and offer of assistance on this matter.

[10] The QCEW employment count is a total derived from quarterly contribution reports filed by almost every employer in the U.S., Puerto Rico and the U.S. Virgin Islands. It counts only filled jobs, whether full or part-time, temporary or permanent, by place of work. The quarterly reports include the establishment's monthly employment levels for the pay periods that include the twelfth of the month. We consider private employers only.

[11] Under most State laws or regulations, wages include bonuses, stock options, severance pay, profit distributions, cash value of meals and lodging, tips and other gratuities, and, in some States, employer contributions to certain deferred compensation plans such as 401(k) plans.

Figure 3 provides a visual overview of our method for using these industry-specific indicators to construct our index of advanced manufacturing. To summarize, we convert the indicators to index values and combine them within each of the four major categories. We then combine those category-specific index values into an aggregate index, weighting each category equally (at 25 percent).

Figure 3. A-MI Construction



We use national data on four-digit NAICS manufacturing industries throughout with one exception. Where R&D spending was provided only at the three-digit level, four-digit estimates were made. We then use a log transformation on metrics with large variability before scaling all from 0 to 100 using the following equation: $z_i = 100 * [(x_i - \min(x)) / (\max(x) - \min(x))]$.

Part 2. Readiness Index (RI) and Progress Index (PI)

Our assessment of the readiness of individual counties to support A-M development uses a similar framework and similar measurable concepts.[12] Fortunately, StatsAmerica,[13] a project from the Indiana Business Research Center (IBRC) with support from the U.S. Economic Development Administration, contained sufficient county-level data for our analysis. Specifically, the 2021 update of their Innovation Intelligence Index (II3) provides key metrics in the following five general areas:

- human capital and knowledge creation – measures the extent of a region's knowledge creation such as university-knowledge spillovers (i.e., enabling innovation) and educational attainment (i.e., a talent pipeline)
- business dynamics – measures creation and destruction of individual establishments (i.e., 'creative destruction') and venture capital availability
- business profile – measures local capital funding available and industry composition[14]
- employment and productivity – measures industry performance (e.g., GDP per worker) and innovation outcomes (e.g., patent rates)
- economic well-being – measures of compensation adequacy (e.g., annual wages)

Our Readiness Index (RI) assesses each of the 95 TN counties on their current ability to support A-M development. We use three indicators in each of the major categories of innovation, talent, and business climate, as listed in Table 3. While these selected indicators are not specific to A-M, they indicate potential for economic development and they align with three of the same categories as the industry-specific A-MI data (note the lack of a suitable measure of productivity).

We constructed indices utilizing selected indicators for the year 2020. The chosen indicators are intended to assess a combination of talent, innovation, business dynamics, and productivity of each TN county on a population-adjusted basis. Figure 4 provides a visual overview of the RI construction, and additional details on the data are provided Appendix Section 7.2.[15]

[12] Originally, we intended to measure the portion of advanced manufacturing industry currently within each county and track its recent progress. However, a lack of county-industry data necessitated a change in strategy. From the Q&A page of the BLS-QCEW, *"The finest level of geographic detail is the county-industry level … Even the county by industry data cited above is at the margin of being disclosable - approximately 60 percent of the most detailed level data are suppressed for confidentiality reasons."*

[13] For more details, see https://www.statsamerica.org.

[14] Business dynamics and business profiles reflect resource availability and entrepreneurial activity locally (i.e., they measure local business climate). Creative destruction is a phrase attributed to noted economist Joseph Schumpeter. Generally, it refers to deliberate dismantling of established processes in favor of innovation.

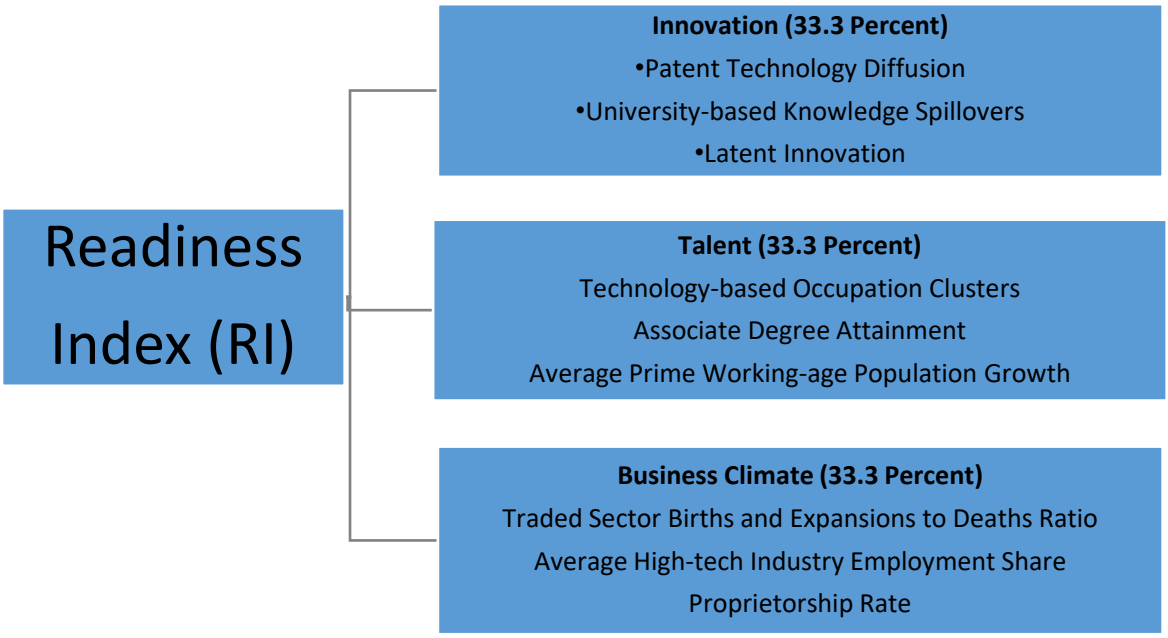
[15] For location-specific models, we substituted business dynamics measures in lieu of 'business climate' measures and consider this substitution appropriate.

Table 3. County-Level Indicators for A-M Readiness

Indicator	Definition	Component Measured
Patent Technology Diffusion	An original calculation that measures the degree to which a technology spreads and is adopted. It is based on a region's volume of patents and the technology classes of those patents.	Innovation
University-Based Knowledge Spillovers	The amount of university R&D spending in engineering, geosciences, life sciences, math and computer science, and physical science weighted by the exponential of the negative distance between the university and the county selected at universities at least 50 miles from the selected region.	Innovation
Latent Innovation	Estimate the complexity and uniqueness of an industry in a region. Operating principle is that being unique and complex are indicators of specialization and innovation. Uses the Latent Innovation Index measure created by Goetz and Han (2020).	Innovation
Associate Degree Attainment	The percent of the population age 25 and older with an associate degree.	Talent
Technology-Based Knowledge Occupation Clusters	The percent of total employment that is in occupations which apply high-level technology (e.g., scientists and engineers).	Talent
Average Prime Working-Age Population Growth	The five-year-average annual growth rate for the population age 25 to 44.	Talent
Proprietorship Rate	The number of nonfarm proprietors divided by the total number of workers.	Business Dynamics
Traded Sector Births and Expansions to Deaths Ratio	This ratio measures whether the businesses that serve distant markets (instead of local markets) are, on balance, growing or declining. It is calculated as the sum of births and expansions divided by the sum of deaths and contractions.	Business Dynamics
Average High-Tech Industry Employment Share	The percentage of total employment that is in high-tech industries.	Business Dynamics

Source: Indicators from StatsAmerica Innovation Intelligence project. See the Appendix for additional details on each of these indicators.

Figure 4. Readiness Index Construction



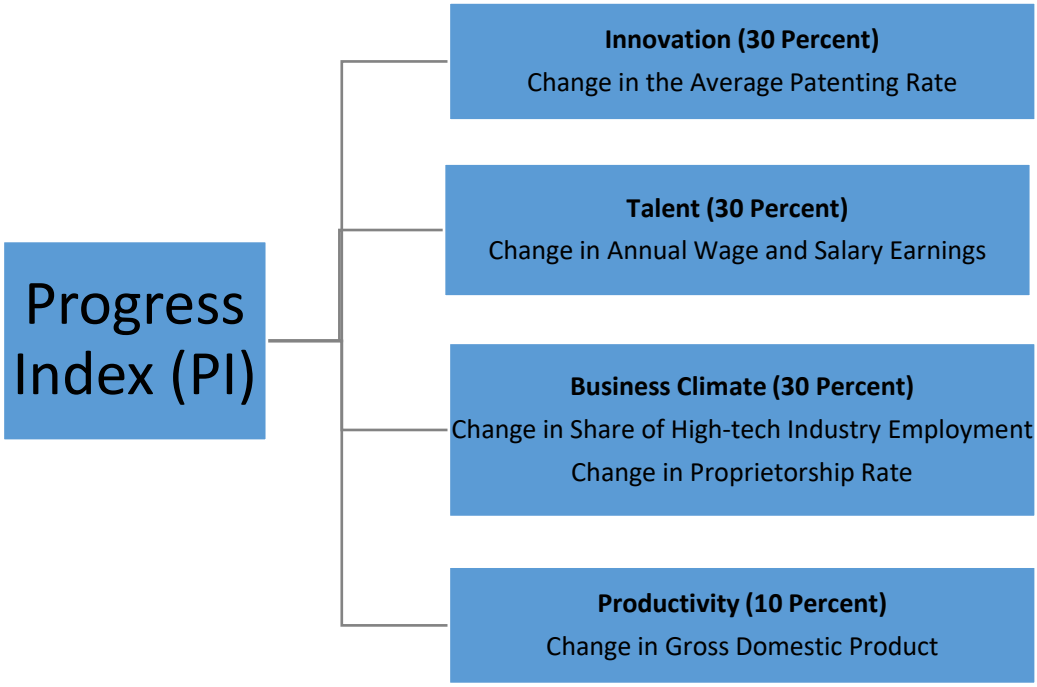
Our Progress Index (PI) measures improvement in several indicators of readiness over time at the county level, also relying on StatsAmerica data. Our specific indicators are listed and defined in Table 4, and a visual overview of the PI construction process is provided in Figure 5. Note the availability of a productivity indicator, which we weight slightly less than the other three categories as shown. Additional details on these data are provided in the Appendix Section 7.3.

Table 4. County-Level Indicators for Progress in A-M Readiness

Indicator	**Description**	**Component Measured**
Ten-Year Change in Average Patenting Rate	The ten-year change in three-year average patents per 1,000 workers.	Innovation Change
Five-Year Change in Annual Wage and Salary Earnings per Worker	The five-year change in annual wage and salary earnings per worker.	Talent Change
Five-Year Change in Share of High-Tech Industry Employment	The five-year change in the percentage of total employment from high-tech industries.	Business Dynamics
Five-Year Change in Proprietorship Rate	The ten-year change in the three-year average of venture capital deals.	Business Dynamics
Five-Year Change in Gross Domestic Product (per Worker)	The five-year change in current-dollar GDP per worker.	Productivity Change

Source: Indicators from StatsAmerica Innovation Intelligence project. See the Appendix for additional details on each of these indicators.

Figure 5. Progress Index Construction



Section 5. Results

Part 1. A-MI Results

Table 5 provides a complete listing of the industry-specific A-MI composite scores using the national data as described above. This table includes not only the industry composite rank but also the component ranks for the four key areas. Composite index values range from a high of 77.7 for Pharmaceutical and Medicine Manufacturing to a low of 20.0 for Coating, Engraving, Heat Treating, and Allied Activities. For policymakers considering the expansion of advanced manufacturing in their jurisdiction (e.g. county, state, etc.), this table provides useful information as to which industries they might try to attract. Figure 6 shows the overall distribution of industry-specific A-MI composite scores using the national data as described above. The distribution mean is 45.0 and the median is 42.4.

A cursory review suggests that the component ranks for innovation, talent, and climate are highly correlated with the industry composite rank. Table 6 provides a closer look at Spearman's rank correlations among the components of the A-MI and illustrates strong correlations between innovation and talent ranks as well as innovation and climate (i.e., exports). The three components taken together overwhelmed the productivity rank, which showed much lower correlations with the other components and the composite rank. However, the inclusion of productivity added breadth and provided additional insight.

Figure 6. Histogram of Advanced Manufacturing Indices (A-MI)

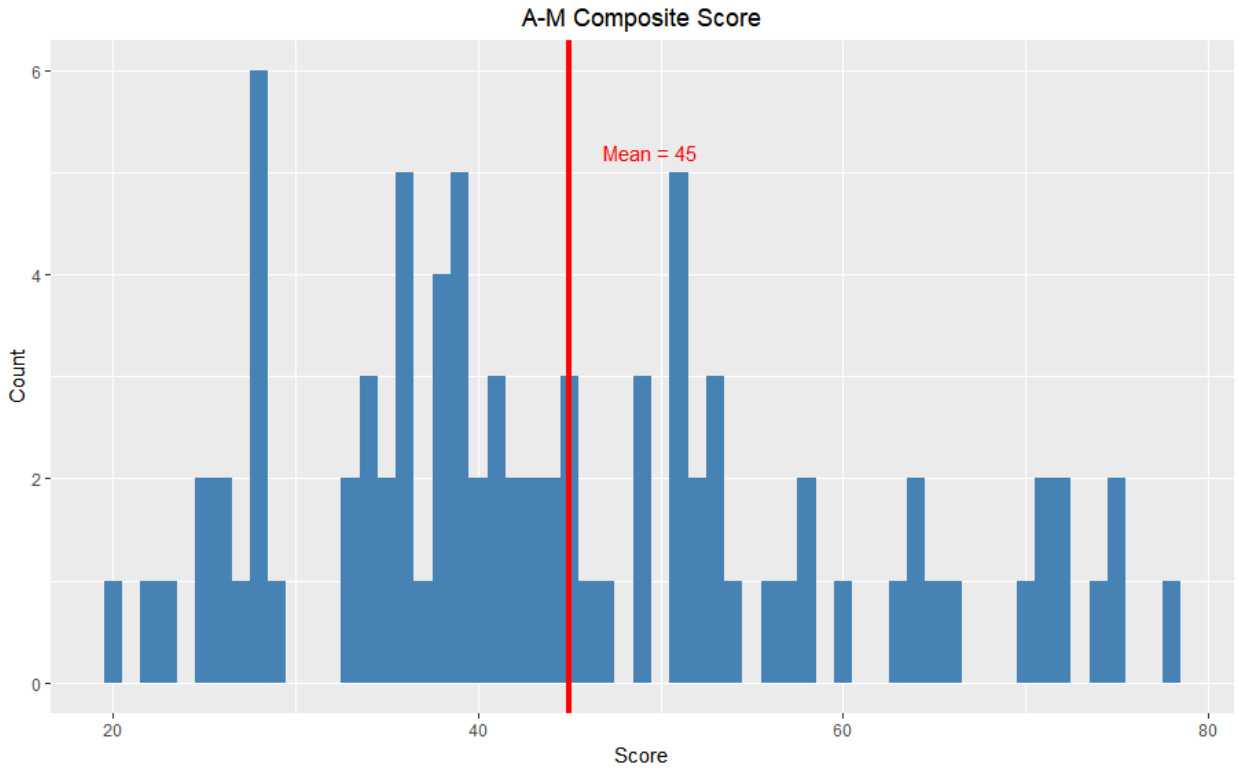


Table 5. Manufacturing Industries Ranked for Advancedness (BCBER Model)

A-MI Rank	NAICS	Description	A-MI	Innovation Rank	Talent Rank	Climate Rank	Productivity Rank
1	3254	Pharmaceutical and Medicine Manufacturing	77.7	1	2	12	41
2	3342	Communications Equipment Manufacturing	74.8	2	10	6	36
3	3341	Computer and Peripheral Equipment Manufacturing	74.5	6*	4	8	19
4	3344	Semiconductor and Other Electronic Component Manufacturing	73.8	3	7	17	3
5	3241	Petroleum and Coal Products Manufacturing	72.1	33*	11	2	2
6	3251	Basic Chemical Manufacturing	71.8	22	1	5	8
7	3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	70.6	9	5	13	21
8	3343	Audio and Video Equipment Manufacturing	70.5	4.5*	12	7	37
9	3252	Resin, Synthetic Rubber, and Artificial and Synthetic Fibers and Filaments Manufacturing	70.1	21	3	4	22
10	3364	Aerospace Product and Parts Manufacturing	65.6	7	9	18	59
11	3346	Manufacturing and Reproducing Magnetic and Optical Media	64.8	4.5*	16	3	84
12	3259	Other Chemical Product and Preparation Manufacturing	63.9	19*	6	32	25
13	3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	63.5	19	13	20	7
14	3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	63.0	10	8	28	70
15	3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	60.4	17	15	10	62
16	3361	Motor Vehicle Manufacturing	58.1	13.5*	32	9	31
17	3255	Paint, Coating, and Adhesive Manufacturing	57.8	19*	14	40	40
18	3391	Medical Equipment and Supplies Manufacturing	56.7	8	20	31	60
19	3332	Industrial Machinery Manufacturing	55.6	25.5*	17	11	71
20	3369	Other Transportation Equipment Manufacturing	53.9	13.5*	38	38	16
21	3353	Electrical Equipment Manufacturing	53.2	30.5*	19	23	45
22	3331	Agriculture, Construction, and Mining Machinery Manufacturing	53.1	25.5*	21	26	42
23	3112	Grain and Oilseed Milling	52.5	48*	28	14	4
24	3363	Motor Vehicle Parts Manufacturing	52.4	13.5*	41	37	35
25	3314	Nonferrous Metal (except Aluminum) Production and Processing	51.6	68*	30	1	51
26	3352	Household Appliance Manufacturing	51.4	30.5*	45	21	15
27	3339	Other General Purpose Machinery Manufacturing	51.2	25.5*	22	25	73

A-MI Rank	NAICS	Description	A-MI	Innovation Rank	Talent Rank	Climate Rank	Productivity Rank
28	3359	Other Electrical Equipment and Component Manufacturing	51.1	30.5*	23	15	83
29	3333	Commercial and Service Industry Machinery Manufacturing	51.1	25.5*	18	34	81
30	3362	Motor Vehicle Body and Trailer Manufacturing	50.5	13.5*	63	42	14
31	3365	Railroad Rolling Stock Manufacturing	49.4	13.5*	27	33	85
32	3122	Tobacco Manufacturing	49.1	35.5*	34	64	1
33	3351	Electric Lighting Equipment Manufacturing	48.8	30.5*	29	51	17
34	3221	Pulp, Paper, and Paperboard Mills	46.8	64.5*	24	22	30
35	3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	46.4	25.5*	31	48	72
36	3161	Leather and Hide Tanning and Finishing	45.0	58*	74	19	5
37	3366	Ship and Boat Building	44.9	13.5*	25	74	78
38	3111	Animal Food Manufacturing	44.6	48*	26	47	11
39	3311	Iron and Steel Mills and Ferroalloy Manufacturing	44.5	68*	33	29	27
40	3399	Other Miscellaneous Manufacturing	44.1	34	68	27	74
41	3335	Metalworking Machinery Manufacturing	42.7	25.5*	37	66	79
42	3313	Alumina and Aluminum Production and Processing	42.6	68*	36	36	32
43	3262	Rubber Product Manufacturing	42.5	37.5*	47	43	43
44	3325	Hardware Manufacturing	42.3	75*	40	24	34
45	3271	Clay Product and Refractory Manufacturing	41.4	41*	54	45	24
46	3115	Dairy Product Manufacturing	40.6	48*	52	55	13
47	3169	Other Leather and Allied Product Manufacturing	40.6	58*	83	16	50
48	3119	Other Food Manufacturing	39.9	48*	57	52	20
49	3272	Glass and Glass Product Manufacturing	39.9	41*	49	44	66
50	3322	Cutlery and Handtool Manufacturing	39.5	75*	42	39	49
51	3132	Fabric Mills	39.4	58*	69	30	64
52	3329	Other Fabricated Metal Product Manufacturing	39.3	75*	39	35	68
53	3279	Other Nonmetallic Mineral Product Manufacturing	38.6	41*	51	60	44
54	3133	Textile and Fabric Finishing and Fabric Coating Mills	38.6	58*	66	53	18
55	3113	Sugar and Confectionery Product Manufacturing	38.4	48*	65	61	9
56	3261	Plastics Product Manufacturing	38.3	37.5*	58	57	54
57	3152	Cut and Sew Apparel Manufacturing	38.2	58*	79	50	12
58	3324	Boiler, Tank, and Shipping Container Manufacturing	38.1	75*	43	54	23
59	3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	36.6	48*	64	65	29
60	3222	Converted Paper Product Manufacturing	36.3	64.5*	56	59	57

A-MI Rank	NAICS	Description	A-MI	Innovation Rank	Talent Rank	Climate Rank	Productivity Rank
61	3274	Lime and Gypsum Product Manufacturing	36.1	41*	35	70	52
62	3116	Animal Slaughtering and Processing	35.8	48*	82	56	28
63	3121	Beverage Manufacturing	35.8	35.5*	62	69	58
64	3162	Footwear Manufacturing	35.6	58*	77	41	82
65	3141	Textile Furnishings Mills	35.2	58*	75	63	39
66	3149	Other Textile Product Mills	34.5	58*	80	68	26
67	3326	Spring and Wire Product Manufacturing	34.2	75*	50	58	75
68	3131	Fiber, Yarn, and Thread Mills	34.0	58*	81	46	80
69	3312	Steel Product Manufacturing from Purchased Steel	33.8	68*	44	77	10
70	3151	Apparel Knitting Mills	33.1	58*	86	49	65
71	3117	Seafood Product Preparation and Packaging	32.8	48*	76	78	6
72	3321	Forging and Stamping	29.1	75*	46	82	46
73	3315	Foundries	28.2	68*	53	83	63
74	3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	28.1	75*	59	75	76
75	3211	Sawmills and Wood Preservation	28.1	85*	70	62	53
76	3372	Office Furniture (including Fixtures) Manufacturing	27.9	81*	60	71	61
77	3159	Apparel Accessories and Other Apparel Manufacturing	27.9	58*	85	67	86
78	3118	Bakeries and Tortilla Manufacturing	27.7	48*	84	80	38
79	3273	Cement and Concrete Product Manufacturing	26.6	41*	48	85	48
80	3323	Architectural and Structural Metals Manufacturing	26.3	75*	55	84	47
81	3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	25.6	81*	73	73	77
82	3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	25.2	85*	61	72	56
83	3379	Other Furniture Related Product Manufacturing	25.1	81*	72	81	33
84	3231	Printing and Related Support Activities	22.9	83*	71	76	67
85	3219	Other Wood Product Manufacturing	21.6	85*	78	79	55
86	3328	Coating, Engraving, Heat Treating, and Allied Activities	20.0	75*	67	86	69

** Denotes innovation data (i.e., R&D spending) was unavailable at the NAICS four-digit level and estimated from higher-level three-digit industries.*

Source: Data for construction of rank indices from various sources. Refer to Table 2 for more information.

Table 6. Correlations of Rank Order

	Composite Rank	Innovation Rank	Talent Rank	Climate Rank	Productivity Rank
Composite Rank	1	--	--	--	--
Innovation Rank	0.833	1	--	--	--
Talent Rank	0.848	0.679	1	--	--
Climate Rank	0.877	0.588	0.656	1	--
Productivity Rank	0.270	0.112	0.132	0.156	1

Source: Authors' calculations using rank indices from various sources.

We next combine the national industry-specific AM-I values in Table 5 with state-specific measures of industrial intensity in order to rank the states in terms of overall level of advanced manufacturing. We use two candidate measures of industrial intensity: each state's total manufacturing employment and each state's total annual manufacturing wages relative to national averages.[16] We do this calculation of a state-level index first for all manufacturing industries, and second for the top 35 most advanced industries based on our composite AM-I value.[17]

Table 7 provides a complete listing of all four of our state-specific rankings (using all manufacturing industries or top-35 industries, each with both the employment and wage intensity weights). We emphasize that Tennessee ranks very highly, appearing in the top 10 states for all four rankings.

Looking more deeply into the Tennessee rankings, we observe a strong presence in three motor vehicle manufacturing-related industries, all of which are in the top 35 ranked industries. Specifically, NAICS 3361 Motor Vehicle Manufacturing (16), NAICS 3363 Motor Vehicle Parts Manufacturing (24), and NAICS 3362 Motor Vehicle Body and Trailer Manufacturing (30) all of which have employment and wage concentrations in Tennessee that are at least 3.5 times the national average. In addition, the industry with the strongest presence in Tennessee (with the highest relative concentration at more than 6.3 times that of the U.S.) is NAICS 3352 Household Appliance Manufacturing, which is also ranked in the top-35.

The use of employment versus wage concentrations has only a negligible effect, but both are included for completeness. Notably, the selection of industry group has a much greater impact, especially in

[16] Location weights are available from the BLS Quarterly Census of Employment and Wages (QCEW) annual data on manufacturing. Formally, they are known as location quotients (LQ) and measure the relative concentration of an industry within a state relative to the concentration within the U.S. Values exist for both employment and total wages. Because of privacy concerns, some of these data are not disclosable. In those cases, we impute the LQ data for wages and total employment. For industries with a state presence that is not disclosed, we use the median employment and wage LQs for the set of disclosable manufacturing industries within the state. If an industry has no presence in the state, its LQ is zero.

[17] The top 35 A-M industries comprise a significant percentage of TN manufacturing (see the Appendix for a table of data). In 2020, they accounted for 30.2 percent of establishments, almost half (49.8 percent) of manufacturing wages, and nearly half of total manufacturing employment (44.8 percent).

certain states. For example, using only the top 35 industry scores, Alaska moves downward about 25 spots. Maine and Arkansas move down significantly as well. California and Louisiana make significant upward moves. It seems that Alaska, Maine, and Arkansas have lower concentrations of manufacturing within the top 35 advanced industries than their peers, and higher concentrations of lesser ranked industries. The opposite is true of California and Louisiana. Other states exhibit more stability in the four combinations. Indiana is a strong number one in all four rankings, and states in the southeast region tend to rank highly as well. This finding can be seen even more clearly in the Figure 7, which provides an overview of these results using the wage rankings for the top-35 AM industries. The darker the shading, the more "advanced" is the state's manufacturing according to our index values. Based on our rankings, the figure indicates that advanced manufacturing is more concentrated in states located in the Southeast and Midwest regions.

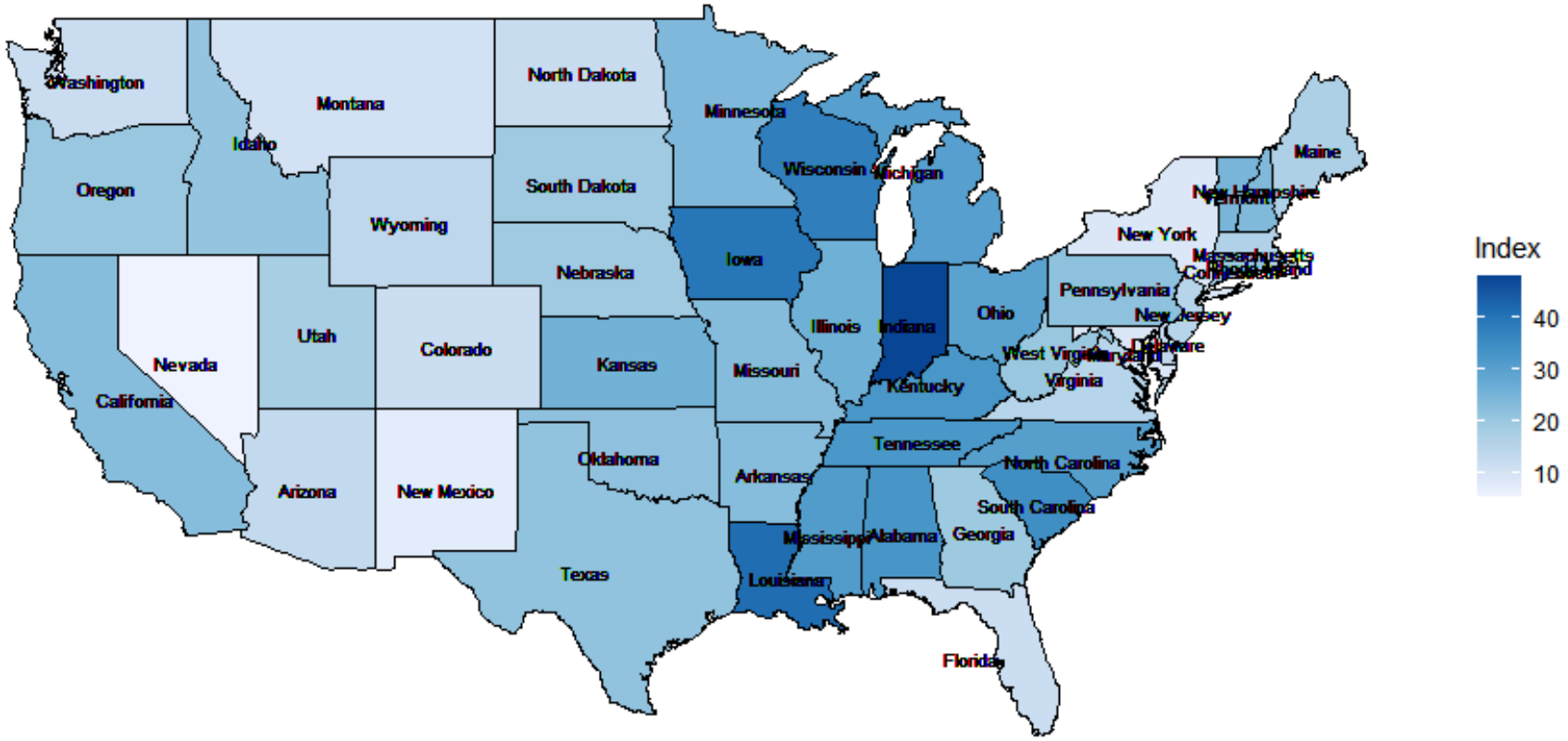
Table 7. State Indices and Ranks for Manufacturing Industries

State Indices and Ranks for Top 35 A-M Industries					State Indices and Ranks for All Manufacturing Industries				
State	**Employment Index**	**Wage Index**	**Employment Rank**	**Wage Rank**	**State**	**Employment Index**	**Wage Index**	**Employment Rank**	**Wage Rank**
Indiana	40.7	48	1	1	Indiana	74.4	88.6	1	1
Wisconsin	35.4	38.2	2	4	Wisconsin	70.7	77.9	2	2
Iowa	35.3	39.9	3	3	Iowa	63.8	74.8	4	3
South Carolina	32.2	34.7	4	5	South Carolina	61.5	71.3	5	5
Alabama	32.1	33	5	6	Alabama	67	73.2	3	4
Tennessee	**30.9**	**32.6**	**6**	**8**	**Tennessee**	**56.5**	**61.2**	**8**	**9**
Louisiana	30.7	41.5	7	2	Louisiana	46.3	59.8	21	11
Kentucky	29.8	32.9	8	7	Kentucky	56.3	66.2	9	7
North Carolina	29.1	30.6	9	10	North Carolina	60.4	61.8	6	8
Mississippi	27.8	31.3	10	9	Mississippi	59.8	70.9	7	6
Michigan	26.7	30.5	11	11	Michigan	50.5	57.8	14	13
Ohio	26.4	29.9	12	12	Ohio	53.6	60.3	11	10
New Hampshire	26.3	24.1	13	17	New Hampshire	47.2	47	18	22
Vermont	26.2	25	14	15	Vermont	50.9	51.5	13	14
Minnesota	26.1	24.2	15	16	Minnesota	49.1	48.3	15	20
Kansas	25.7	25.9	16	14	Kansas	47	50.3	19	18
Illinois	25.5	26.3	17	13	Illinois	44.3	45.5	23	24
Missouri	24	23.4	18	18	Missouri	45	47.6	22	21
Arkansas	23.5	23.1	19	19	Arkansas	55.2	58.7	10	12
Rhode Island	22.7	21.1	20	25	Rhode Island	51.5	50.4	12	17
California	22.4	23.1	21	20	California	35.6	34.8	32	33
Pennsylvania	22	22	22	21	Pennsylvania	44	44.3	24	25
Connecticut	20.8	19.9	23	28	Connecticut	39	38.8	28	30
Oregon	20.8	20.4	24	27	Oregon	43.1	43.5	26	27
Georgia	20	19.8	25	29	Georgia	48.3	50.7	16	16
Oklahoma	19.8	22	26	22	Oklahoma	37.8	42.7	30	28
Utah	19.6	18	27	32	Utah	36.9	35.9	31	32
South Dakota	19.5	19.5	28	31	South Dakota	38.9	41.8	29	29
Nebraska	19.3	19.6	29	30	Nebraska	43.8	48.5	25	19
Texas	19.3	21.6	30	23	Texas	32.4	34.3	35	34
Massachusetts	19.2	16.6	31	34	Massachusetts	34	30.6	33	35
Idaho	19	21.3	32	24	Idaho	39.1	44.2	27	26
West Virginia	17.7	20.5	33	26	West Virginia	33.5	38.4	34	31
New Jersey	16.2	15.3	34	36	New Jersey	28.8	27.2	38	37

State Indices and Ranks for Top 35 A-M Industries					State Indices and Ranks for All Manufacturing Industries				
State	**Employment Index**	**State**	**Employment Index**	**State**	**Employment Index**	**State**	**Employment Index**	**State**	**Employment Index**
Maine	15.9	17.2	35	33	Maine	47.3	51	17	15
Virginia	15.8	15.3	36	35	Virginia	31.4	29.9	36	36
Washington	14.4	12	37	41	Washington	29.4	25.7	37	38
Colorado	13.4	11.8	39	43	Colorado	24.6	22.8	39	40
North Dakota	13.4	12.3	38	40	North Dakota	23.8	23.4	40	39
Arizona	12.8	13.2	41	39	Arizona	21.5	22.2	44	43
Delaware	12.8	13.8	40	38	Delaware	21.5	22.7	43	42
New York	12.6	9	42	46	New York	23	17.7	41	46
Wyoming	12.2	14.1	43	37	Wyoming	19.8	22.1	46	44
Florida	11.5	12	44	42	Florida	20.2	21.1	45	45
Montana	9.8	10.5	45	44	Montana	21.9	22.8	42	41
Maryland	9.7	9.4	46	45	Maryland	17	16.4	47	47
New Mexico	7.9	7.6	47	47	New Mexico	14.1	13.3	49	49
Nevada	5.7	5.6	48	48	Nevada	14.5	15.6	48	48
Alaska	3.8	3.3	50	49	Alaska	46.5	46.9	20	23
Hawaii	3.8	3	49	50	Hawaii	10.5	8.9	50	50

Note: An alphabetical table containing this information is provided as Table A.3 in the Appendix.

Figure 7. Advanced Manufacturing Industry Concentration by State (Total Wages)



Part 2. RI and PI Results

The previous section shows that Tennessee has strong advanced manufacturing presence relative to other U.S. states. In this section we provide a more micro-level examination, and report the advanced manufacturing readiness and progress among all 95 TN counties. Table 8 provides a complete listing of both readiness and progress index values and rankings for all counties. Figures 8 and 9 show county heat maps for the RI and PI respectively, with darker shading indicating greater readiness or progress.

Focusing first on the readiness index (Figure 8), it appears that AM readiness is highest among counties containing or surrounding the larger metro areas (Nashville, Knoxville, Chattanooga, and Memphis). Furthermore, from a regional perspective, counties in Middle Tennessee are more heavily represented at the top of the readiness rankings. In fact, the top-5 counties are all located in Middle Tennessee. Four of the top-5 are neighbors (or contain) Nashville (Williamson, Sumner, Davidson, and Wilson). The fifth, Coffee County, is also in Middle Tennessee, and is home to the Manchester Tennessee Industrial Park as well as the more recently announced 2,000 acre *I-24 megasite*. It is worth noting that these county-level data generally reveal that most of the top readiness counties also have larger populations. To go a step further, we calculate a Spearman's rank correlation coefficient of 0.52 between our readiness index and population, confirming a moderate correlation between the two.

In contrast to AM readiness, which is in general higher around the larger metro areas, no such pattern exists with regards to AM progress. Figure 9 presents a county heat map measuring the progress index. In Tennessee, the five counties with highest PIs are: Wayne, Roane, Perry, Cocke, and Carter. Wayne and Perry, which have relatively small populations, ranked first and third respectively on the strength of a strong innovation component. Rounding out the top-10 are Hickman, Macon, Grainger, and Lewis, all of which also have populations in the bottom half of the distribution. High marks for Hickman and Macon were also driven by a strong innovation component, while Grainger and Lewis ranked eighth and ninth respectively primarily due to the talent of their workforce.

Table 8. 2021 Readiness and Progress County Indices, Ranks, and Component Ranks

	Readiness						Progress					
County (Population Rank)	**Index**	**Readiness Rank**	**Innovation Rank**	**Talent Rank**	**Environment Rank**		**Index**	**Progress Rank**	**Innovation Rank**	**Talent Rank**	**Environment Rank**	**Productivity Rank**
Anderson (18)	141.7	**11**	23	6	19		129.4	**41**	25	42	64	40
Bedford (33)	117.4	**63**	70	28	71		127.8	**44**	61.5	73.5	5	68
Benton (76)	111.1	**77**	20	91	86		114.1	**85**	88.5	14	68	53
Bledsoe (78)	109.3	**81**	88	50	79		125.4	**54**	88.5	7	18	87
Blount (11)	132.9	**23**	44	16	25		120.7	**66**	36	86	48	33
Bradley (13)	121.3	**52**	45	52	56		120.8	**65**	46	53	59	84
Campbell (40)	121.7	**50**	59	73	18		120.1	**70**	61.5	61.5	51	48
Cannon (79)	118.5	**60**	64	42	58		120.6	**68**	63	68	38	59
Carroll (52)	119.7	**57**	39	61	63		115.2	**82**	88.5	12	75.5	24
Carter (26)	119.3	**59**	31	88	46		157.0	**5**	4	26	28.5	69
Cheatham (38)	145.3	**7**	58	10	3		133.9	**30**	53	13	70	47
Chester (74)	105.6	**86**	83	71	87		107.6	**91**	88.5	48	31	43
Claiborne (48)	118.1	**61**	33	60	77		122.3	**62**	20	75	87	60.5
Clay (90)	116.1	**67**	35	79	65		108.5	**90**	88.5	54	8	89
Cocke (42)	117.4	**62**	28	86.5	64		158.9	**4**	1	30	20	77.5
Coffee (24)	154.1	**3**	4.5	5	9		135.5	**24**	52	15	54	37
Crockett (80)	113.0	**74**	87	62	35		127.7	**45**	76	21	50	44
Cumberland (22)	128.5	**30**	41	74	8		118.5	**76**	44	78	72	23
Davidson (2)	151.0	**4**	1	26	11		125.2	**56**	49	43	45.5	65
Decatur (87)	109.4	**80**	84	44	85		135.7	**22**	10	60	79.5	12
DeKalb (65)	128.8	**27**	63	11	33		141.0	**13**	3	55	71	92
Dickson (29)	128.8	**28**	10	48	67		127.5	**46**	29	35	81	28
Dyer (41)	112.1	**76**	82	36.5	75		130.1	**37**	50	36.5	60	10
Fayette (37)	146.7	**6**	17	54	1		113.6	**87**	59	89.5	58	66
Fentress (69)	124.8	**39**	89	69	6		115.0	**83**	88.5	27	24	52

	Readiness						Progress					
County (Population Rank)	**Index**	**Readiness Rank**	**Innovation Rank**	**Talent Rank**	**Environment Rank**		**Index**	**Progress Rank**	**Innovation Rank**	**Talent Rank**	**Environment Rank**	**Productivity Rank**
Franklin (36)	127.3	**32**	66	15	29		134.7	**27**	66	20	34	20
Gibson (32)	129.3	**25**	29	70	12		121.6	**64**	57	34	89	32
Giles (50)	125.7	**37**	34	21	72		135.6	**23**	28	77	16	3
Grainger (61)	109.0	**82**	85	89	37		147.1	**8**	26	4	78	11
Greene (20)	112.8	**75**	47	80	74		138.0	**15**	12	69.5	39	21
Grundy (82)	122.5	**45**	30	58	53		125.3	**55**	76	17	91	9
Hamblen (21)	120.6	**55**	24	51	81		123.5	**59**	23	63.5	75.5	77.5
Hamilton (4)	136.9	**18**	16	18.5	32		120.7	**67**	47	61.5	61	64
Hancock (92)	98.7	**91**	79	82	94		111.7	**89**	88.5	66	6	36
Hardeman (57)	127.1	**33**	37	36.5	39.5		129.9	**39**	19	59	79.5	17
Hardin (55)	96.1	**92**	95	83	59		124.3	**58**	76	33	63	22
Hawkins (25)	121.6	**51**	26	49	73		133.5	**33**	45	24	37	76
Haywood (72)	128.2	**31**	18	59	31		134.8	**26**	17	45	41	79
Henderson (53)	105.5	**87**	80	76	76		131.5	**35**	58	25	42	57
Henry (47)	124.1	**41**	12	77	62		119.3	**74**	70	50	73	18
Hickman (60)	122.6	**44**	38	63	39.5		154.0	**6**	6	40.5	52	8
Houston (89)	108.5	**84**	74	64	80		137.8	**16**	21	39	53	13
Humphreys (68)	120.9	**54**	73	25	49		114.1	**84**	22	94	85	90
Jackson (85)	126.0	**36**	69	30	20		128.0	**43**	18	93	21	83
Jefferson (28)	115.8	**69**	54	86.5	38		138.9	**14**	30	31	14	54.5
Johnson (70)	116.0	**68**	21	84	78		119.4	**73**	76	76	25	34.5
Knox (3)	143.7	**8**	9	29	14.5		126.6	**51**	38	57	40	38
Lake (91)	88.2	**95**	94	95	90		129.7	**40**	76	1.5	95	19
Lauderdale (59)	95.9	**93**	77	94	92		94.4	**95**	88.5	69.5	94	16
Lawrence (35)	128.7	**29**	27	43	36		128.5	**42**	16	46	92	45.5
Lewis (84)	121.7	**49**	65	45	34		146.7	**9**	76	3	22	26
Lincoln (43)	119.5	**58**	67	24	70		115.9	**81**	64	73.5	43	93.5

	Readiness						Progress					
County (Population Rank)	**Index**	**Readiness Rank**	**Innovation Rank**	**Talent Rank**	**Environment Rank**		**Index**	**Progress Rank**	**Innovation Rank**	**Talent Rank**	**Environment Rank**	**Productivity Rank**
Loudon (27)	126.2	**35**	51	65	13		118.0	**78**	32	67	86	50
McMinn (31)	120.6	**56**	62	13	83		118.5	**75**	33.5	82	65	63
McNairy (56)	115.4	**71**	91	39	30		133.6	**32**	60	40.5	17	15
Macon (58)	126.9	**34**	19	47	51		147.4	**7**	7	47	28.5	88
Madison (15)	110.2	**79**	52	75	88		134.2	**29**	15	56	57	34.5
Marion (51)	116.6	**65**	50	85	42		125.7	**53**	67	44	23	42
Marshall (44)	134.2	**22**	48	1	52		144.5	**10**	27	10	66	6
Maury (14)	142.8	**10**	25	2	24		125.9	**52**	56	19	93	25
Meigs (83)	123.1	**43**	92	23	27		129.9	**38**	88.5	5	7	73
Monroe (34)	122.3	**46**	68	31	43		127.0	**49**	31	65	67	4
Montgomery (7)	138.3	**14**	32	12	17		133.8	**31**	68	22	19	67
Moore (93)	104.3	**88**	75	53	95		116.7	**80**	88.5	87	3	1
Morgan (64)	122.1	**48**	55	40	47.5		142.7	**11**	76	6	12	49
Obion (49)	103.3	**89**	71	93	82		136.6	**19**	9	80	44	56
Overton (62)	136.7	**19**	7	66	21		126.9	**50**	76	16	83	14
Perry (88)	108.6	**83**	93	27	69		159.9	**3**	2	36.5	36	5
Pickett (95)	117.0	**64**	43	78	57		104.3	**93**	88.5	85	11	70
Polk (73)	115.2	**72**	46	81	60.5		119.5	**72**	88.5	18	15	58
Putnam (17)	131.6	**24**	14	33	47.5		119.6	**71**	48	49	84	31
Rhea (46)	114.2	**73**	78	34	68		117.4	**79**	65	88	69	2
Roane (30)	140.5	**13**	22	9	23		161.4	**2**	8	9	47	39
Robertson (19)	138.2	**15**	36	20	10		135.2	**25**	54	72	1	85
Rutherford (5)	135.9	**20**	49	8	22		123.3	**61**	55	63.5	35	62
Scott (63)	106.0	**85**	86	35	89		101.7	**94**	76	92	88	93.5
Sequatchie (77)	140.8	**12**	4.5	57	16		136.1	**21**	39	71	2	81
Sevier (16)	116.4	**66**	57	92	28		136.5	**20**	13	29	90	54.5
Shelby (1)	137.4	**17**	2	72	26		122.0	**63**	40	58	62	60.5

	Readiness						Progress					
County (Population Rank)	**Index**	**Readiness Rank**	**Innovation Rank**	**Talent Rank**	**Environment Rank**		**Index**	**Progress Rank**	**Innovation Rank**	**Talent Rank**	**Environment Rank**	**Productivity Rank**
Smith (66)	124.6	**40**	56	18.5	54		131.1	**36**	76	32	13	30
Stewart (81)	111.0	**78**	81	38	84		106.3	**92**	76	83	77	95
Sullivan (9)	134.9	**21**	42	22	14.5		133.4	**34**	11	79	45.5	51
Sumner (8)	157.7	**2**	8	7	4		127.0	**48**	42	51.5	27	72
Tipton (23)	137.8	**16**	13	67	7		118.2	**77**	51	81	49	74
Trousdale (86)	143.3	**9**	3	4	66		137.1	**18**	88.5	1.5	4	71
Unicoi (71)	125.3	**38**	60	14	50		120.5	**69**	35	91	30	75
Union (67)	123.2	**42**	40	55	45		123.3	**60**	88.5	8	26	80
Van Buren (94)	115.5	**70**	72	46	60.5		134.7	**28**	14	84	10	91
Warren (39)	122.2	**47**	53	32	55		137.3	**17**	24	38	32	27
Washington (12)	129.1	**26**	15	56	41		125.1	**57**	33.5	51.5	56	41
Wayne (75)	93.0	**94**	90	90	91		163.8	**1**	5	23	9	29
Weakley (45)	102.2	**90**	76	68	93		141.4	**12**	69	11	33	7
White (54)	121.1	**53**	61	41	44		112.0	**88**	43	89.5	82	45.5
Williamson (6)	165.0	**1**	6	3	2		127.1	**47**	37	28	74	86
Wilson (10)	150.1	**5**	11	17	5		113.6	**86**	41	95	55	82

Source: Authors' calculations using data from StatsAmerica Innovation Intelligence.

Figure 8. County Readiness Index (RI)

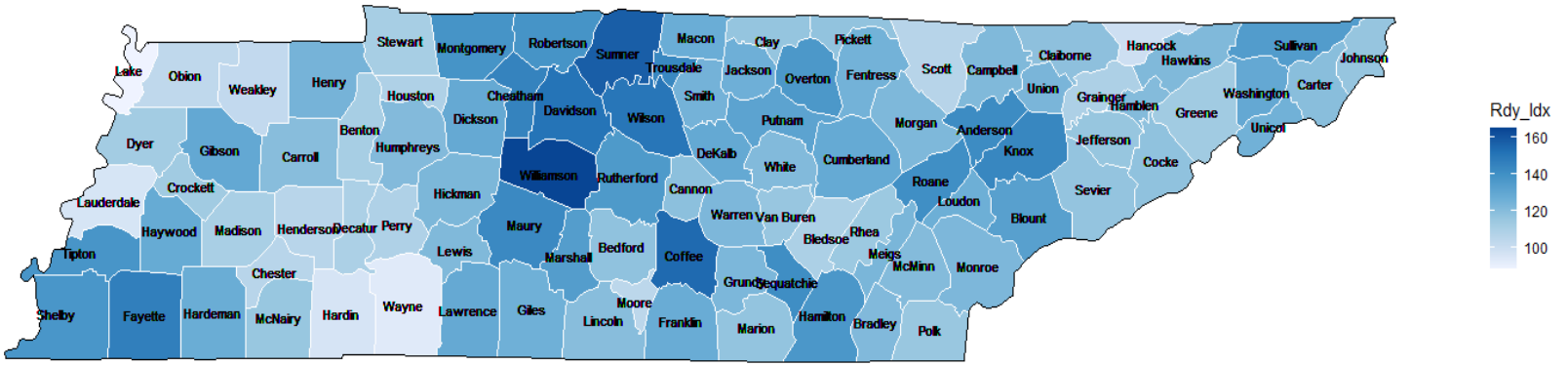
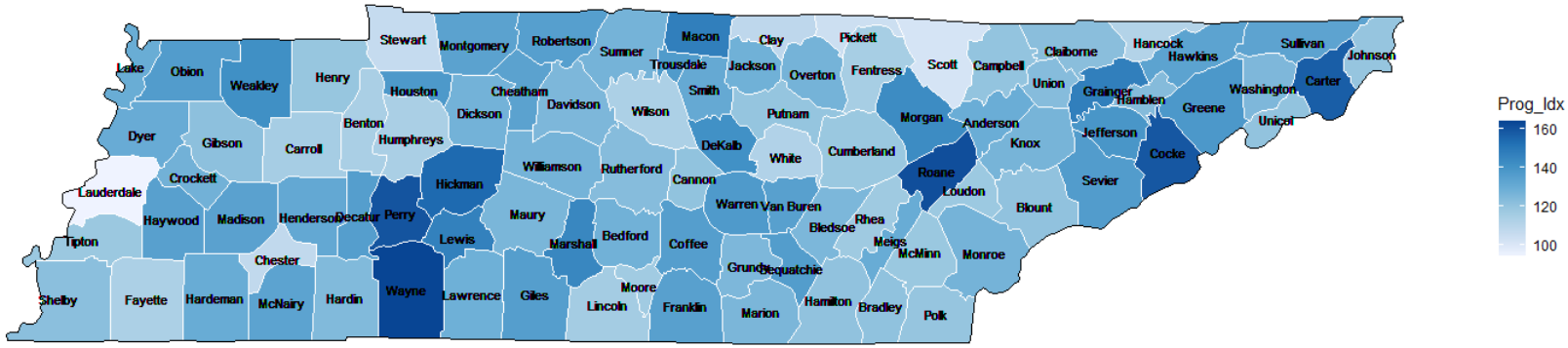


Figure 9. County Progress Index (PI)



Source: Authors' calculations using data from StatsAmerica Innovation Intelligence.

Section 6: Final Thoughts

Overall, this report provides some insight into the essence of A-M and provides assessments in four areas. First, there is a framework to differentiate manufacturing industries on their advancement. Then it ranks states based on the level and composition of their manufacturing industry with different measures of industry concentration and different combination of industry groups. Results indicate that Tennessee is ranked in the top-10 among all states with respect to manufacturing "advancedness," and Tennessee's ranking is robust to the various ways in which we measure "advancedness."

Finally, TN counties are differentiated on both their population-adjusted readiness and progress to support, grow, and attract A-M. We find that counties ranked higher in AM readiness are generally (but not always) those containing or surrounding the state's larger metro areas, and that the county readiness index is correlated with county population size. By comparison, AM progress is seemingly unrelated to population size, and is more evenly distributed throughout the state.

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Section 7. Appendix

7.1: Additional Background on National Data for A-MI Construction

The national advanced manufacturing index is constructed using metrics from four separate categories: innovation, talent, business climate, and productivity. Each category received an equal weighting (25 percent).

Following Crossman (2020), our final selection of indicators was based on four rules:

1. Face Validity – the metrics should measure some aspect of the nature, efficiency, or enhancement of the production process inputs or attributes of its outputs.
2. Uni-dimensionality – the metrics should be narrow enough to measure a single dimension.
3. Specificity – the metrics must be granular enough to capture the desired objective.
4. Variance – the metrics should have sufficient variability to differentiate industries along a spectrum.

We subjectively evaluated the candidate indicators according to the first three rules. For the fourth, we used visual inspection of box plots.

Below we provide more details on the metrics used for each category.

Innovation (25 percent)

Much precedent exists for research and development (R&D) as a measure of innovation. We used a log transformation to achieve a distribution with fewer outliers.

- Research & Development (2018) – log (R&D costs / employment), an often-used proxy measure for industry innovation

According to the National Science Foundation (NSF), "The Business Enterprise Research and Development Survey (BERD) and its predecessors are the primary sources of information on research and development performed or funded by businesses within the United States since 1953." [18] These data enabled a metric for R&D per employee by industry.

Talent (25 percent)

Again, there is precedent for STEM share as a measure of talent, and average annual wages is intuitively appealing. Each was equally weighted.

- STEM share (2020) – STEM employment / employment; a measure of the quality/talent of labor input
- Average annual wages (2020) – log (average annual wage), a measure of the quality/talent of the labor input

[18] The *Business Enterprise Research and Development Survey* (BERD) covers 2019 and subsequent years for businesses with 10 or more employees and the *Annual Business Survey* (ABS) includes 2017 and subsequent years for businesses with 1–9 employees. Prior to BERD and ABS, these data were collected by predecessor surveys.

For determining the percentage of STEM employees in each NAICS code, we began by identifying STEM occupations using the Department of Labor's Employment and Training Association's O*NET resource. Then we used the Bureau of Labor Statistics Industry-Occupation matrices for a crosswalk to 4-digit NAICS manufacturing industry. A log transformation of the average wage reduced dispersion and achieved a more normal distribution.

Business Climate (25 percent)

Any manufacturing industry with large export volume, by definition, is competitive globally. It follows that this competitive position exists at least partially because of a favorable regulatory and tax climate. Regulatory policy, tax reform, and trade policy were all sub-recommendations of the business climate in the AMP report. Due to data availability, we focus on a metric related to trade policy (export volume) as our measure of business climate. Export volume (2020) – log (export value / employment); a measure of the business climate.

Data for export volume by industry came from USA Trade Online. Again, we used a log transformation to reduce dispersion and achieve a more normal distribution.

Productivity (25 percent)

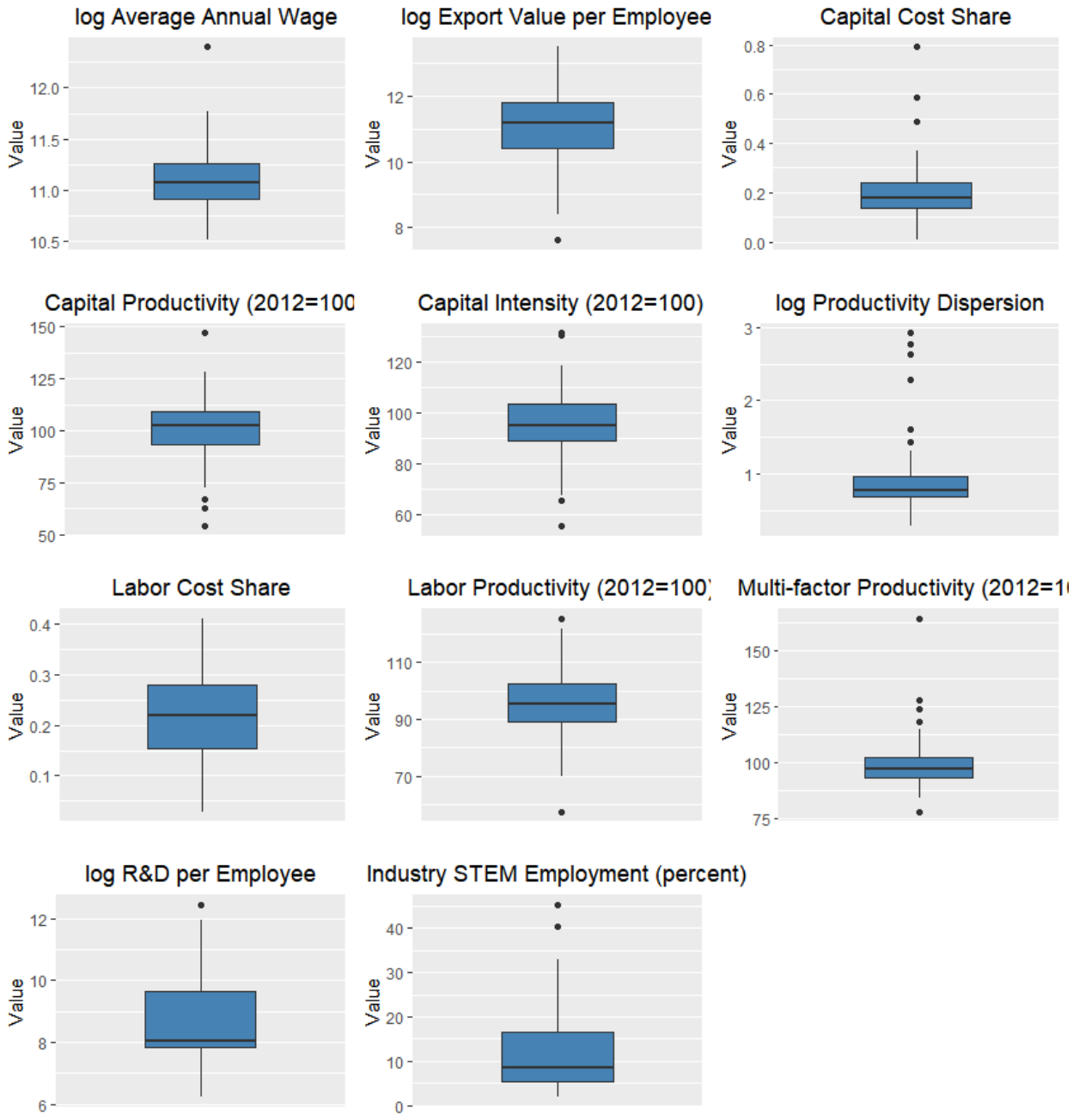
The purpose of seeking manufacturing industry advancement is to maximize productivity over a set of inputs. Therefore, productivity measures comprise one-quarter of our A-M index – 5 percent for each measure below. These definitions were taken largely from the BLS Productivity Glossary.[19]

- Capital productivity (2019) – output / capital cost; the efficiency at which capital inputs[20] are utilized in producing output of goods and services, measured as output produced per unit of capital inputs.
- Capital intensity (2019) – capital input / hours worked; the ratio of the amount of capital input used relative to the amount of labor hours used to produce output. Increases in the capital-to-hours ratio reflect increases in the intensity of capital used in the production process.
- Dispersion index (2019) – the dispersion index is an experimental measure of within-industry productivity. For an individual industry, it is the log of the productivity ratio of an establishment in the 75th percentile divided by that of an establishment in the 25th percentile; log ($prod_{75th}$ / $prod_{25th}$). One hypothesis is that an increase in new industry entrants following a period of innovation creates more dispersion in productivity. We consider high dispersion indicative of rising productivity or advancement.
- Labor cost share (2019) – labor cost / sum of input costs; the portion of the total costs to produce output that can be attributed to the cost of labor. Since more labor (and less capital) are generally considered to be inefficient; we use the negative of this measure.
- Labor productivity (2019) – output / hours worked; the efficiency at which labor hours are utilized in producing output of goods and services, measured as output per hour of labor.

[19] https://www.bls.gov/mfp/optglossary.htm.

[20] *Capital input,* also known as capital services, is the flow of the services derived from physical assets (equipment, structures, inventories, and land) and intellectual property used to produce output.

Figure A.1. Advanced Manufacturing Indicator Box Plots



7.2: Additional Background on County Data for RI Construction

Innovation (33.3 percent)

Innovation is measured using three separate metrics:

- Patent technology diffusion - a calculation that measures the degree to which a technology spreads and is adopted. It is based on a region's volume of patents and the technology classes of those patents. Patents are first classified according to twelve technology categories, recognizing that some categories (e.g., medical devices and medical technology) are cited more widely across diverse fields. A diffusion index is then calculated for each category. The number of citations is separately counted for each patent, and individual scores are assigned on the basis of how that number deviates from the mean number of citations among patents in the region. The final patent technology diffusion indicator value is a function of both the technology category and the relative number of citations.
- University-based knowledge spillovers - the amount of university R&D spending in engineering, geosciences, life sciences, math and computer science, and physical science weighted by the exponential of the negative distance between the university and the county selected at universities at least 50 miles from the selected region. To avoid dealing with very small numbers, we divide the distance by 100 miles before taking the exponential.
- Latent innovation - estimates the complexity and uniqueness of an industry in a region. The operating principle is that uniqueness and complexity are indicators of specialization and innovation. Uses the Latent Innovation Index measure created by Goetz and Han (2020). This measure uses spatial proximity to innovative industries on the premise that industries interact and influence each other.

Patent activity along with R&D spending are widely accepted measures of innovation, and increased R&D funding was a sub-recommendation of the AMP report. The third metric measures innovation not captured in traditional measures such as patents and R&D spending. These three were weighted equally.

Talent (33.3 percent)

All three talent indicators measure availability. The first – technology-based knowledge clusters – is a substitution for the preferred STEM degree counterpart which exhibited insufficient variability among the counties. The second is a highly prized sub-recommendation from the AMP report. The report stated, "The community college level of education is the 'sweet spot' for reducing the skills gap in manufacturing." The third is also valued highly because many locations have a workforce gap. In a 2014 report (Deloitte and Manufacturing Institute 2014), "Eighty percent of manufacturing executives reported they are willing to pay more than the market rates in workforce areas suffering a talent crisis…" These three were equally weighted.

- Technology-based knowledge occupation clusters - the percent of total employment that is in occupations which apply high-level technology (e.g., scientists and engineers).
- Associate degree attainment - the percent of the population age 25 and older with an associate degree.
- Average prime working-age population growth - the five-year-average annual growth rate for the population age 25 to 44.

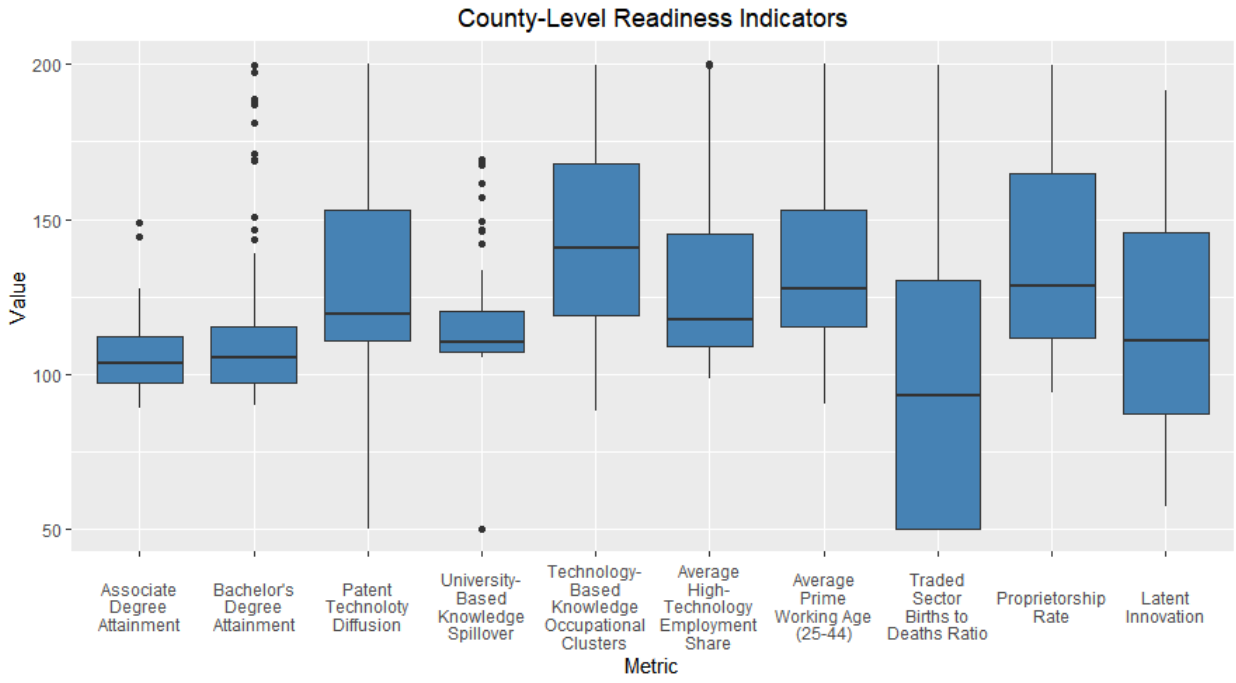
Business Climate (33.3 percent)

We expect traditional climate measures such as tax policy and regulatory environment to be roughly consistent throughout the state, so lack of variation made these poor measures. However, the dynamism occurring as firms enter, grow, shrink, or exit the economy can differentiate counties and provide a measure of the local business climate. Therefore, our definition of business climate includes direct and indirect measures of the local operating environment.

The first indicator captures an aspect of a firm's location decision. Industries that serve a population outside the region and are not resource dependent have the freedom to choose a favorable (local) business climate. The last two measures reflect co-location and entrepreneurial optimism for high-tech industry. A recent study (Liang 2020) showed a significant beneficial effect for high-tech industry attributed to regional economic co-evolution. The study captured the extent to which firms aspire to co-locate for synergy and other aspects of a favorable business environment. Moreover, larger values of the last two indicators implicitly suggest existing regulatory and tax conditions that, at a minimum, are not so burdensome to change the location decision. The three were equally weighted.

- Traded sector births and expansions to deaths ratio - measures which new businesses serve "export" markets, i.e., sell to those outside of the region rather than serving the local population.
- Average high-tech industry employment share - the percentage of total employment that is in high-tech industries.
- Proprietorship rate - the number of nonfarm proprietors divided by the total number of workers.

Figure A.2. County-Level Readiness Box Plots



Source: Data from StatsAmerica Innovation Intelligence.

7.3: Additional Background on County Data for PI Construction

Innovation (30 percent)

Some measure of patent activity is used in both location-based indices because it is an accepted indicator of innovation.

- Change in the average patenting rate - the ten-year change in three-year average patents per 1,000 workers.

Talent (30 percent)

Significant increases in earnings, the most comprehensive and a market-based measure of talent, reflect a talent pool that is deepening.

- Change in annual wage and salary earnings per worker - the five-year change in annual wage and salary earnings per worker.

Business Climate (30 percent)

Increases here signal a local climate conducive to high-tech industry growth and entrepreneurial optimism, as well as a tax and regulatory environment that does not constrain either.

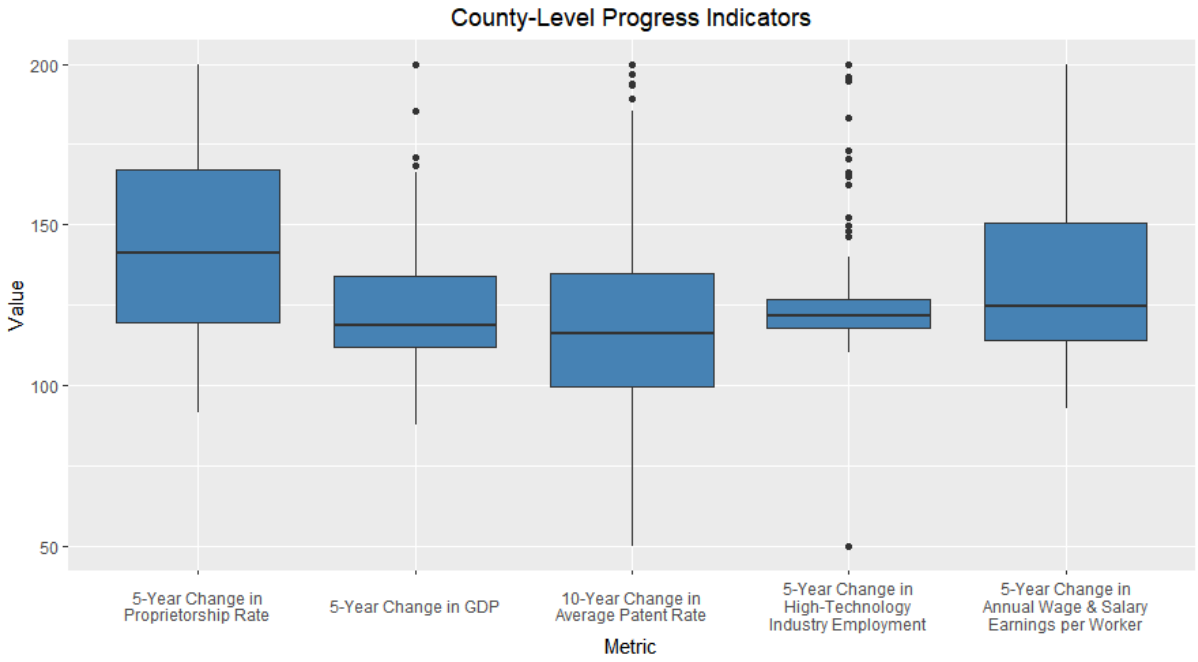
- Change in share of high-tech industry employment - the five-year change in the percentage of total employment from high-tech industries.
- Change in proprietorship rate – the five-year change in the proprietorship rate.

Productivity (10 percent)

Gross Domestic Product (GDP) per worker is the ultimate measure of productivity and appropriate for this purpose.

- Change in Gross Domestic Product - the five-year change in current-dollar GDP per worker.

Figure A.3. County-Level Progress Box Plots



Source: Data from StatsAmerica Innovation Intelligence.

7.4: Brookings Report Comparison

To understand how our results compare with those of previous studies, we recall that the Brookings Institution (Rothwell and Kulkami 2015) used a simpler quantitative definition. They categorized 35 manufacturing industries as advanced by having R&D spending per employee in the *78th percentile of* ***all*** *industries* and *having a greater share of STEM employees than the U.S. average.*

We examine the results of a modified Brookings approach for comparison with our broader model's results. Since our analysis included only manufacturing, we altered the threshold values for R&D spending and STEM employment for the modified Brookings approach. Our modified criteria define advanced manufacturing as those exceeding the mean for ***both*** *R&D manufacturing spending per employee* **and** a *greater share of STEM employees than the U.S manufacturing average* (11.0 percent). This approach yielded the 31 industries shown in Table A.1.

Table A.1. Top 31 Advanced Industries in Manufacturing (Modified Brookings Model)

NAICS	Description	NAICS	Description
3241	Petroleum and Coal Products Manufacturing	3332	Industrial Machinery Manufacturing
3251	Basic Chemical Manufacturing	3333	Commercial and Service Industry Machinery Manufacturing
3252	Resin, Synthetic Rubber, and Artificial and Synthetic Fibers and Filaments Manufacturing	3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	3335	Metalworking Machinery Manufacturing
3254	Pharmaceutical and Medicine Manufacturing	3336	Engine, Turbine, and Power Transmission Equipment Manufacturing
3255	Paint, Coating, and Adhesive Manufacturing	3339	Other General Purpose Machinery Manufacturing
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	3341	Computer and Peripheral Equipment Manufacturing
3259	Other Chemical Product and Preparation Manufacturing	3342	Communications Equipment Manufacturing
3262	Rubber Product Manufacturing	3343	Audio and Video Equipment Manufacturing
3331	Agriculture, Construction, and Mining Machinery Manufacturing	3344	Semiconductor and Other Electronic Component Manufacturing
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	3364	Aerospace Product and Parts Manufacturing
3346	Manufacturing and Reproducing Magnetic and Optical Media	3365	Railroad Rolling Stock Manufacturing
3351	Electric Lighting Equipment Manufacturing	3366	Ship and Boat Building
3353	Electrical Equipment Manufacturing	3369	Other Transportation Equipment Manufacturing
3359	Other Electrical Equipment and Component Manufacturing	3391	Medical Equipment and Supplies Manufacturing
3363	Motor Vehicle Parts Manufacturing		

Twenty-six of these 31 (84 percent) also appeared in the BCBER model's top 31 (see Table 5). It is reassuring that our broader, more comprehensive method offers reasonable concurrence with a modified Brookings approach.

7.5: Supplementary Information

Examination of Table A.2 indicates the most advanced industries pay higher wages though, on average, do not employ more people than the least advanced. Consider the cumulative distributions of wages and employment. Industries in the first quintile (rank 1-18) pay over one quarter of TN manufacturing wages while the bottom quintile (rank 69-86) pays less than 17 percent. Further, the top 35 industries (quintiles 1 and 2) pay almost half of total wages.

However, these same quintiles are proportionally represented in the cumulative employment distribution. The first quintile has 19 percent of total employment while the fifth quintile has about 20 percent of all manufacturing employees. With the number of employees roughly equal in the first and fifth quintile, we deduce that the top quintile pays wages (25/17 = 1.47 times higher) almost 50 percent higher than the bottom quintile. Economic development organizations and government officials can use this information advantageously in recruitment efforts.

Table A.2. Manufacturing Industries by A-MI Rank with Cumulative Percentages of Establishments, Employment, and Wages

A-MI Rank	NAICS	Description	A-MI	Cumulative Percentage Establishments	Cumulative Percentage Employment	Cumulative Percentage Wages
1	3254	Pharmaceutical and Medicine Manufacturing	77.7	1.4	0.6	0.9
2	3342	Communications Equipment Manufacturing	74.8	1.8	0.7	1.0
3	3341	Computer and Peripheral Equipment Manufacturing	74.5	2.1	0.8	1.1
4	3344	Semiconductor and Other Electronic Component Manufacturing	73.8	2.8	1.3	1.6
5	3241	Petroleum and Coal Products Manufacturing	72.1	3.1	1.6	2.1
6	3251	Basic Chemical Manufacturing	71.8	4.3	2.9	3.9
7	3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	70.6	4.6	3.0	4.2
8	3343	Audio and Video Equipment Manufacturing	70.5	5.0	3.2	4.4
9	3252	Resin, Synthetic Rubber, and Artificial and Synthetic Fibers and Filaments Manufacturing	70.1	5.8	6.1	8.6
10	3364	Aerospace Product and Parts Manufacturing	65.6	6.3	6.7	9.2
11	3346	Manufacturing and Reproducing Magnetic and Optical Media	64.8	6.6	6.8	9.3

A-MI Rank	NAICS	Description	A-MI	Cumulative Percentage Establishments	Cumulative Percentage Employment	Cumulative Percentage Wages
12	3259	Other Chemical Product and Preparation Manufacturing	63.9	7.5	7.9	10.5
13	3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	63.5	8.6	9.0	11.6
14	3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	63.0	10.9	10.0	12.8
15	3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	60.4	11.2	10.4	13.3
16	3361	Motor Vehicle Manufacturing	58.1	11.5	15.6	20.5
17	3255	Paint, Coating, and Adhesive Manufacturing	57.8	12.2	16.1	21.2
18	3391	Medical Equipment and Supplies Manufacturing	56.7	15.7	18.9	25.4
19	3332	Industrial Machinery Manufacturing	55.6	16.9	19.3	25.8
20	3369	Other Transportation Equipment Manufacturing*	53.9	17.2	19.3	25.8
21	3353	Electrical Equipment Manufacturing	53.2	18.2	20.8	27.5
22	3331	Agriculture, Construction, and Mining Machinery Manufacturing	53.1	19.0	21.8	28.3
23	3112	Grain and Oilseed Milling	52.5	19.3	22.4	29.2
24	3363	Motor Vehicle Parts Manufacturing	52.4	22.9	34.3	39.5
25	3314	Nonferrous Metal (except Aluminum) Production and Processing	51.6	23.4	34.7	40.0
26	3352	Household Appliance Manufacturing	51.4	23.9	37.2	42.2
27	3339	Other General Purpose Machinery Manufacturing	51.2	25.8	38.8	43.8
28	3359	Other Electrical Equipment and Component Manufacturing	51.1	26.6	39.4	44.5
29	3333	Commercial and Service Industry Machinery Manufacturing	51.1	27.4	39.9	44.9
30	3362	Motor Vehicle Body and Trailer Manufacturing	50.5	28.2	40.6	45.4
31	3365	Railroad Rolling Stock Manufacturing*	49.4	28.2	40.6	45.4
32	3122	Tobacco Manufacturing	49.1	28.4	40.9	45.8
33	3351	Electric Lighting Equipment Manufacturing	48.8	28.8	41.4	46.4
34	3221	Pulp, Paper, and Paperboard Mills	46.8	29.2	42.2	47.7
35	3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	46.4	30.2	44.4	49.8
36	3161	Leather and Hide Tanning and Finishing	45.0	30.2	44.5	49.8

A-MI Rank	NAICS	Description	A-MI	Cumulative Percentage Establishments	Cumulative Percentage Employment	Cumulative Percentage Wages
37	3366	Ship and Boat Building	44.9	30.7	45.6	50.8
38	3111	Animal Food Manufacturing	44.6	31.1	45.6	50.8
39	3311	Iron and Steel Mills and Ferroalloy Manufacturing	44.5	31.6	46.0	51.3
40	3399	Other Miscellaneous Manufacturing	44.1	36.1	48.0	53.0
41	3335	Metalworking Machinery Manufacturing	42.7	38.8	48.9	53.8
42	3313	Alumina and Aluminum Production and Processing	42.6	39.1	49.8	54.9
43	3262	Rubber Product Manufacturing	42.5	40.2	52.6	57.4
44	3325	Hardware Manufacturing	42.3	40.3	52.7	57.5
45	3271	Clay Product and Refractory Manufacturing	41.4	40.9	53.4	58.1
46	3115	Dairy Product Manufacturing	40.6	41.4	54.3	58.9
47	3169	Other Leather and Allied Product Manufacturing	40.6	41.6	54.3	58.9
48	3119	Other Food Manufacturing	39.9	42.6	55.9	60.5
49	3272	Glass and Glass Product Manufacturing	39.9	43.3	56.9	61.4
50	3322	Cutlery and Handtool Manufacturing	39.5	43.6	57.2	61.6
51	3132	Fabric Mills	39.4	44.0	57.5	62.0
52	3329	Other Fabricated Metal Product Manufacturing	39.3	45.9	61.0	66.8
53	3279	Other Nonmetallic Mineral Product Manufacturing	38.6	47.5	61.7	67.4
54	3133	Textile and Fabric Finishing and Fabric Coating Mills	38.6	47.8	62.0	67.7
55	3113	Sugar and Confectionery Product Manufacturing	38.4	48.4	62.8	68.4
56	3261	Plastics Product Manufacturing	38.3	52.0	66.9	71.9
57	3152	Cut and Sew Apparel Manufacturing	38.2	53.1	68.0	72.6
58	3324	Boiler, Tank, and Shipping Container Manufacturing	38.1	53.7	68.7	73.3
59	3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	36.6	54.1	69.7	74.6
60	3222	Converted Paper Product Manufacturing	36.3	56.4	72.7	77.5
61	3274	Lime and Gypsum Product Manufacturing	36.1	56.5	72.8	77.6
62	3116	Animal Slaughtering and Processing	35.8	57.5	76.3	80.5
63	3121	Beverage Manufacturing	35.8	60.7	78.2	82.0

A-MI Rank	NAICS	Description	A-MI	Cumulative Percentage Establishments	Cumulative Percentage Employment	Cumulative Percentage Wages
64	3162	Footwear Manufacturing	35.6	60.8	78.2	82.0
65	3141	Textile Furnishings Mills	35.2	61.3	78.3	82.0
66	3149	Other Textile Product Mills	34.5	62.7	79.0	82.4
67	3326	Spring and Wire Product Manufacturing	34.2	63.2	79.4	82.8
68	3131	Fiber, Yarn, and Thread Mills	34.0	63.4	79.8	83.1
69	3312	Steel Product Manufacturing from Purchased Steel	33.8	63.9	80.3	83.5
70	3151	Apparel Knitting Mills	33.1	64.0	80.5	83.6
71	3117	Seafood Product Preparation and Packaging*	32.8	64.0	80.5	83.6
72	3321	Forging and Stamping	29.1	64.7	81.3	84.3
73	3315	Foundries	28.2	65.1	82.2	85.2
74	3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	28.1	69.6	83.7	86.6
75	3211	Sawmills and Wood Preservation	28.1	71.6	84.4	87.0
76	3372	Office Furniture (including Fixtures) Manufacturing	27.9	72.7	85.0	87.5
77	3159	Apparel Accessories and Other Apparel Manufacturing	27.9	72.8	85.0	87.5
78	3118	Bakeries and Tortilla Manufacturing	27.7	74.8	87.1	89.2
79	3273	Cement and Concrete Product Manufacturing	26.6	77.3	88.7	90.8
80	3323	Architectural and Structural Metals Manufacturing	26.3	82.3	91.5	93.5
81	3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	25.6	85.7	93.5	94.9
82	3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	25.2	86.2	93.9	95.2
83	3379	Other Furniture Related Product Manufacturing	25.1	86.4	94.1	95.4
84	3231	Printing and Related Support Activities	22.9	94.3	96.5	97.3
85	3219	Other Wood Product Manufacturing	21.6	98.3	99.2	99.4
86	3328	Coating, Engraving, Heat Treating, and Allied Activities	20.0	100.0	100.0	100.0

Source: Data from BLS QCEW.

** Tennessee 2020 totals were unavailable for NAICS 3369 and NAICS 3117.*

Table A.3. State Indices and Ranks for Manufacturing Industries

State Indices and Ranks for Top 35 A-M Industries					State Indices and Ranks for All Manufacturing Industries				
State	**Employment Index**	**Wage Index**	**Employment Rank**	**Wage Rank**	**State**	**Employment Index**	**Wage Index**	**Employment Rank**	**Wage Rank**
Alabama	32.1	33.0	5	6	Alabama	67.0	73.2	3	4
Alaska	3.8	3.3	50	49	Alaska	46.5	46.9	20	23
Arizona	12.8	13.2	41	39	Arizona	21.5	22.2	44	43
Arkansas	23.5	23.1	19	19	Arkansas	55.2	58.7	10	12
California	22.4	23.1	21	20	California	35.6	34.8	32	33
Colorado	13.4	11.8	39	43	Colorado	24.6	22.8	39	40
Connecticut	20.8	19.9	23	28	Connecticut	39.0	38.8	28	30
Delaware	12.8	13.8	40	38	Delaware	21.5	22.7	43	42
Florida	11.5	12.0	44	42	Florida	20.2	21.1	45	45
Georgia	20.0	19.8	25	29	Georgia	48.3	50.7	16	16
Hawaii	3.8	3.0	49	50	Hawaii	10.5	8.9	50	50
Idaho	19.0	21.3	32	24	Idaho	39.1	44.2	27	26
Illinois	25.5	26.3	17	13	Illinois	44.3	45.5	23	24
Indiana	40.7	48.0	1	1	Indiana	74.4	88.6	1	1
Iowa	35.3	39.9	3	3	Iowa	63.8	74.8	4	3
Kansas	25.7	25.9	16	14	Kansas	47.0	50.3	19	18
Kentucky	29.8	32.9	8	7	Kentucky	56.3	66.2	9	7
Louisiana	30.7	41.5	7	2	Louisiana	46.3	59.8	21	11
Maine	15.9	17.2	35	33	Maine	47.3	51.0	17	15
Maryland	9.7	9.4	46	45	Maryland	17.0	16.4	47	47
Massachusetts	19.2	16.6	31	34	Massachusetts	34.0	30.6	33	35
Michigan	26.7	30.5	11	11	Michigan	50.5	57.8	14	13
Minnesota	26.1	24.2	15	16	Minnesota	49.1	48.3	15	20
Mississippi	27.8	31.3	10	9	Mississippi	59.8	70.9	7	6
Missouri	24.0	23.4	18	18	Missouri	45.0	47.6	22	21
Montana	9.8	10.5	45	44	Montana	21.9	22.8	42	41
Nebraska	19.3	19.6	29	30	Nebraska	43.8	48.5	25	19
Nevada	5.7	5.6	48	48	Nevada	14.5	15.6	48	48
New Hampshire	26.3	24.1	13	17	New Hampshire	47.2	47.0	18	22
New Jersey	16.2	15.3	34	36	New Jersey	28.8	27.2	38	37
New Mexico	7.9	7.6	47	47	New Mexico	14.1	13.3	49	49
New York	12.6	9.0	42	46	New York	23.0	17.7	41	46
North Carolina	29.1	30.6	9	10	North Carolina	60.4	61.8	6	8
North Dakota	13.4	12.3	38	40	North Dakota	23.8	23.4	40	39
Ohio	26.4	29.9	12	12	Ohio	53.6	60.3	11	10
Oklahoma	19.8	22.0	26	22	Oklahoma	37.8	42.7	30	28
Oregon	20.8	20.4	24	27	Oregon	43.1	43.5	26	27

State Indices and Ranks for Top 35 A-M Industries					State Indices and Ranks for All Manufacturing Industries				
State	**Employment Index**	**Wage Index**	**Employment Rank**	**Wage Rank**	**State**	**Employment Index**	**Wage Index**	**Employment Rank**	**Wage Rank**
Pennsylvania	22.0	22.0	22	21	Pennsylvania	44.0	44.3	24	25
Rhode Island	22.7	21.1	20	25	Rhode Island	51.5	50.4	12	17
South Carolina	32.2	34.7	4	5	South Carolina	61.5	71.3	5	5
South Dakota	19.5	19.5	28	31	South Dakota	38.9	41.8	29	29
Tennessee	**30.9**	**32.6**	**6**	**8**	**Tennessee**	**56.5**	**61.2**	**8**	**9**
Texas	19.3	21.6	30	23	Texas	32.4	34.3	35	34
Utah	19.6	18.0	27	32	Utah	36.9	35.9	31	32
Vermont	26.2	25.0	14	15	Vermont	50.9	51.5	13	14
Virginia	15.8	15.3	36	35	Virginia	31.4	29.9	36	36
Washington	14.4	12.0	37	41	Washington	29.4	25.7	37	38
West Virginia	17.7	20.5	33	26	West Virginia	33.5	38.4	34	31
Wisconsin	35.4	38.2	2	4	Wisconsin	70.7	77.9	2	2
Wyoming	12.2	14.1	43	37	Wyoming	19.8	22.1	46	44

AN APPENDIX TO: ASSESSING ADVANCED MANUFACTURING IN TENNESSEE

May 2022

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Table of Contents

Introduction

This is a stand-alone appendix to supplement the report *Assessing Advanced Manufacturing in Tennessee*, and contains profile sheets on each of Tennessee's 95 counties. These profiles provide basic demographic information, statistics on manufacturing employment within the county, and various charts that provide perspective on its readiness and progress towards the support and development of advanced manufacturing within the state. Each profile also contains a link to the (U.S.) 'Census Quick Fact Link' for the county.

The data used in this portion of the report are 2021 county-level data from the StatsAmerica Innovation Intelligence project. The StatsAmerica reference publication[1] explains their scoring methodology in detail. One important point from the reference publication is that for a given year, it is valid to make comparisons across geographic units of a similar type (i.e. comparing counties with one another), however, these data cannot be used to compare counties with different geographic units of analysis, such as states.

We compiled Readiness Index (RI) county scores as an equal weighting of innovation, talent, and environment[2] areas having three StatsAmerica metrics each. The Progress Index (PI) county scores are a composite weighting of four areas and five StatsAmerica metrics. Innovation and talent have one metric each and are weighted at 30 percent, environment has two metrics at 15 percent each, and the single productivity metric comprises the remaining 10 percent of the composite. The Readiness and Progress indices are a means of comparison among Tennessee counties only. Therefore, each county is assigned a Readiness and Progress rank from 1 to 95 with 1 being the highest.

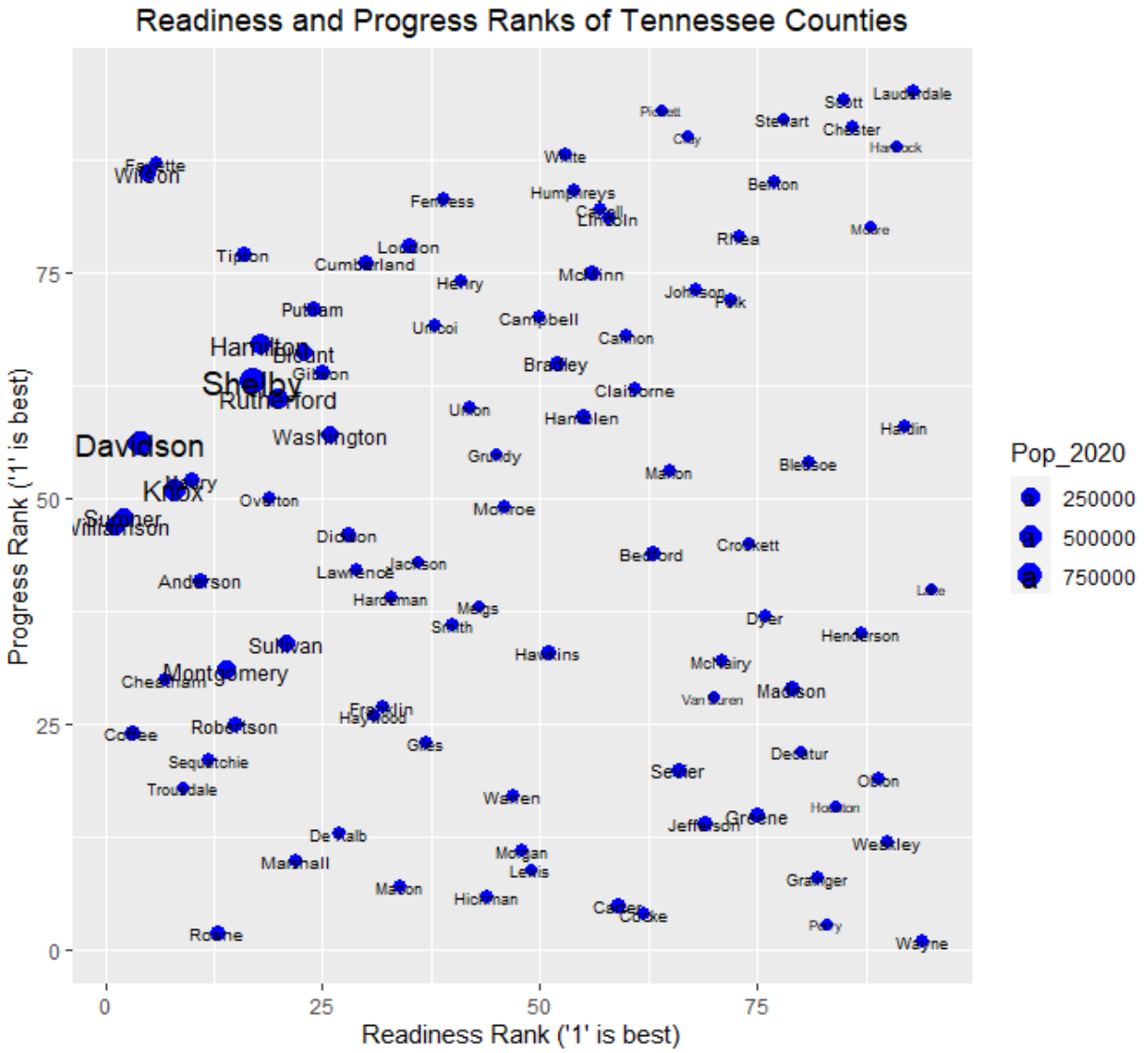
[1] Driving Regional Innovation, The Innovation Index 2.0, August 2016

[2] Here we are using the term environment to encompass business climate and business dynamic measures.

Overview

This plot shows how individual counties fared on both readiness and progress over the past five-to-ten 10-year period. The size of the dots reflects variation in population.

Those counties closest to the left side of the graph scored highly for readiness. Those closest to the bottom of the graph have made the most recent progress. A positive correlation between readiness and population is apparent. Those close to the origin ranked highly on both readiness and progress. Conversely, those farthest from the origin ranked poorly on both.



Output

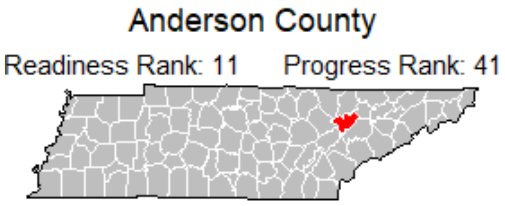
Individual county profile pages follow. Each page contains the county population listed in the 2020 U.S. Census. Average annual employment numbers and average manufacturing wages are from the 2020 Quarterly Census of Employment and Wages (QCEW).

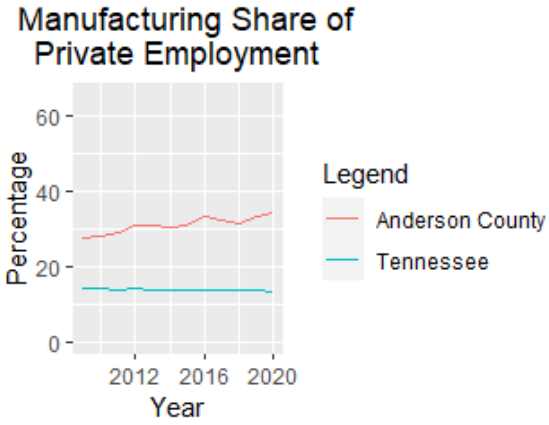
The Census Quick Fact Link can provide relevant tables, charts, maps, and dashboards to further compare demographic information from individual counties. Note that the Census numbers, particularly total employment, may differ from their QCEW counterparts because of differences in methodology.

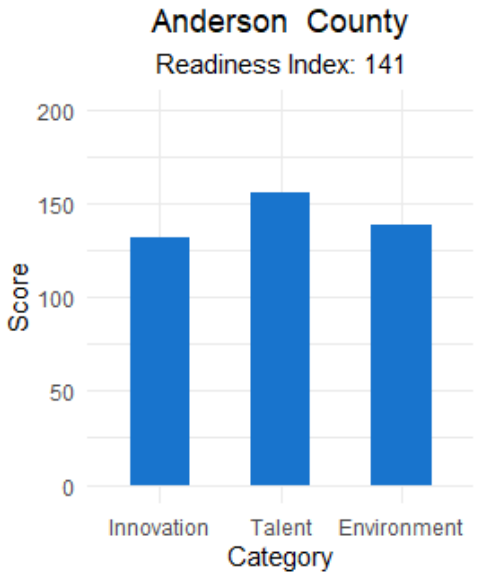
Anderson County

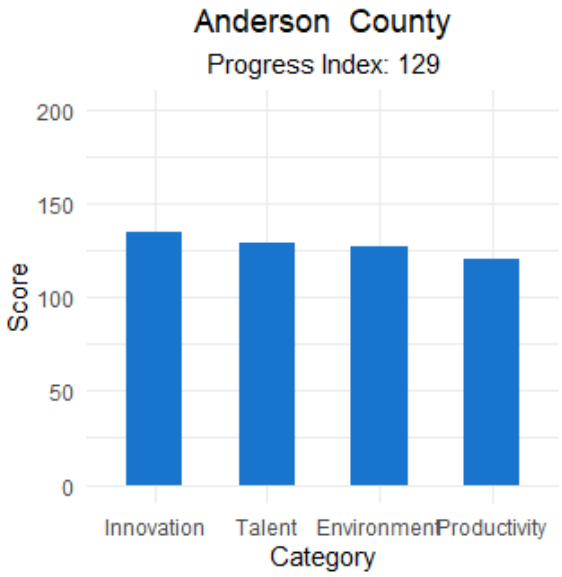
In 2020, the population of Anderson County was 77,123 and its average annual manufacturing employment (NAICS 31-33) was 11,888.

Total private sector employment was 34,760 and manufacturing employment was 34.2 percent of the total. That is approximately 15.4 manufacturing employees per hundred residents and ranks number 1 among all counties. The average annual wage and salary for manufacturing workers is $84,589. This ranks number 2 among all counties. For additional demographic information on Anderson County, see the Census Quick Fact link.







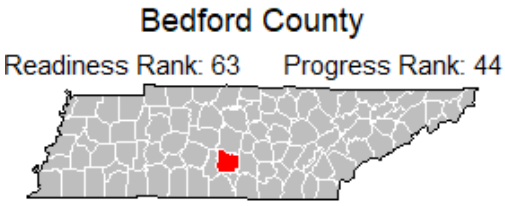


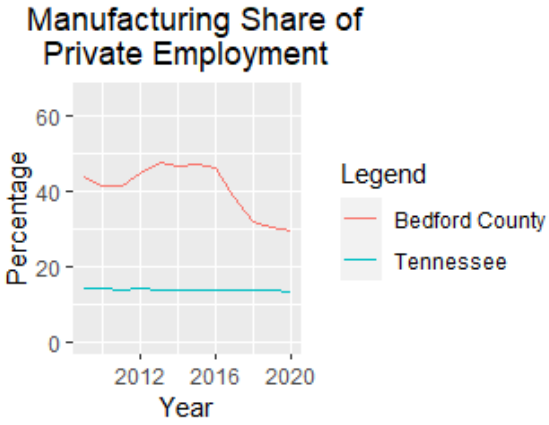
Anderson County's readiness index was 141, ranking it 11th out of 95 counties. The high readiness index value was due to a strong talent component which ranked 6th overall. Its progress index value was 129, ranking it 41st out of 95 counties. For progress, innovation was strongest among the components ranking 25th.

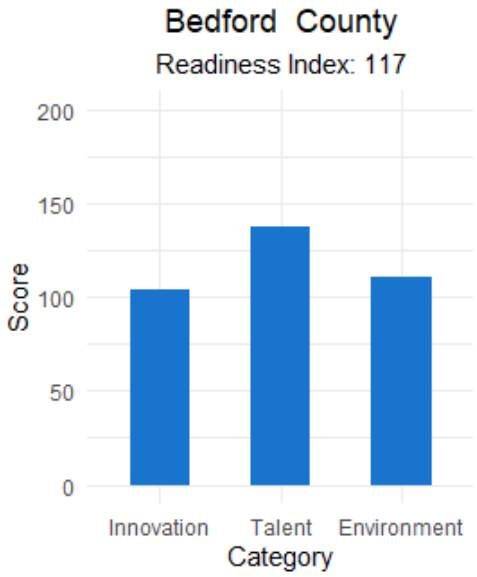
Bedford County

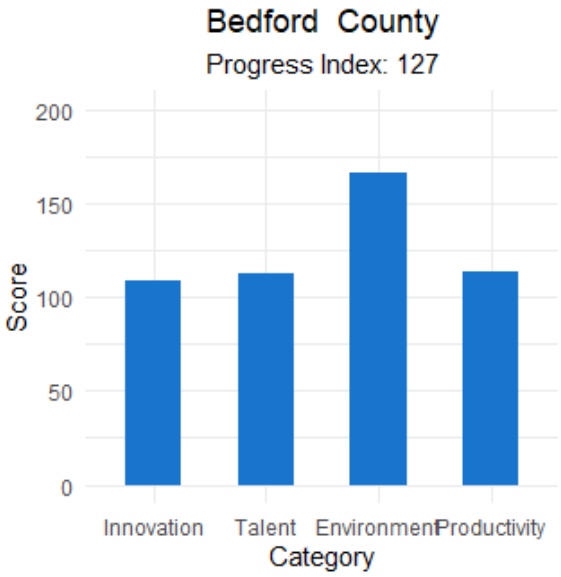
In 2020, the population of Bedford County was 50,237 and its average annual manufacturing employment (NAICS 31-33) was 3,928.

Total private sector employment was 13,364 and manufacturing employment was 29.4 percent of the total. That is approximately 7.8 manufacturing employees per hundred residents and ranks number 17 among all counties. The average annual wage and salary for manufacturing workers is $50,188. This ranks number 55 among all counties. For additional demographic information on Bedford County, see the Census Quick Fact link.







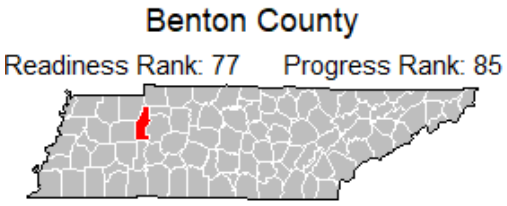


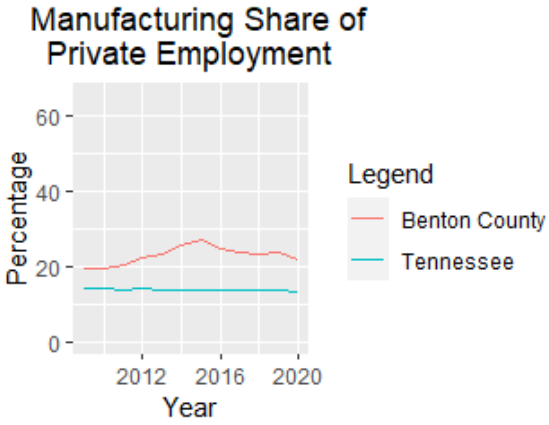
Bedford County's readiness index was 117, ranking it 63rd out of 95 counties. The moderate readiness index value came with component rankings for innovation and talent at 70th and 71st overall. Its progress index value was 127, ranking it 44th out of 95 counties. For progress, the environment was strongest among the components ranking 5th.

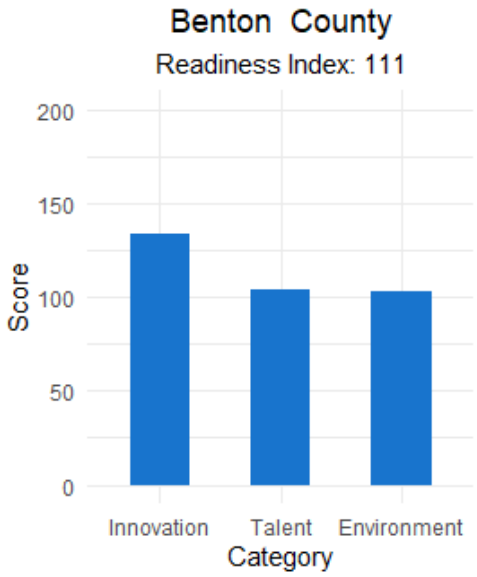
Benton County

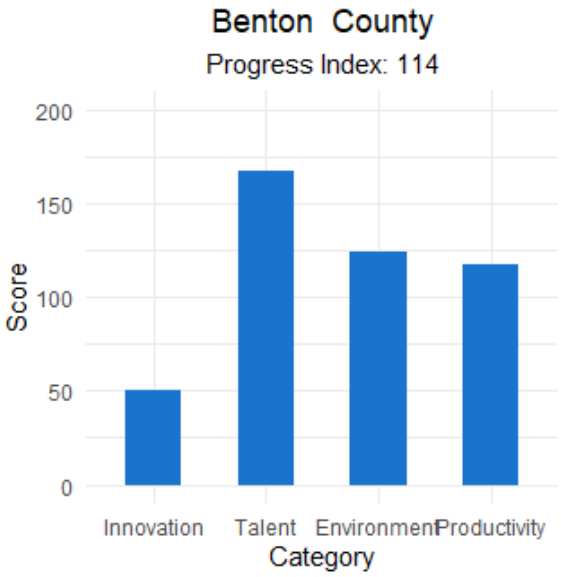
In 2020, the population of Benton County was 15,864 and its average annual manufacturing employment (NAICS 31-33) was 675.

Total private sector employment was 3,076 and manufacturing employment was 21.9 percent of the total. That is approximately 4.3 manufacturing employees per hundred residents and ranks number 53 among all counties. The average annual wage and salary for manufacturing workers is $42,531. This ranks number 75 among all counties. For additional demographic information on Benton County, see the Census Quick Fact link.







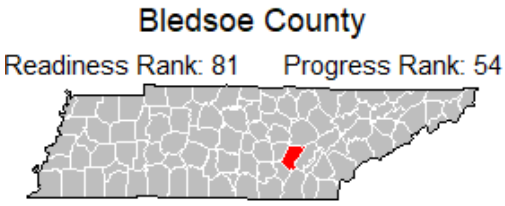


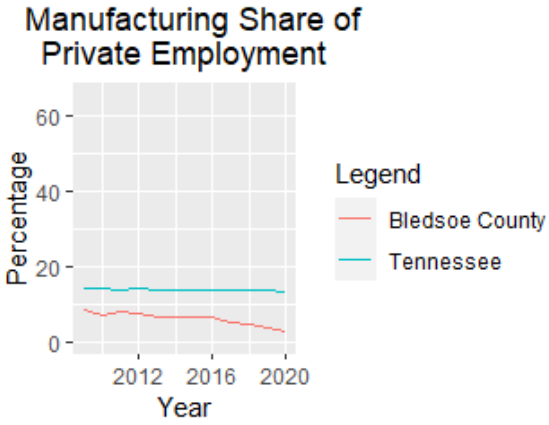
Benton County's readiness index was 111, ranking it 77th out of 95 counties. The readiness index value came with an innovation rank of 20th. Its progress index value was 114, ranking it 85th out of 95 counties. For progress, talent was strongest among the components ranking 14th.

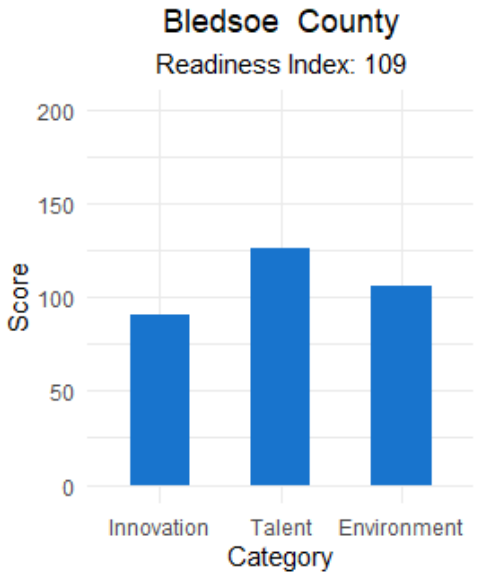
Bledsoe County

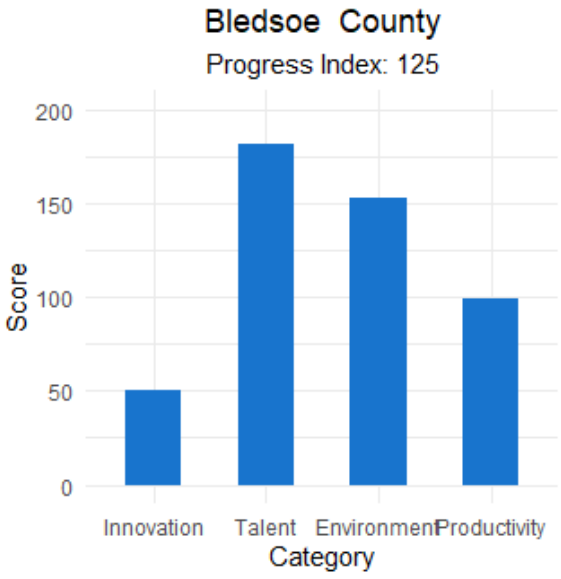
In 2020, the population of Bledsoe County was 14,913 and its average annual manufacturing employment (NAICS 31-33) was 28.

Total private sector employment was 940 and manufacturing employment was 3.0 percent of the total. That is approximately 0.2 manufacturing employees per hundred residents and ranks number 92 among all counties. The average annual wage and salary for manufacturing workers is $29,268. This ranks number 91 among all counties. For additional demographic information on Bledsoe County, see the Census Quick Fact link.







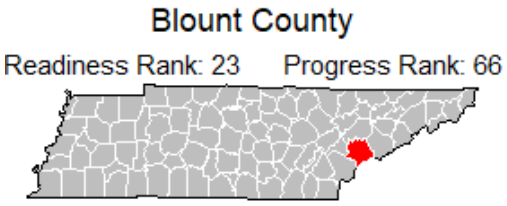


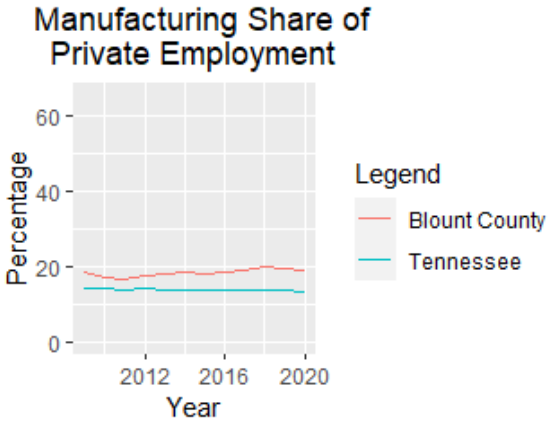
Bledsoe County's readiness index was 109, ranking it 81st out of 95 counties. The readiness index value talent component ranked 50th. Its progress index value was 125, ranking it 54th out of 95 counties. For progress, talent and environment were strong ranking 7th and 18th respectively.

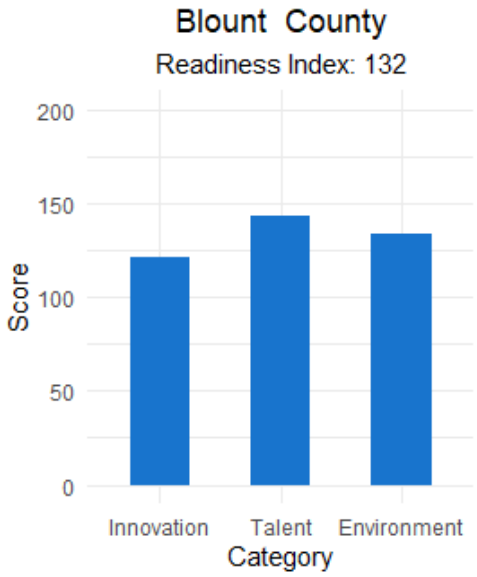
Blount County

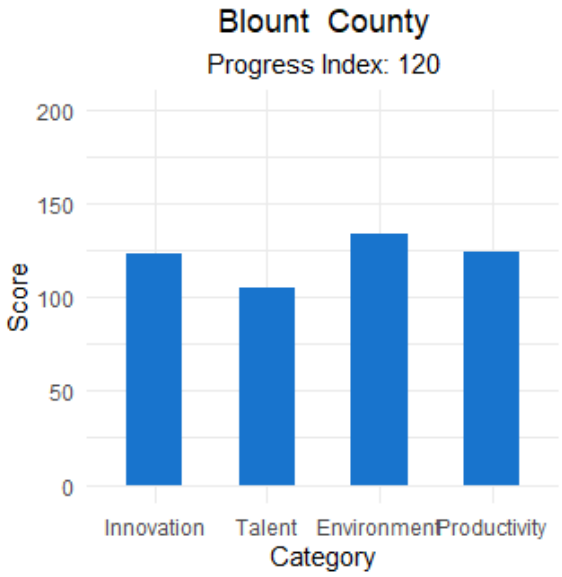
In 2020, the population of Blount County was 135,280 and its average annual manufacturing employment (NAICS 31-33) was 7,956.

Total private sector employment was 41,342 and manufacturing employment was 19.2 percent of the total. That is approximately 5.9 manufacturing employees per hundred residents and ranks number 40 among all counties. The average annual wage and salary for manufacturing workers is $66,172. This ranks number 12 among all counties. For additional demographic information on Blount County, see the Census Quick Fact link.







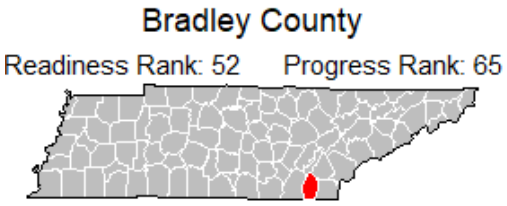


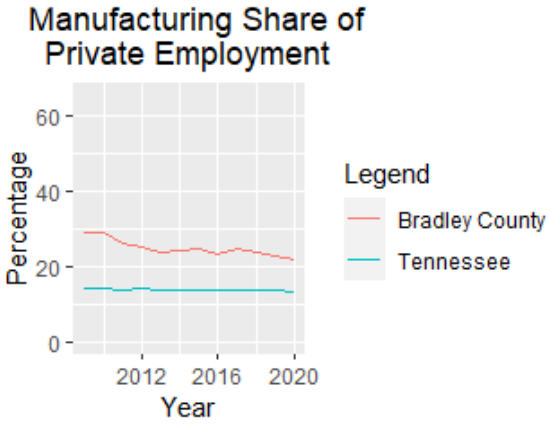
Blount County's readiness index was 132, ranking it 23rd out of 95 counties. The strongest readiness component was talent which ranked 16th overall. Its progress index value was 120, ranking it 66th out of 95 counties. For progress, innovation and productivity ranked 36th and 33rd respectively.

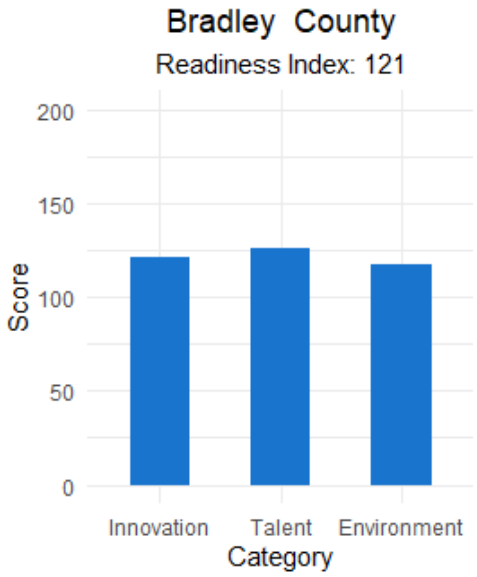
Bradley County

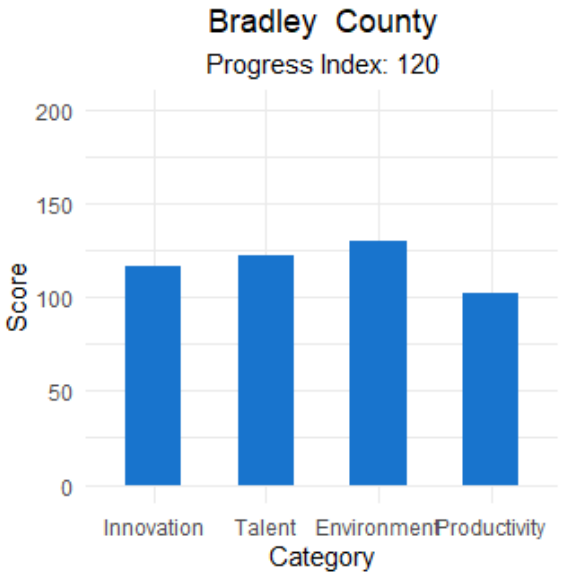
In 2020, the population of Bradley County was 108,620 and its average annual manufacturing employment (NAICS 31-33) was 8,429.

Total private sector employment was 39,004 and manufacturing employment was 21.6 percent of the total. That is approximately 7.8 manufacturing employees per hundred residents and ranks number 18 among all counties. The average annual wage and salary for manufacturing workers is $58,190. This ranks number 23 among all counties. For additional demographic information on Bradley County, see the Census Quick Fact link.







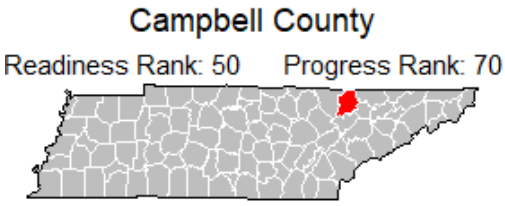


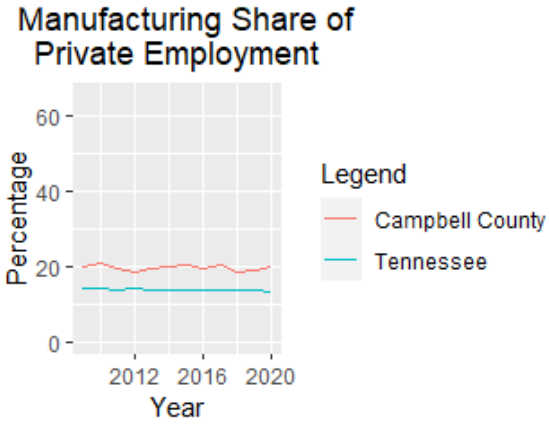
Bradley County's readiness index was 121, ranking it 52nd out of 95 counties. The strongest readiness component was innovation which ranked 45th overall. Its progress index value was 120, ranking it 65th out of 95 counties. For progress, innovation and talent had the best component rankings at 46th and 53rd respectively.

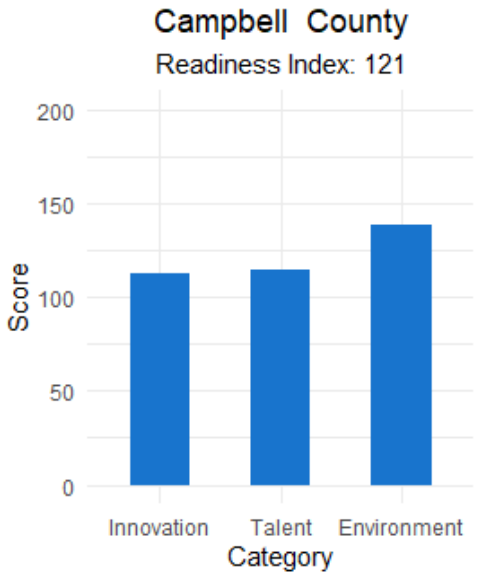
Campbell County

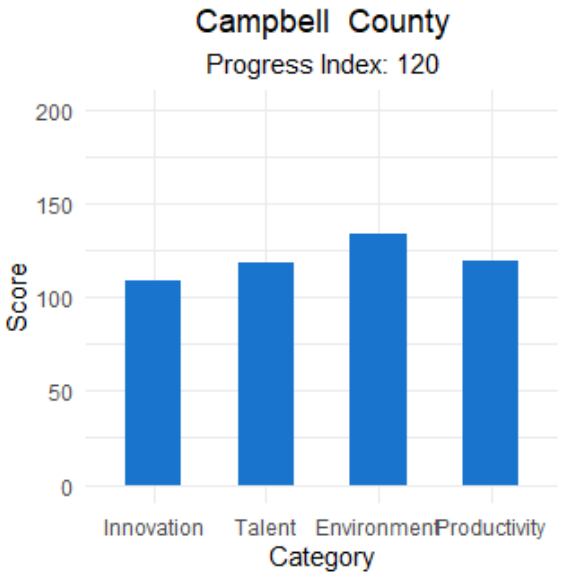
In 2020, the population of Campbell County was 39,272 and its average annual manufacturing employment (NAICS 31-33) was 1,428.

Total private sector employment was 7,206 and manufacturing employment was 19.8 percent of the total. That is approximately 3.6 manufacturing employees per hundred residents and ranks number 60 among all counties. The average annual wage and salary for manufacturing workers is $44,918. This ranks number 71 among all counties. For additional demographic information on Campbell County, see the Census Quick Fact link.







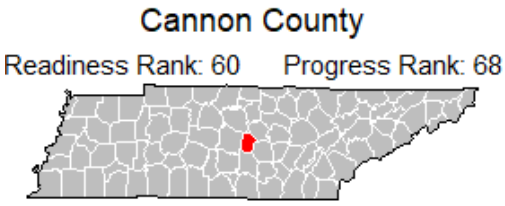


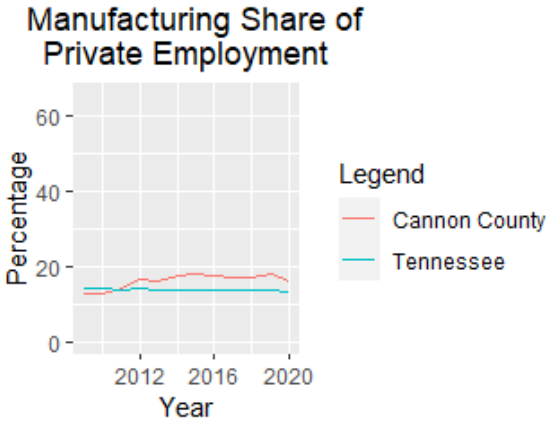
Campbell County's readiness index was 121, ranking it 50th out of 95 counties. The strongest readiness component was environment which ranked 18th overall. Its progress index value was 120, ranking it 70th out of 95 counties. For progress, environment and productivity had the best component rankings at 51st and 48th respectively.

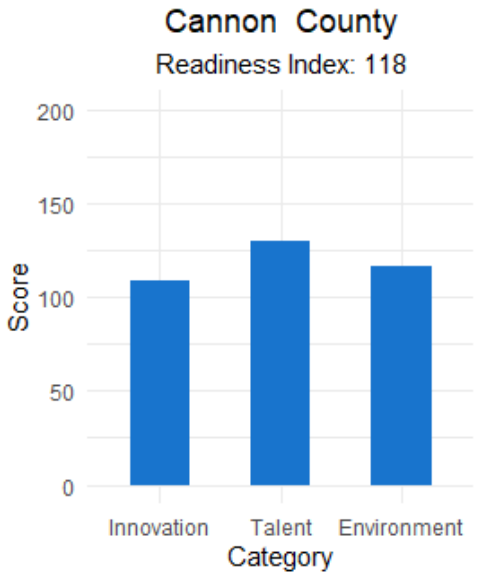
Cannon County

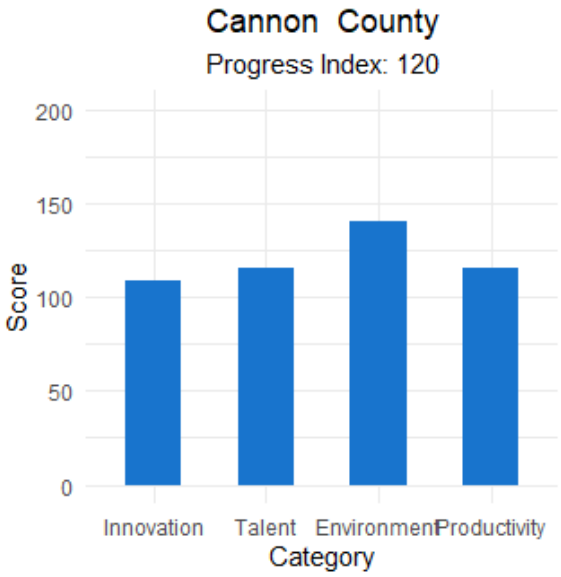
In 2020, the population of Cannon County was 14,506 and its average annual manufacturing employment (NAICS 31-33) was 293.

Total private sector employment was 1,794 and manufacturing employment was 16.3 percent of the total. That is approximately 2.0 manufacturing employees per hundred residents and ranks number 80 among all counties. The average annual wage and salary for manufacturing workers is $36,927. This ranks number 84 among all counties. For additional demographic information on Cannon County, see the Census Quick Fact link.







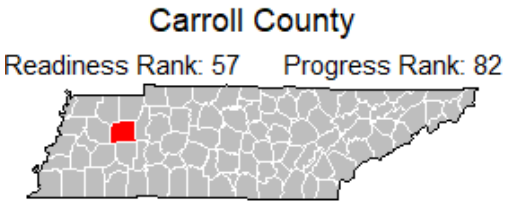


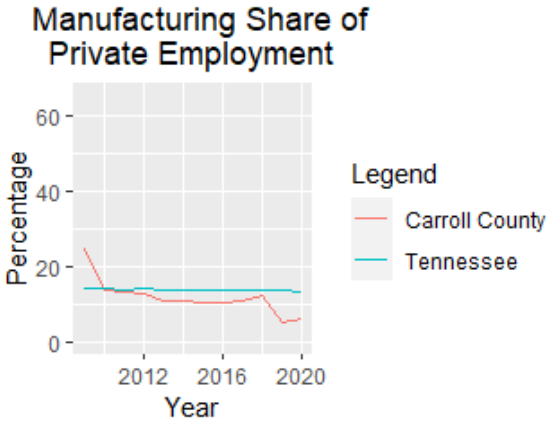
Cannon County's readiness index was 118, ranking it 60th out of 95 counties. The strongest readiness component was talent which ranked 42nd overall. Its progress index value was 120, ranking it 68th out of 95 counties. For progress, environment and productivity had the best component rankings at 38th and 59th respectively.

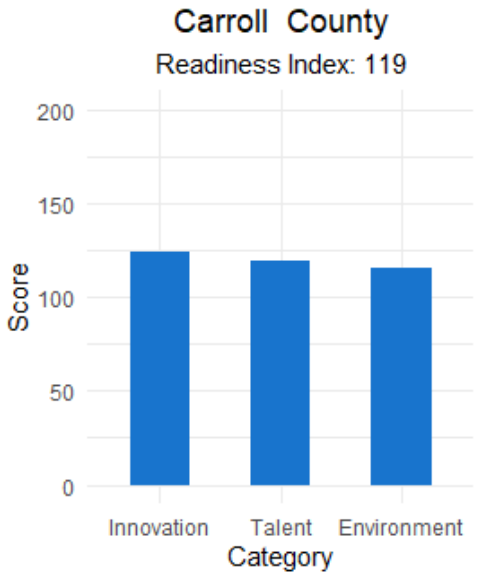
Carroll County

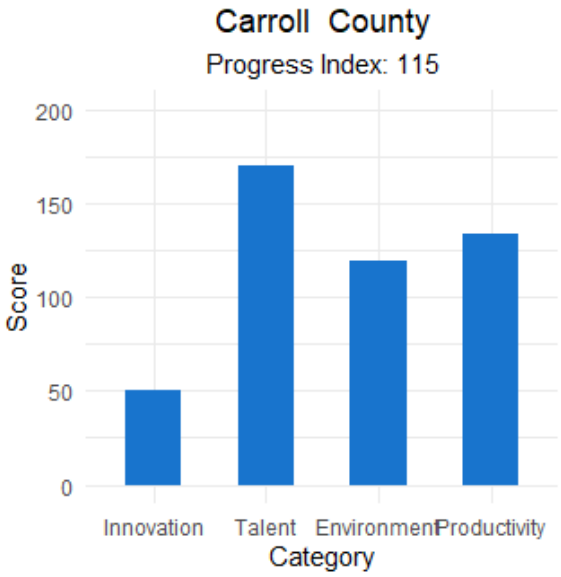
In 2020, the population of Carroll County was 28,440 and its average annual manufacturing employment (NAICS 31-33) was 300.

Total private sector employment was 4,944 and manufacturing employment was 6.1 percent of the total. That is approximately 1.1 manufacturing employees per hundred residents and ranks number 91 among all counties. The average annual wage and salary for manufacturing workers is $40,326. This ranks number 80 among all counties. For additional demographic information on Carroll County, see the Census Quick Fact link.







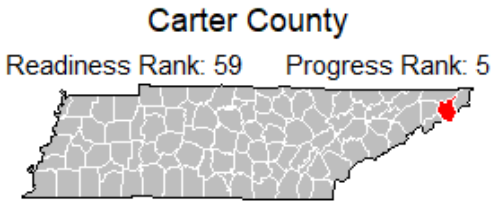


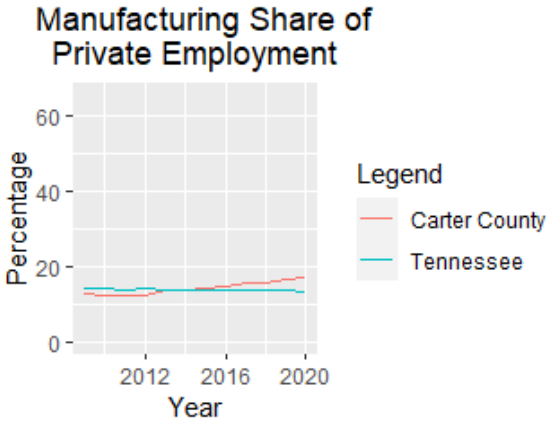
Carroll County's readiness index was 119, ranking it 57th out of 95 counties. The strongest readiness component was innovation which ranked 39th overall. Its progress index value was 115, ranking it 82nd out of 95 counties. For progress, talent and productivity were the strongest components ranking 12th and 24th respectively.

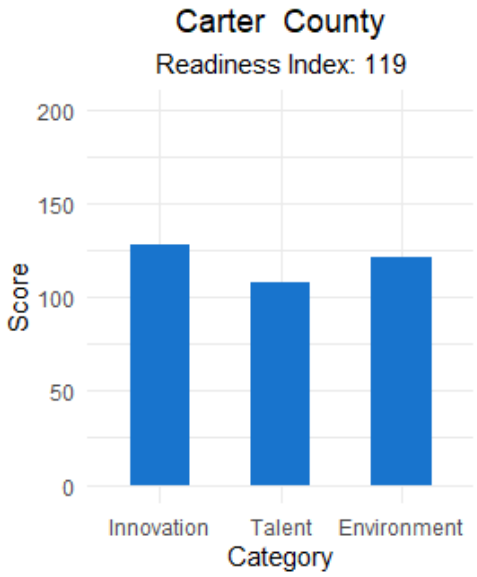
Carter County

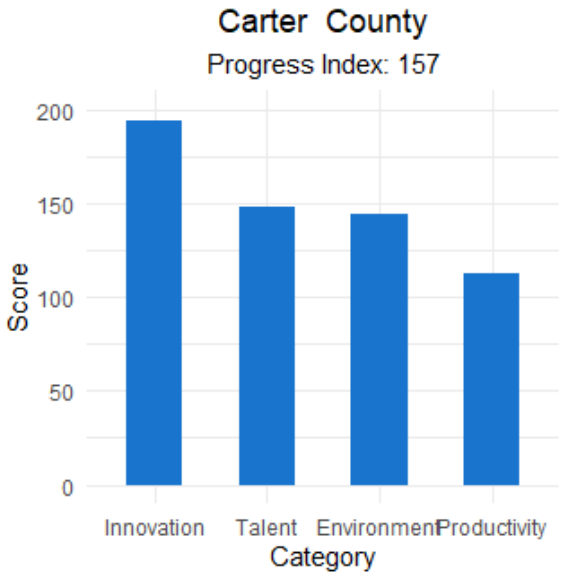
In 2020, the population of Carter County was 56,356 and its average annual manufacturing employment (NAICS 31-33) was 1,524.

Total private sector employment was 8,990 and manufacturing employment was 17.0 percent of the total. That is approximately 2.7 manufacturing employees per hundred residents and ranks number 71 among all counties. The average annual wage and salary for manufacturing workers is $49,971. This ranks number 57 among all counties. For additional demographic information on Carter County, see the Census Quick Fact link.







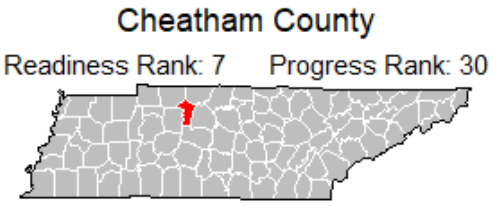


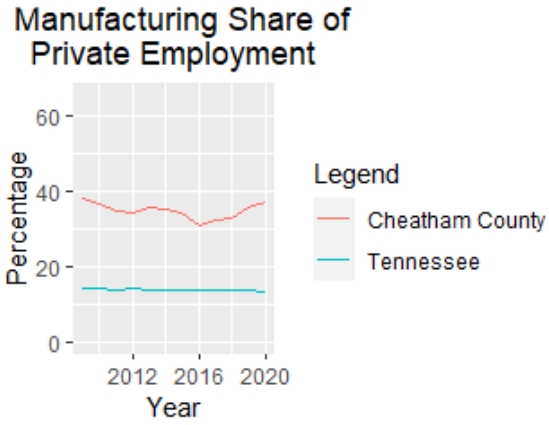
Carter County's readiness index was 119, ranking it 59th out of 95 counties. The strongest readiness component was innovation which ranked 31st overall. Its progress index value was 157, ranking it 5th out of 95 counties. For progress, innovation and talent were the strongest components ranking 4th and 26th respectively.

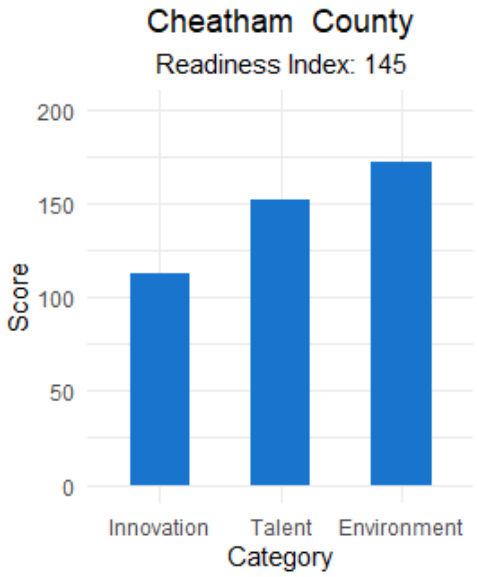
Cheatham County

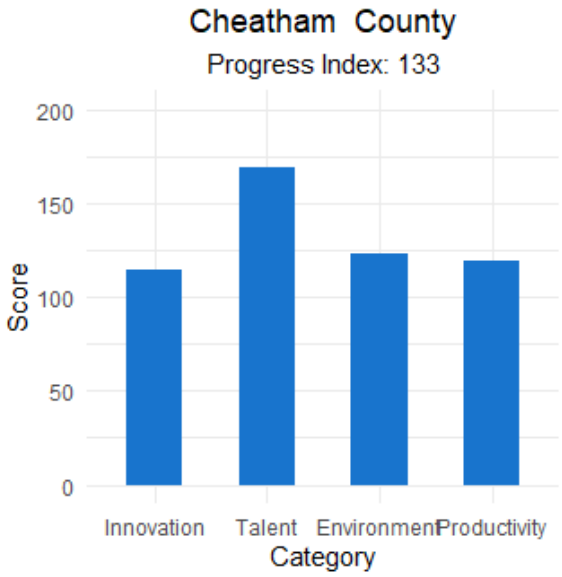
In 2020, the population of Cheatham County was 41,072 and its average annual manufacturing employment (NAICS 31-33) was 2,603.

Total private sector employment was 7,067 and manufacturing employment was 36.8 percent of the total. That is approximately 6.3 manufacturing employees per hundred residents and ranks number 36 among all counties. The average annual wage and salary for manufacturing workers is $64,761. This ranks number 14 among all counties. For additional demographic information on Cheatham County, see the Census Quick Fact link.







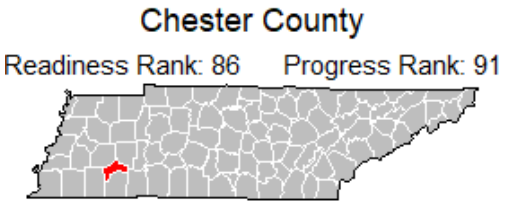


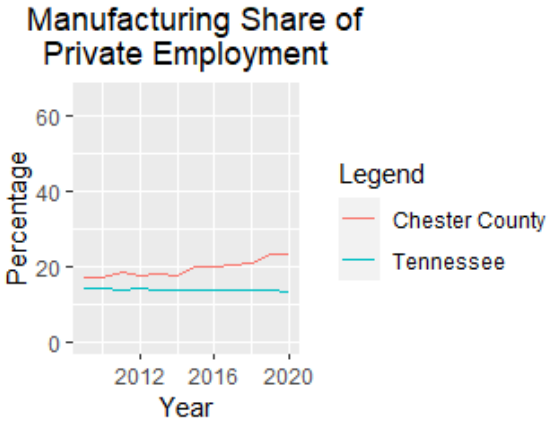
Cheatham County's readiness index was 145, ranking it 7th out of 95 counties. The high readiness ranking came from strength in the talent and environment components which ranked 10th and 3rd overall. Its progress index value was 133, ranking it 30th out of 95 counties. For progress, talent ranked 13th overall.

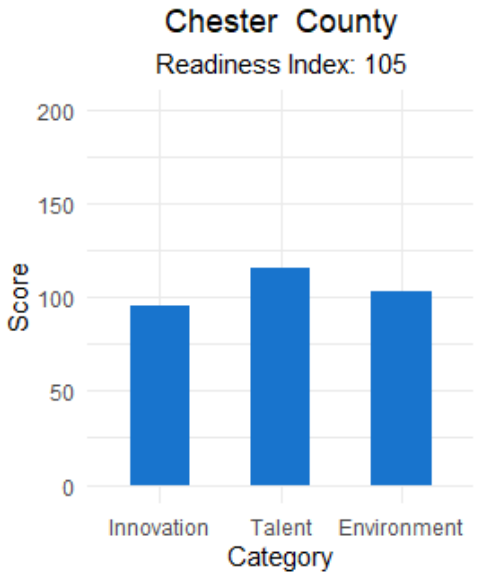
Chester County

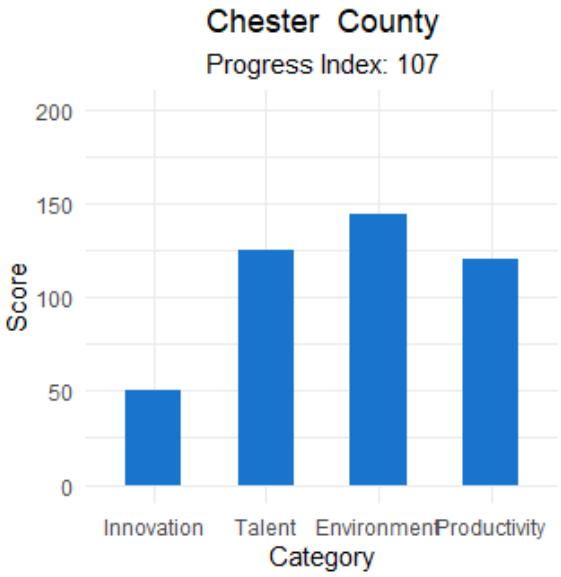
In 2020, the population of Chester County was 17,341 and its average annual manufacturing employment (NAICS 31-33) was 583.

Total private sector employment was 2,505 and manufacturing employment was 23.3 percent of the total. That is approximately 3.4 manufacturing employees per hundred residents and ranks number 65 among all counties. The average annual wage and salary for manufacturing workers is $49,610. This ranks number 58 among all counties. For additional demographic information on Chester County, see the Census Quick Fact link.







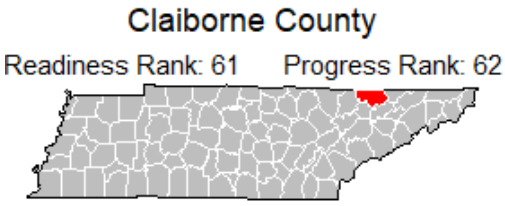


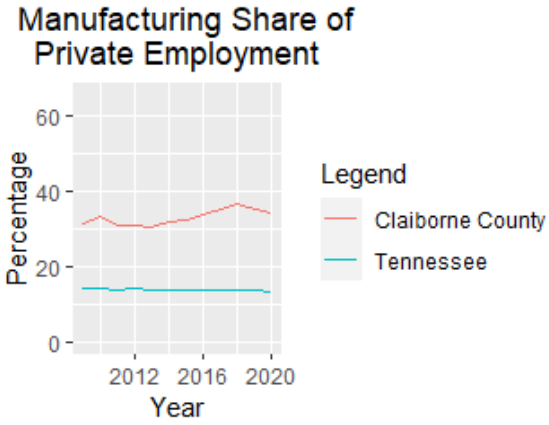
Chester County's readiness index was 105, ranking it 86th out of 95 counties. The strongest readiness component was talent which ranked 71st overall. Its progress index value was 107, ranking it 91st out of 95 counties. For progress, the environment component ranked 31st overall.

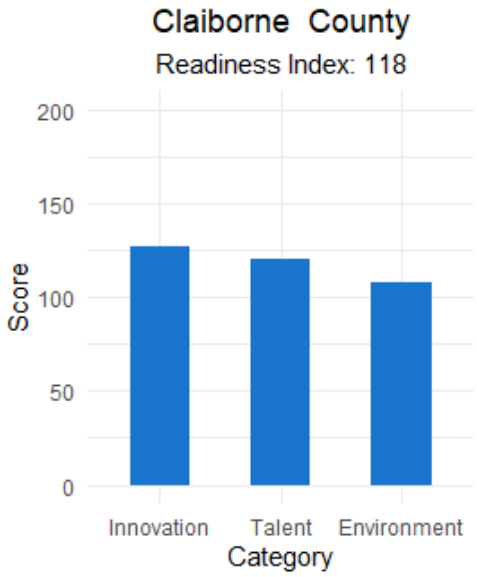
Claiborne County

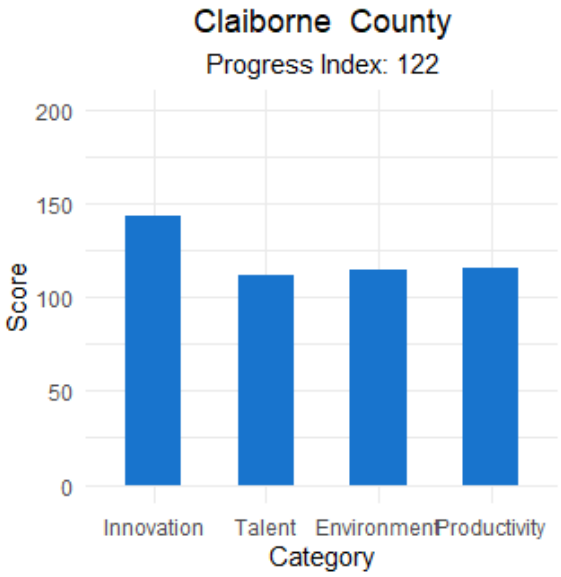
In 2020, the population of Claiborne County was 32,043 and its average annual manufacturing employment (NAICS 31-33) was 2,369.

Total private sector employment was 6,976 and manufacturing employment was 34.0 percent of the total. That is approximately 7.4 manufacturing employees per hundred residents and ranks number 22 among all counties. The average annual wage and salary for manufacturing workers is $38,752. This ranks number 82 among all counties. For additional demographic information on Claiborne County, see the Census Quick Fact link.







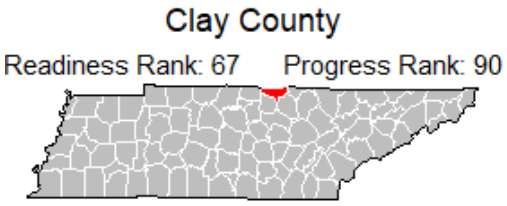


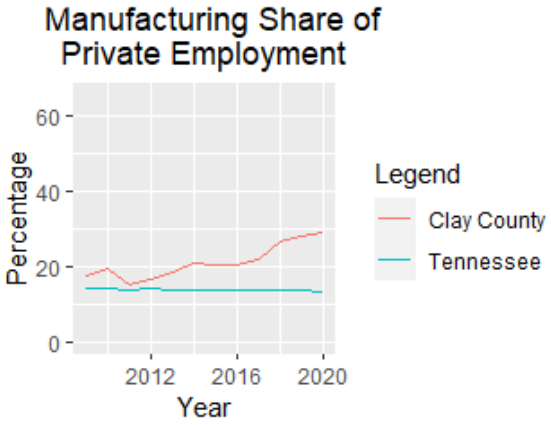
Claiborne County's readiness index was 118, ranking it 61st out of 95 counties. The strongest readiness component was innovation which ranked 33rd overall. Its progress index value was 122, ranking it 62nd out of 95 counties. For progress, the innovation component ranked 20th overall.

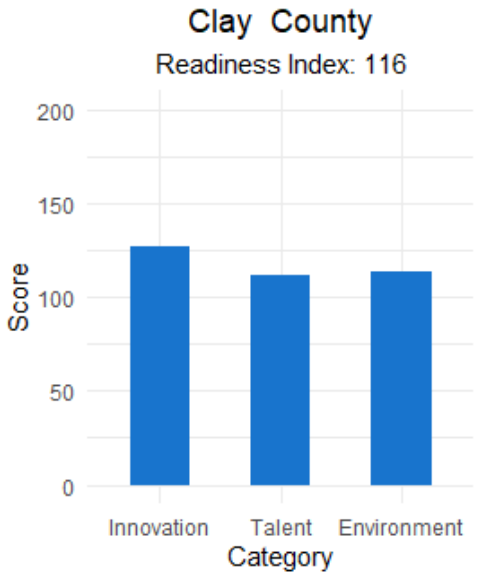
Clay County

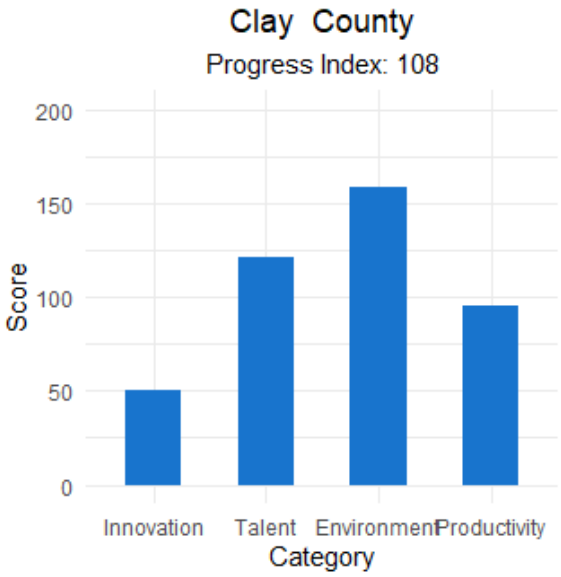
In 2020, the population of Clay County was 7,581 and its average annual manufacturing employment (NAICS 31-33) was 247.

Total private sector employment was 862 and manufacturing employment was 28.7 percent of the total. That is approximately 3.3 manufacturing employees per hundred residents and ranks number 67 among all counties. The average annual wage and salary for manufacturing workers is $42,971. This ranks number 74 among all counties. For additional demographic information on Clay County, see the Census Quick Fact link.







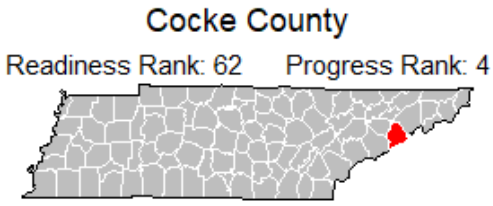


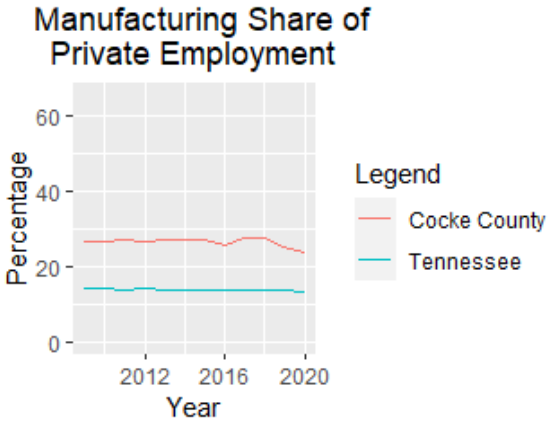
Clay County's readiness index was 116, ranking it 67th out of 95 counties. The strongest readiness component was innovation which ranked 35th overall. Its progress index value was 108, ranking it 90th out of 95 counties. For progress, the environment component ranked 8th overall.

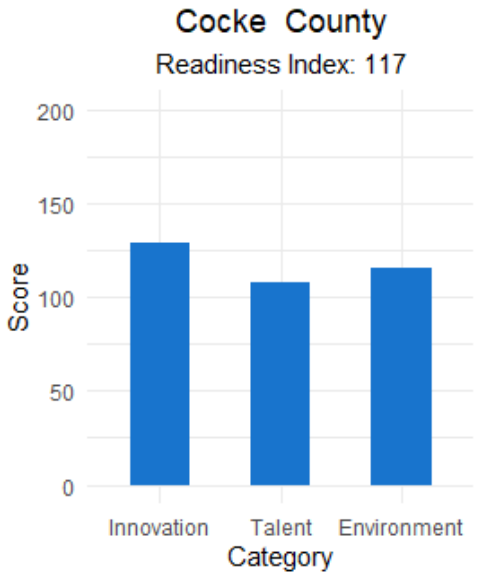
Cocke County

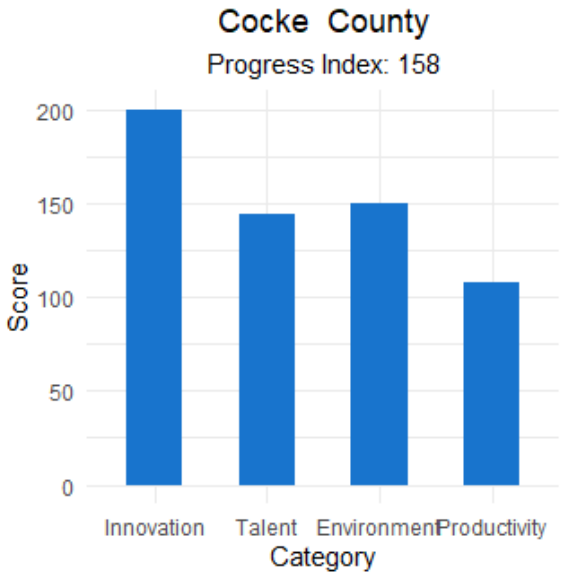
In 2020, the population of Cocke County was 35,999 and its average annual manufacturing employment (NAICS 31-33) was 1,303.

Total private sector employment was 5,489 and manufacturing employment was 23.7 percent of the total. That is approximately 3.6 manufacturing employees per hundred residents and ranks number 61 among all counties. The average annual wage and salary for manufacturing workers is $57,881. This ranks number 25 among all counties. For additional demographic information on Cocke County, see the Census Quick Fact link.







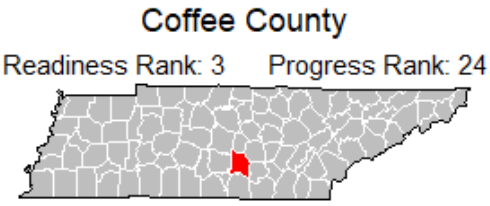


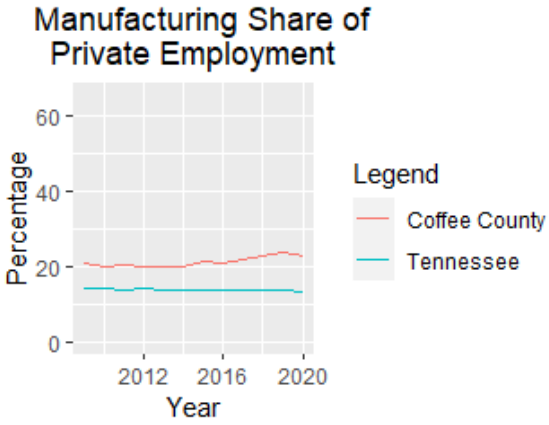
Cocke County's readiness index was 117, ranking it 62nd out of 95 counties. The strongest readiness component was innovation which ranked 28th overall. Its progress index value was 158, ranking it 4th out of 95 counties. For progress, an extremely strong innovation component ranked 1st overall.

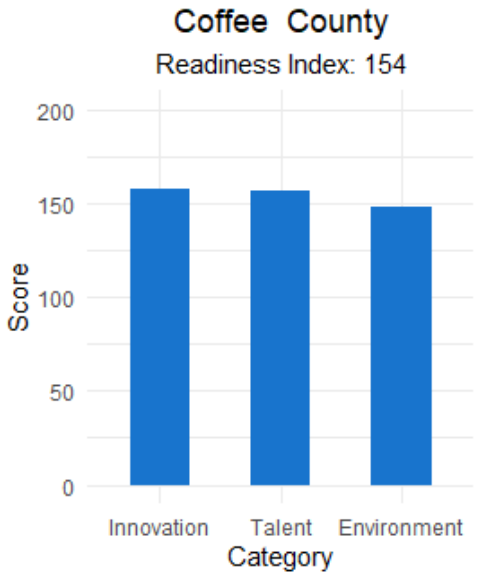
Coffee County

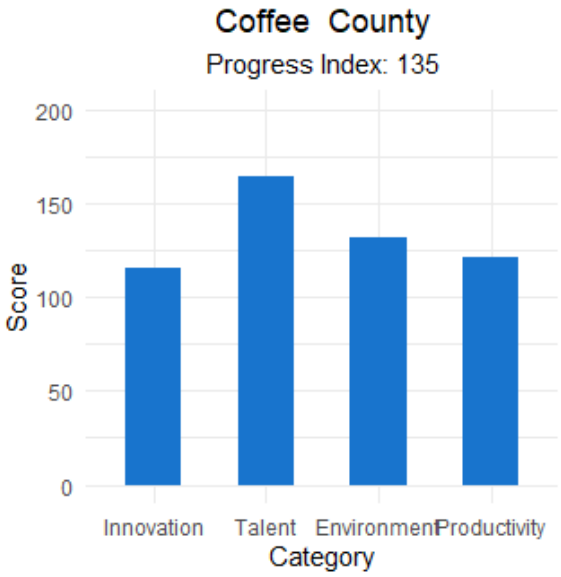
In 2020, the population of Coffee County was 57,889 and its average annual manufacturing employment (NAICS 31-33) was 5,021.

Total private sector employment was 22,178 and manufacturing employment was 22.6 percent of the total. That is approximately 8.7 manufacturing employees per hundred residents and ranks number 11 among all counties. The average annual wage and salary for manufacturing workers is $52,171. This ranks number 44 among all counties. For additional demographic information on Coffee County, see the Census Quick Fact link.







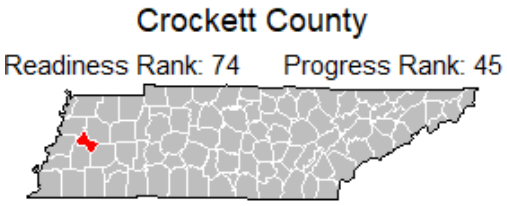


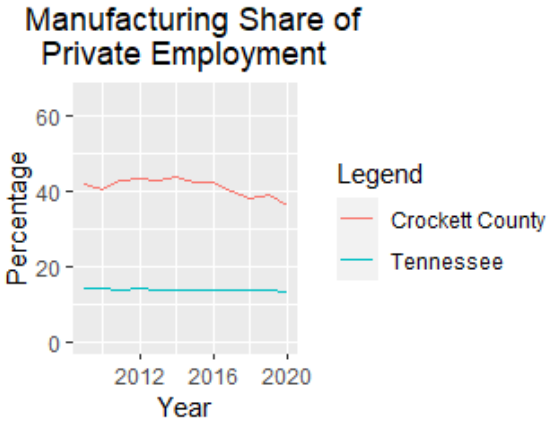
Coffee County's readiness index was 154, ranking it 3rd out of 95 counties. All readiness components ranked in the top ten in their respective categories with talent ranking 5th overall. The county's progress index value was 135, ranking it 24th out of 95 counties. For progress, a strong talent component ranked 15th overall.

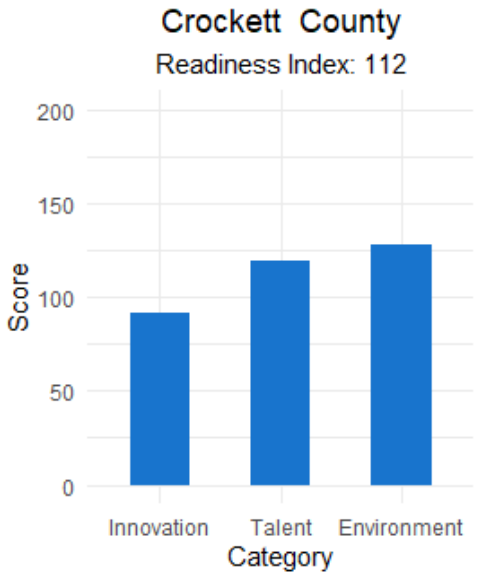
Crockett County

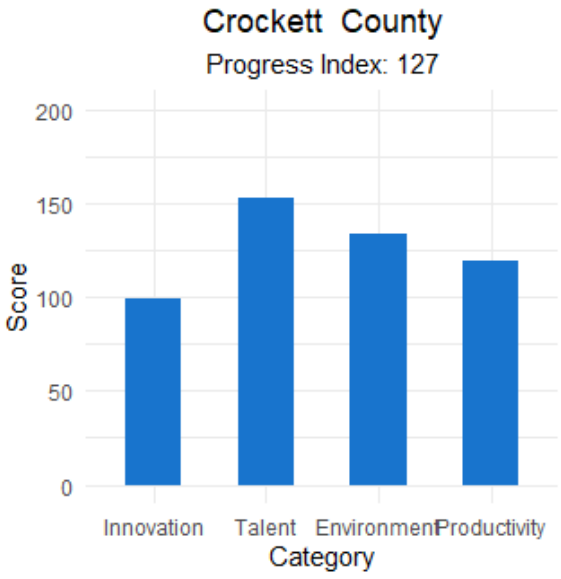
In 2020, the population of Crockett County was 13,911 and its average annual manufacturing employment (NAICS 31-33) was 1,076.

Total private sector employment was 2,992 and manufacturing employment was 36.0 percent of the total. That is approximately 7.7 manufacturing employees per hundred residents and ranks number 19 among all counties. The average annual wage and salary for manufacturing workers is $63,733. This ranks number 16 among all counties. For additional demographic information on Crockett County, see the Census Quick Fact link.







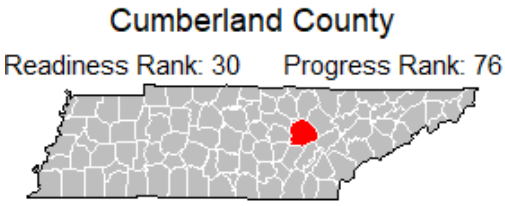


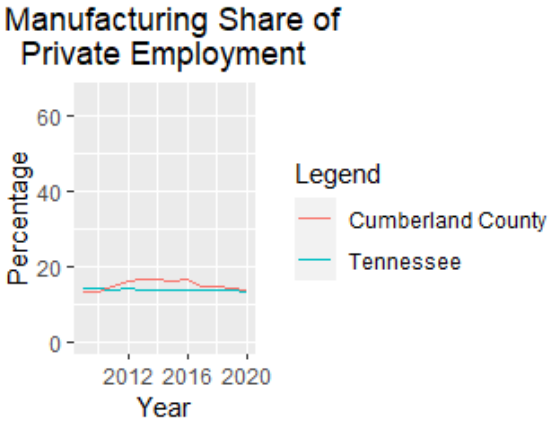
Cumberland County's readiness index was 112, ranking it 74th out of 95 counties. The environment component was the strongest ranking 8th. The county's progress index value was 127, ranking it 45th out of 95 counties. For progress, talent was the strongest component ranking 21st overall.

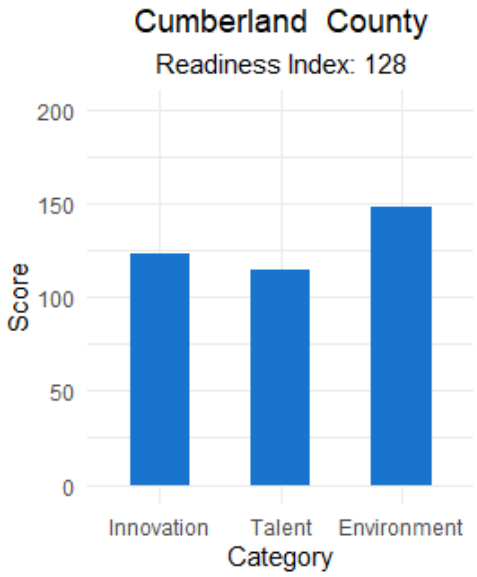
Cumberland County

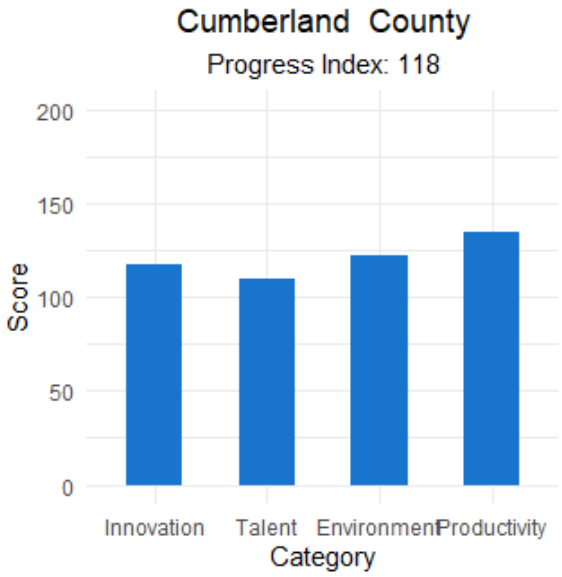
In 2020, the population of Cumberland County was 61,145 and its average annual manufacturing employment (NAICS 31-33) was 2,056.

Total private sector employment was 14,822 and manufacturing employment was 13.9 percent of the total. That is approximately 3.4 manufacturing employees per hundred residents and ranks number 64 among all counties. The average annual wage and salary for manufacturing workers is $47,471. This ranks number 61 among all counties. For additional demographic information on Cumberland County, see the Census Quick Fact link.







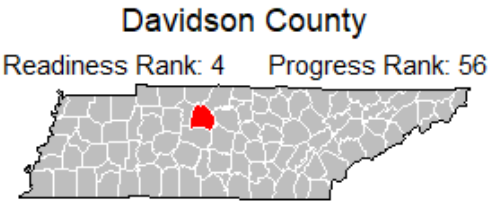


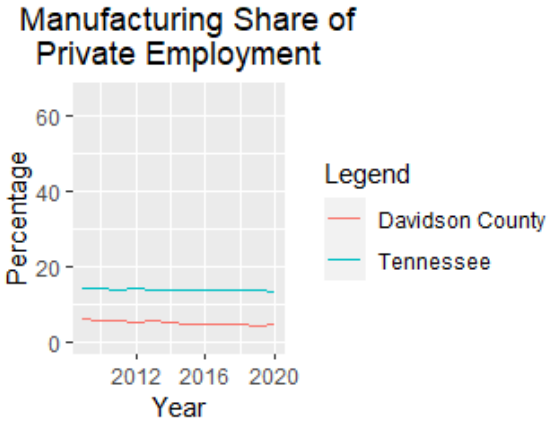
Cumberland County's readiness index was 128, ranking it 30th out of 95 counties. The environment component was the strongest component ranking 8th overall. The county's progress index value was 118, ranking it 76th out of 95 counties. For progress, productivity was the strongest component ranking 23rd overall.

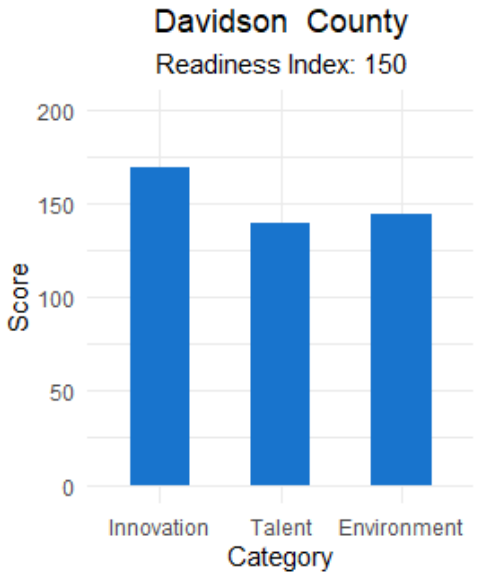
Davidson County

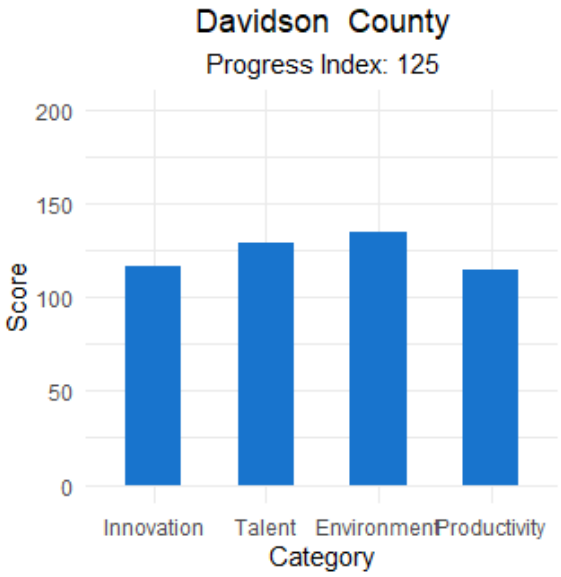
In 2020, the population of Davidson County was 715,884 and its average annual manufacturing employment (NAICS 31-33) was 19,685.

Total private sector employment was 426,709 and manufacturing employment was 4.6 percent of the total. That is approximately 2.7 manufacturing employees per hundred residents and ranks number 70 among all counties. The average annual wage and salary for manufacturing workers is $62,494. This ranks number 19 among all counties. For additional demographic information on Davidson County, see the Census Quick Fact link.







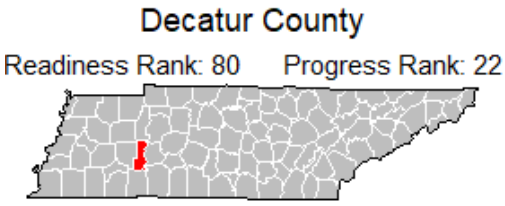


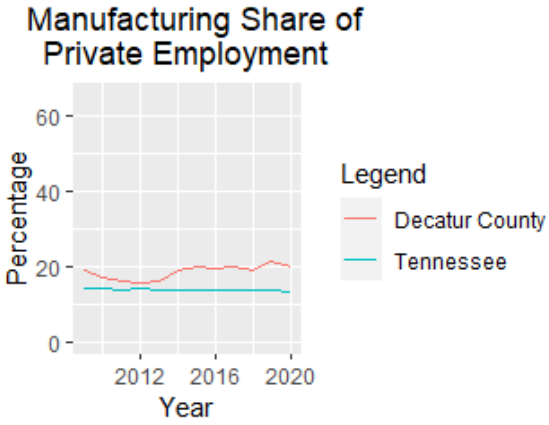
Davidson County's readiness index was 150, ranking it 4th out of 95 counties. The innovation component was extremely strong ranking 1st overall. The county's progress index value was 125, ranking it 56th out of 95 counties. For progress, talent was the strongest ranking 43rd overall.

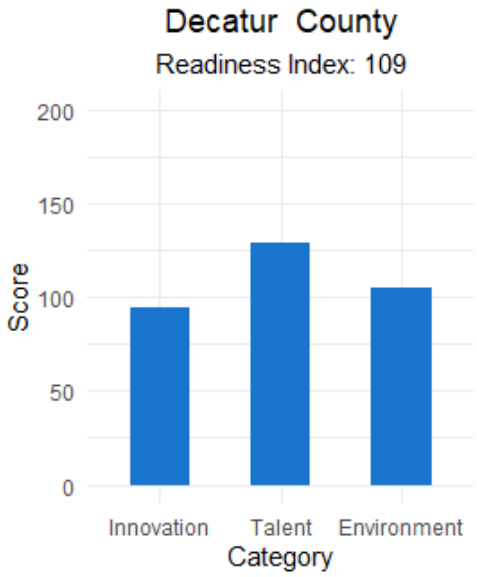
Decatur County

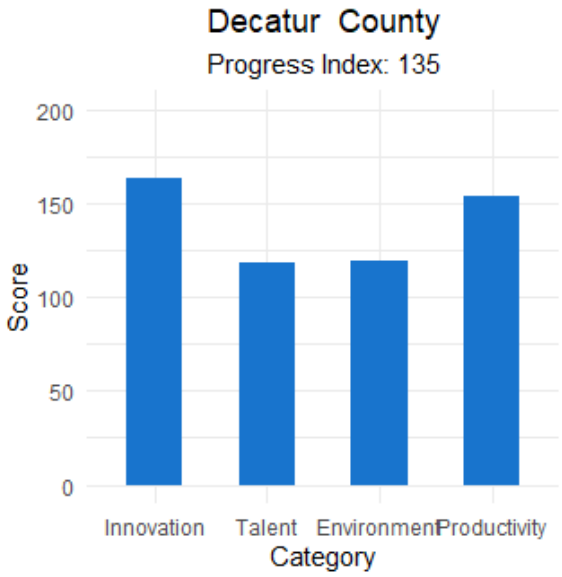
In 2020, the population of Decatur County was 11,435 and its average annual manufacturing employment (NAICS 31-33) was 523.

Total private sector employment was 2,615 and manufacturing employment was 20.0 percent of the total. That is approximately 4.6 manufacturing employees per hundred residents and ranks number 51 among all counties. The average annual wage and salary for manufacturing workers is $43,223. This ranks number 73 among all counties. For additional demographic information on Decatur County, see the Census Quick Fact link.







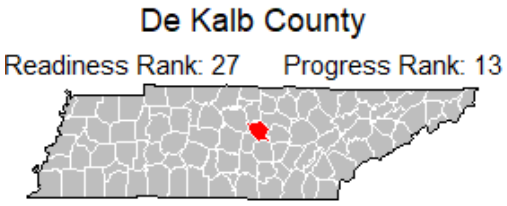


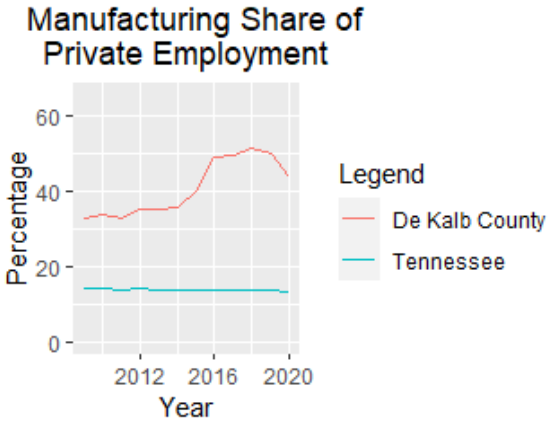
Decatur County's readiness index was 109, ranking it 80th out of 95 counties. The talent component was strongest ranking 44th overall. The county's progress index value was 135, ranking it 22nd out of 95 counties. For progress, innovation had the strongest ranking at 10th overall. Productivity was also strong at 12th.

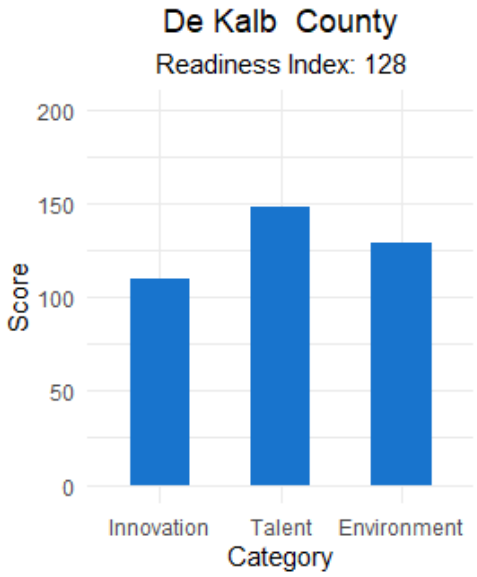
De Kalb County

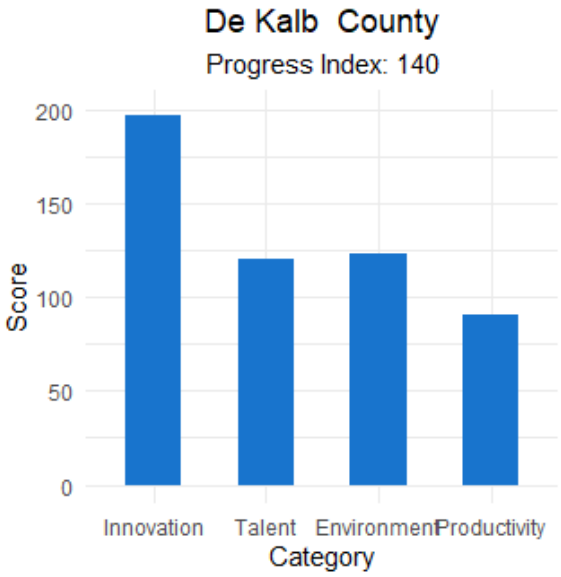
In 2020, the population of De Kalb County was 20,080 and its average annual manufacturing employment (NAICS 31-33) was 1,954.

Total private sector employment was 4,460 and manufacturing employment was 43.8 percent of the total. That is approximately 9.7 manufacturing employees per hundred residents and ranks number 6 among all counties. The average annual wage and salary for manufacturing workers is $52,816. This ranks number 43 among all counties. For additional demographic information on De Kalb County, see the Census Quick Fact link.







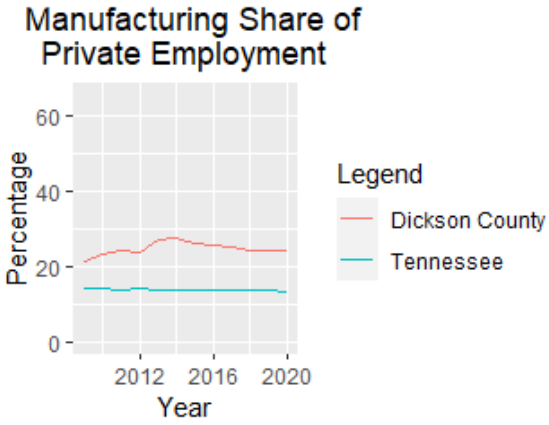


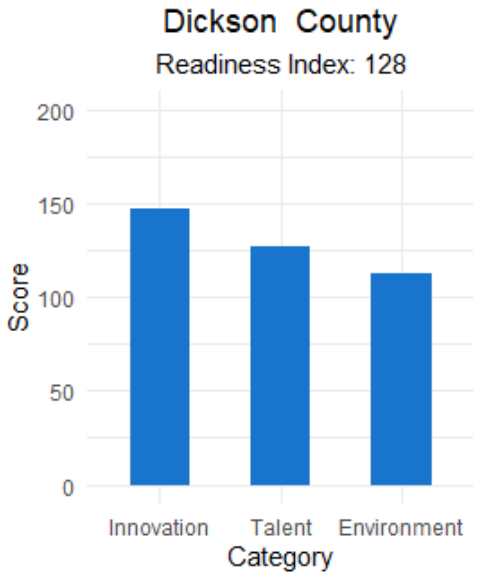
De Kalb County's readiness index was 128, ranking it 27th out of 95 counties. The talent component was strongest ranking 11th overall. The county's progress index value was 140, ranking it 13th out of 95 counties. For progress, innovation was extremely strong ranking 3rd overall.

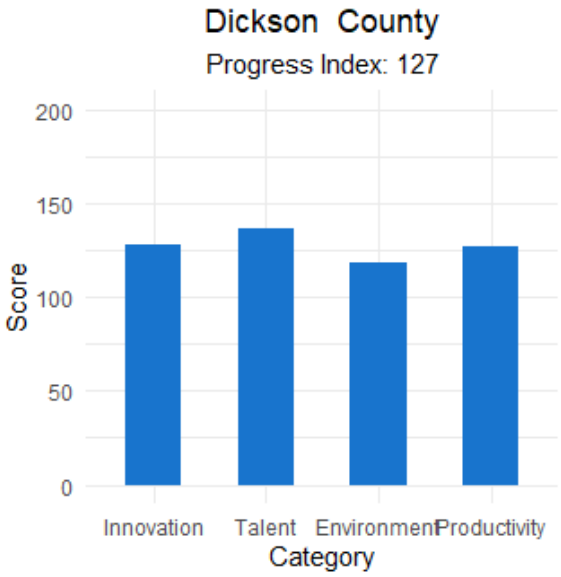
Dickson County

In 2020, the population of Dickson County was 54,315 and its average annual manufacturing employment (NAICS 31-33) was 3,520.

Total private sector employment was 14,577 and manufacturing employment was 24.1 percent of the total. That is approximately 6.5 manufacturing employees per hundred residents and ranks number 33 among all counties. The average annual wage and salary for manufacturing workers is $54,595. This ranks number 39 among all counties. For additional demographic information on Dickson County, see the Census Quick Fact link.





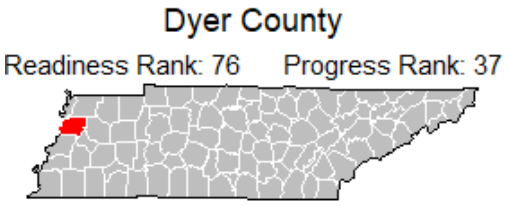


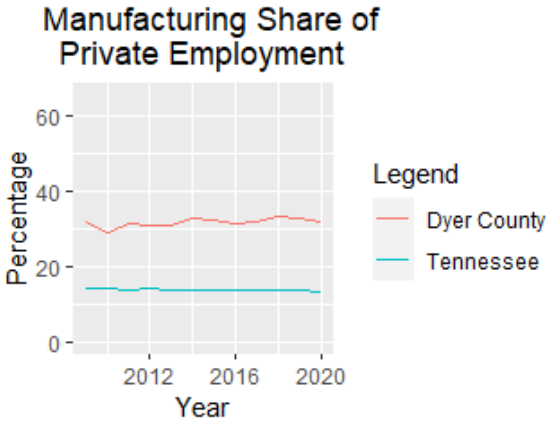
Dickson County's readiness index was 128, ranking it 28th out of 95 counties. The innovation component was strongest ranking 10th overall. The county's progress index value was 127, ranking it 46th out of 95 counties. For progress, innovation and productivity had the highest component rankings at 29th and 28th respectively.

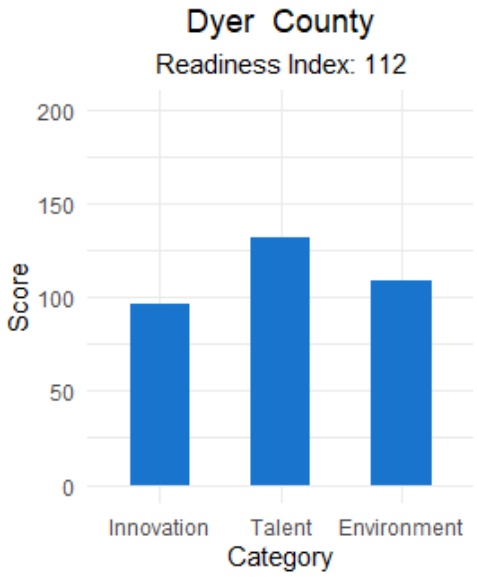
Dyer County

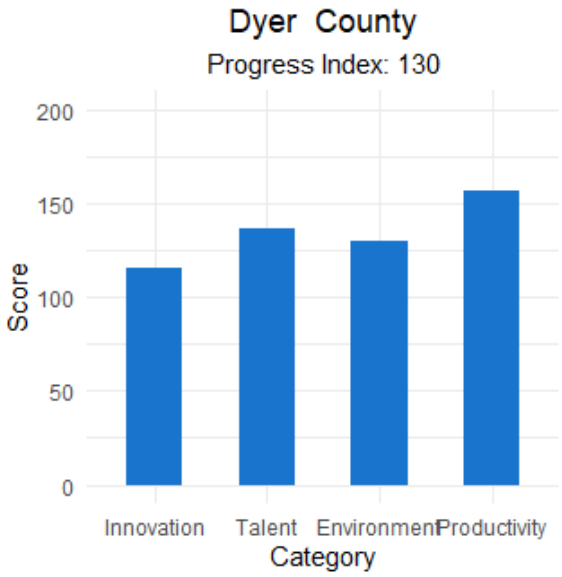
In 2020, the population of Dyer County was 36,801 and its average annual manufacturing employment (NAICS 31-33) was 3,743.

Total private sector employment was 11,723 and manufacturing employment was 31.9 percent of the total. That is approximately 10.2 manufacturing employees per hundred residents and ranks number 5 among all counties. The average annual wage and salary for manufacturing workers is $56,844. This ranks number 28 among all counties. For additional demographic information on Dyer County, see the Census Quick Fact link.







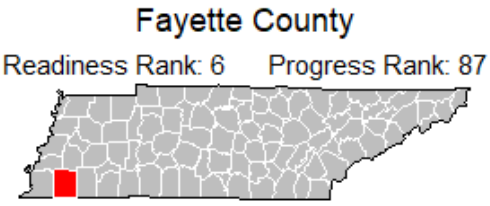


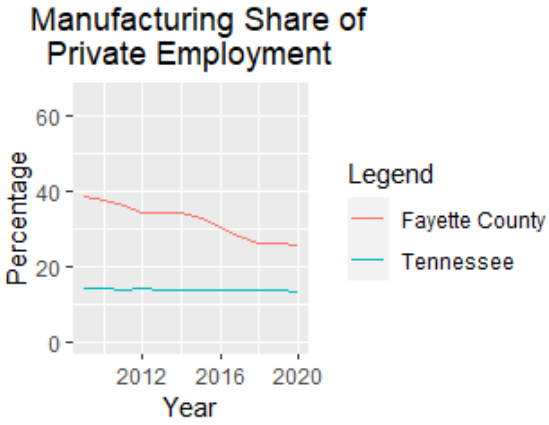
Dyer County's readiness index was 112, ranking it 76th out of 95 counties. The talent component was strongest ranking 36th overall. The county's progress index value was 130, ranking it 37th out of 95 counties. For progress, productivity had the highest component rank at 10th overall.

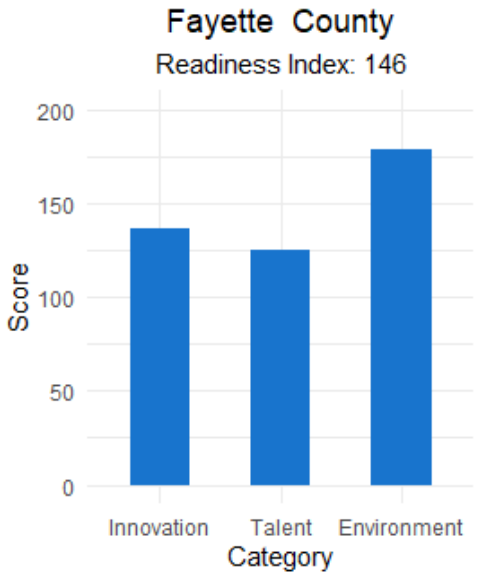
Fayette County

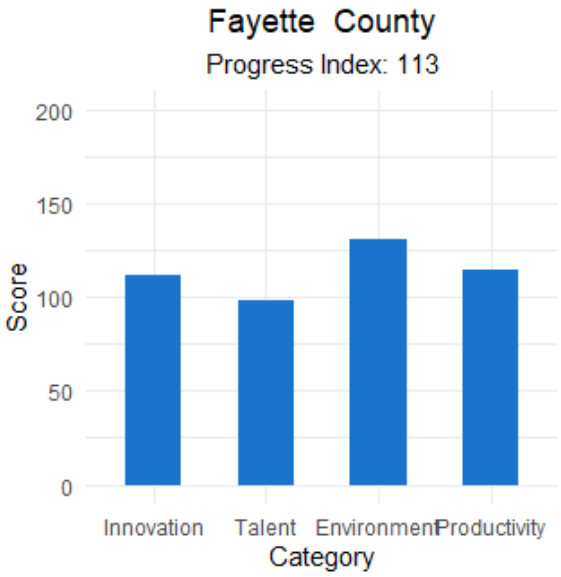
In 2020, the population of Fayette County was 41,990 and its average annual manufacturing employment (NAICS 31-33) was 1,666.

Total private sector employment was 6,476 and manufacturing employment was 25.7 percent of the total. That is approximately 4.0 manufacturing employees per hundred residents and ranks number 56 among all counties. The average annual wage and salary for manufacturing workers is $58,285. This ranks number 22 among all counties. For additional demographic information on Fayette County, see the Census Quick Fact link.







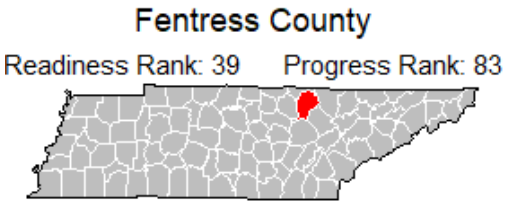


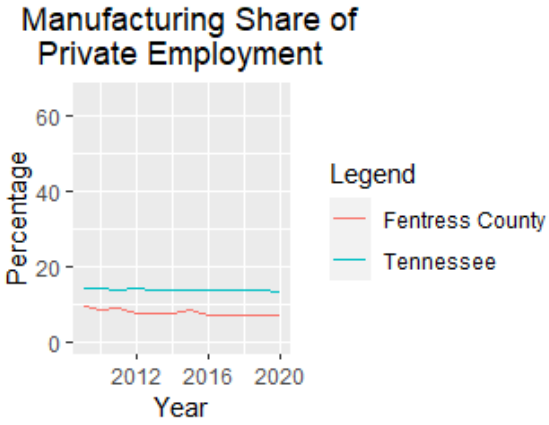
Fayette County's readiness index was 146, ranking it 6th out of 95 counties. The environment component was extremely strong ranking 1st overall. The county's progress index value was 113, ranking it 87th out of 95 counties. For progress, environment had the highest component ranking at 58th overall.

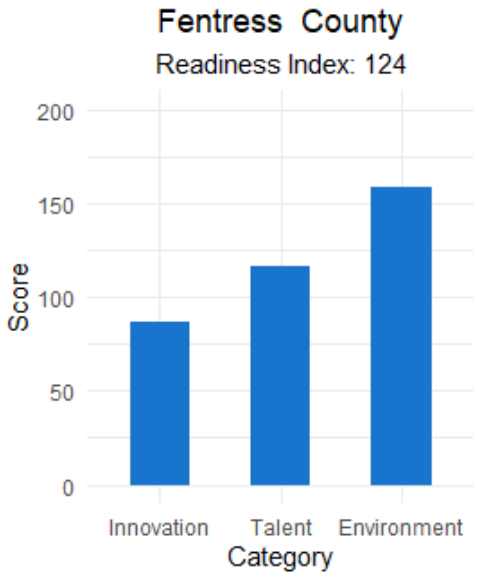
Fentress County

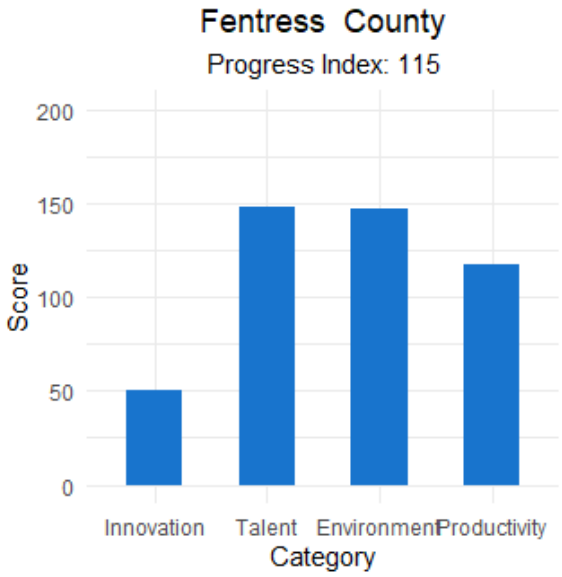
In 2020, the population of Fentress County was 18,489 and its average annual manufacturing employment (NAICS 31-33) was 291.

Total private sector employment was 4,174 and manufacturing employment was 7.0 percent of the total. That is approximately 1.6 manufacturing employees per hundred residents and ranks number 85 among all counties. The average annual wage and salary for manufacturing workers is $32,785. This ranks number 90 among all counties. For additional demographic information on Fentress County, see the Census Quick Fact link.







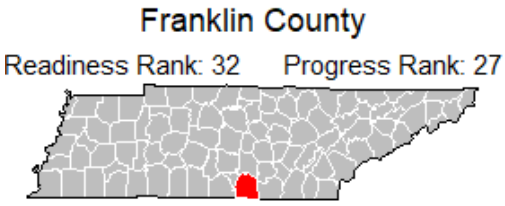


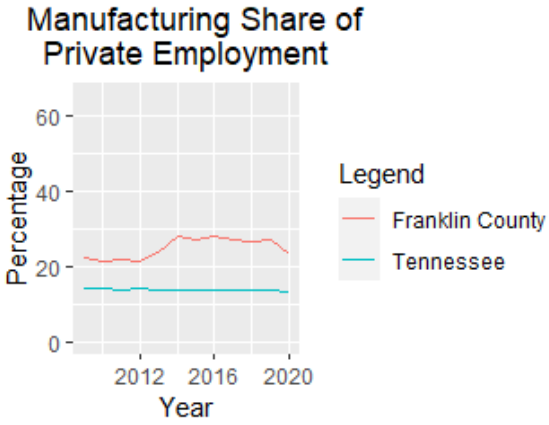
Fentress County's readiness index was 124, ranking it 39th out of 95 counties. The environment component was extremely strong ranking 6th overall. The county's progress index value was 115, ranking it 83rd out of 95 counties. For progress, talent and environment had the highest component rankings at 27th and 24th respectively.

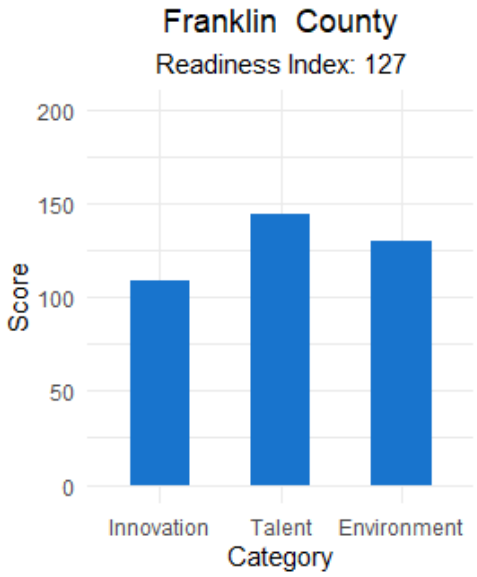
Franklin County

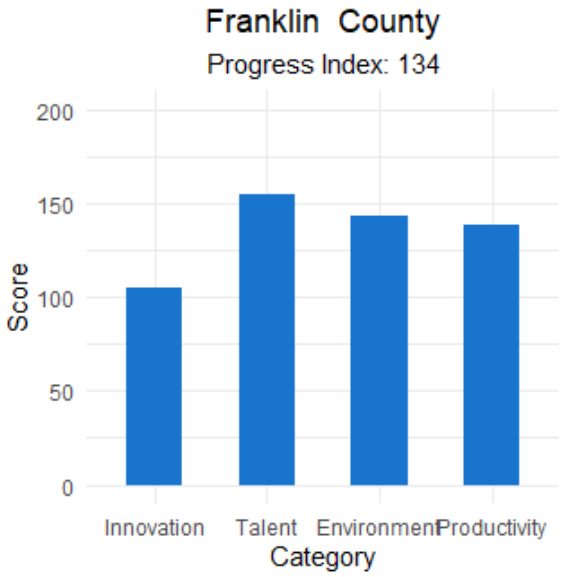
In 2020, the population of Franklin County was 42,774 and its average annual manufacturing employment (NAICS 31-33) was 2,117.

Total private sector employment was 9,136 and manufacturing employment was 23.2 percent of the total. That is approximately 4.9 manufacturing employees per hundred residents and ranks number 46 among all counties. The average annual wage and salary for manufacturing workers is $47,131. This ranks number 64 among all counties. For additional demographic information on Franklin County, see the Census Quick Fact link.







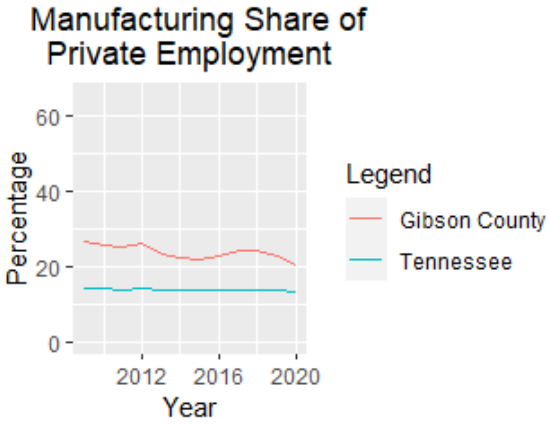


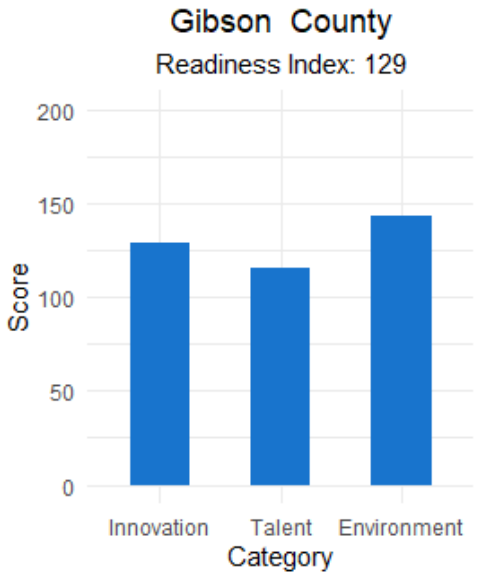
Franklin County's readiness index was 127, ranking it 32nd out of 95 counties. The talent component was strongest and ranked 15th overall. The county's progress index value was 134, ranking it 27th out of 95 counties. For progress, talent and productivity had the highest component rankings where both were 20th.

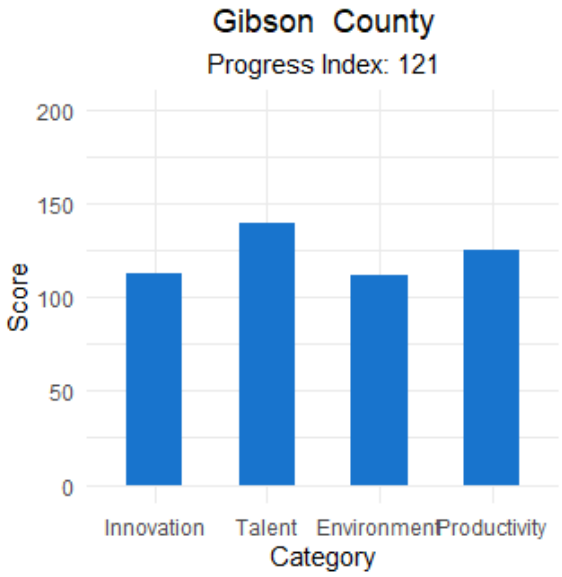
Gibson County

In 2020, the population of Gibson County was 50,429 and its average annual manufacturing employment (NAICS 31-33) was 2,317.

Total private sector employment was 11,402 and manufacturing employment was 20.3 percent of the total. That is approximately 4.6 manufacturing employees per hundred residents and ranks number 50 among all counties. The average annual wage and salary for manufacturing workers is $56,634. This ranks number 29 among all counties. For additional demographic information on Gibson County, see the Census Quick Fact link.





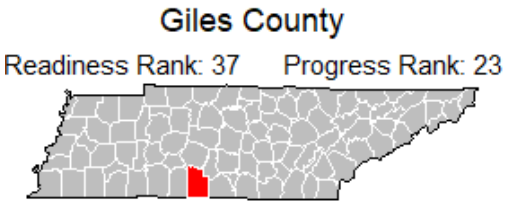


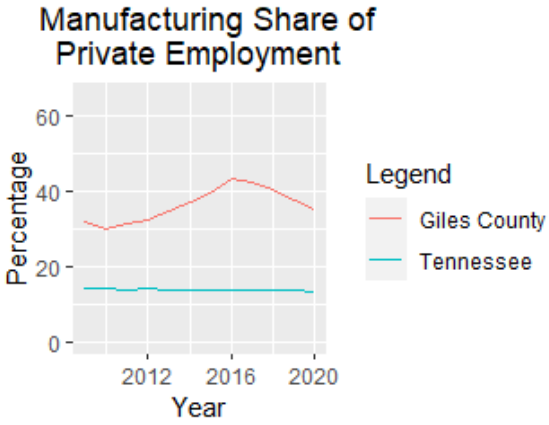
Gibson County's readiness index was 129, ranking it 25th out of 95 counties. The environment component was strongest and ranked 12th overall. The county's progress index value was 121, ranking it 64th out of 95 counties. For progress, talent and productivity had the highest component rankings at 34th and 32nd respectively.

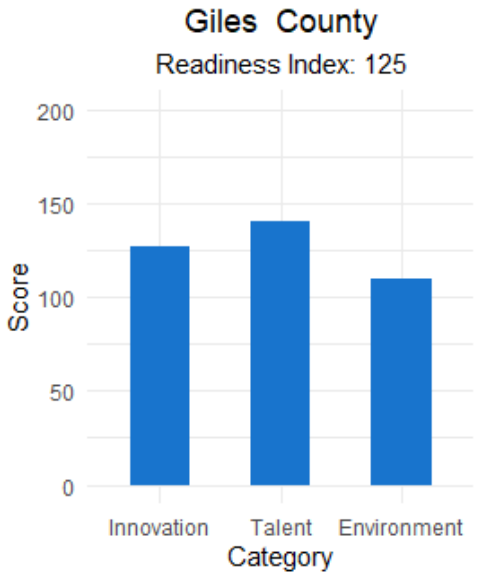
Giles County

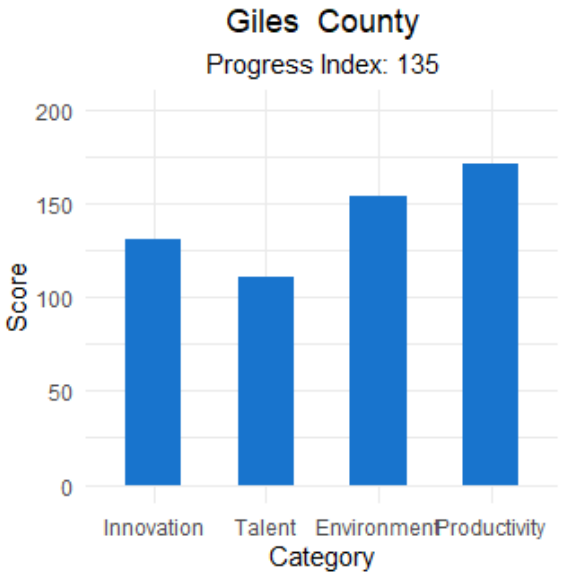
In 2020, the population of Giles County was 30,346 and its average annual manufacturing employment (NAICS 31-33) was 2,852.

Total private sector employment was 8,116 and manufacturing employment was 35.1 percent of the total. That is approximately 9.4 manufacturing employees per hundred residents and ranks number 7 among all counties. The average annual wage and salary for manufacturing workers is $53,107. This ranks number 42 among all counties. For additional demographic information on Giles County, see the Census Quick Fact link.







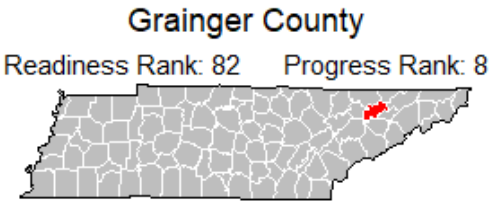


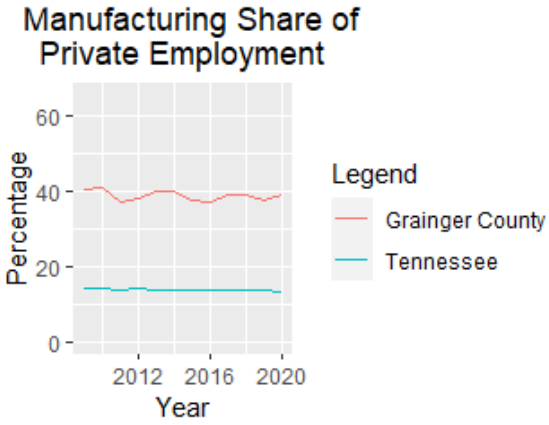
Giles County's readiness index was 125, ranking it 37th out of 95 counties. The talent component was strongest ranking 21st overall. The county's progress index value was 135, ranking it 23rd out of 95 counties. For progress, environment and productivity had the highest component rankings at 16th and 3rd respectively.

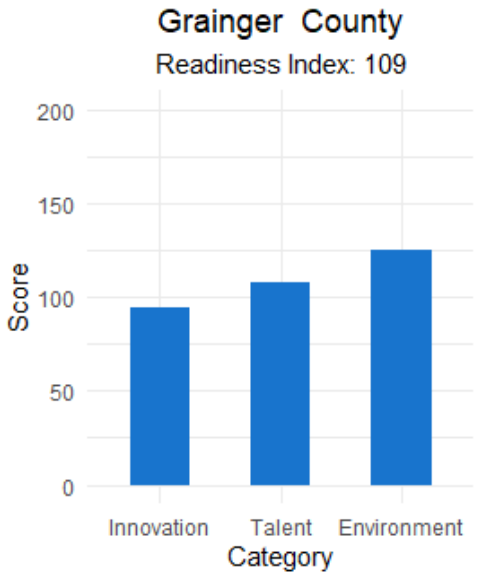
Grainger County

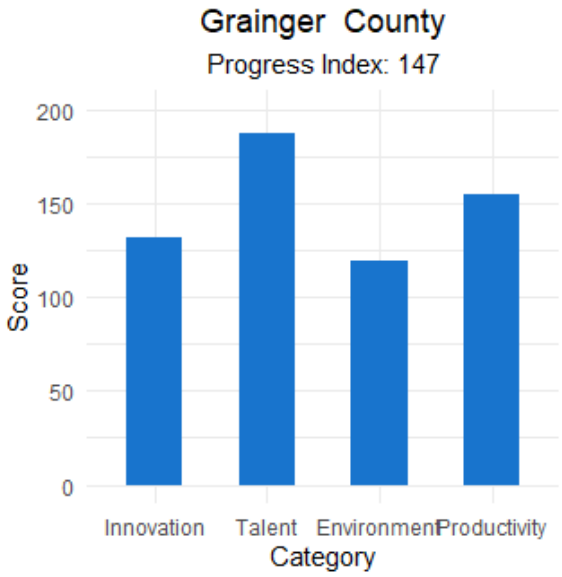
In 2020, the population of Grainger County was 23,527 and its average annual manufacturing employment (NAICS 31-33) was 1,225.

Total private sector employment was 3,151 and manufacturing employment was 38.9 percent of the total. That is approximately 5.2 manufacturing employees per hundred residents and ranks number 44 among all counties. The average annual wage and salary for manufacturing workers is $51,532. This ranks number 49 among all counties. For additional demographic information on Grainger County, see the Census Quick Fact link.







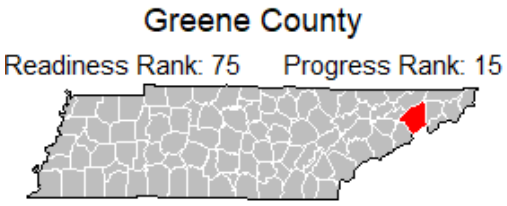


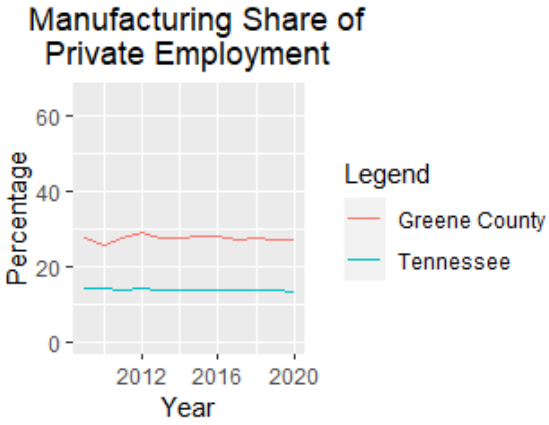
Grainger County's readiness index was 109, ranking it 82nd out of 95 counties. The environment component was the strongest ranking 37th overall. The county's progress index value was strong at 147, ranking it 8th out of 95 counties. For progress, talent and productivity had the highest component rankings at 4th and 11th respectively.

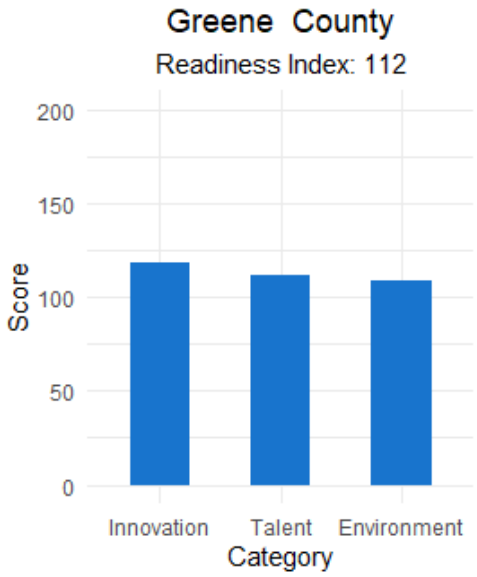
Greene County

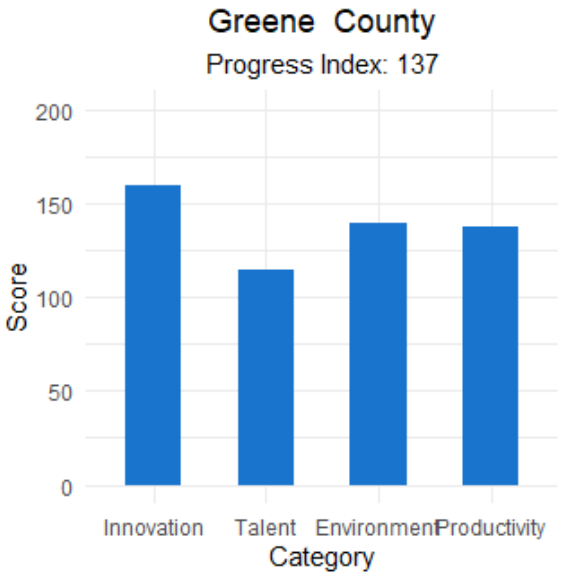
In 2020, the population of Greene County was 70,152 and its average annual manufacturing employment (NAICS 31-33) was 5,494.

Total private sector employment was 20,536 and manufacturing employment was 26.8 percent of the total. That is approximately 7.8 manufacturing employees per hundred residents and ranks number 16 among all counties. The average annual wage and salary for manufacturing workers is $55,323. This ranks number 37 among all counties. For additional demographic information on Greene County, see the Census Quick Fact link.







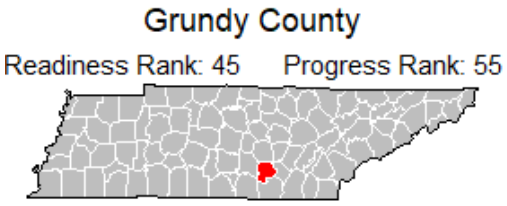


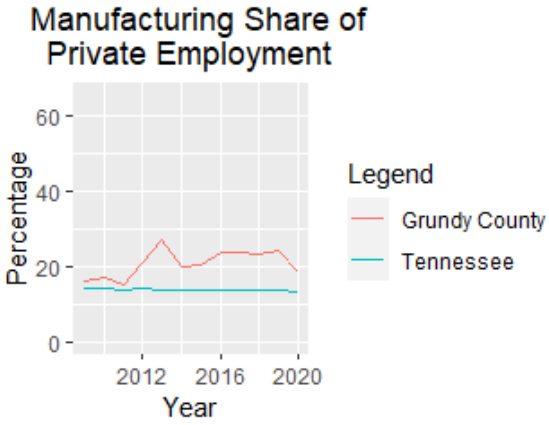
Greene County's readiness index was 112, ranking it 75th out of 95 counties. The innovation component was the strongest ranking 47th overall. The county's progress index value was strong at 137, ranking it 15th out of 95 counties. For progress, innovation and productivity had the highest component rankings at 12th and 21st respectively.

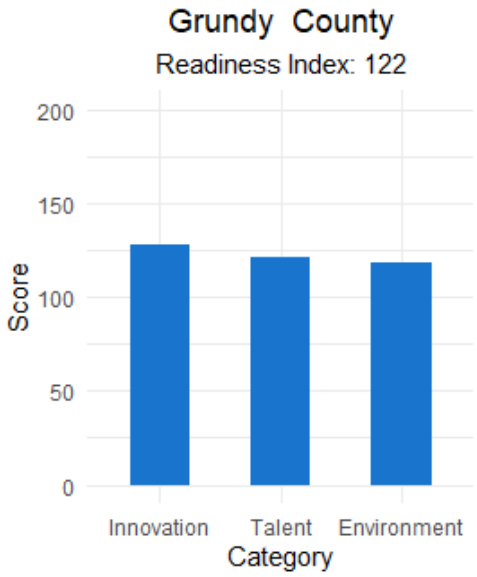
Grundy County

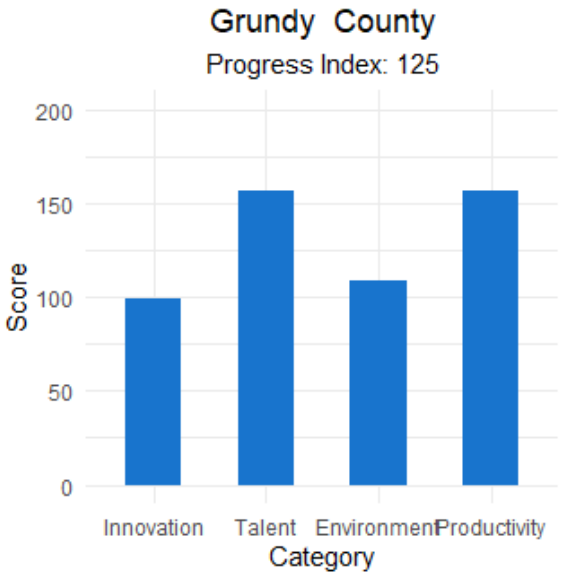
In 2020, the population of Grundy County was 13,529 and its average annual manufacturing employment (NAICS 31-33) was 259.

Total private sector employment was 1,391 and manufacturing employment was 18.6 percent of the total. That is approximately 1.9 manufacturing employees per hundred residents and ranks number 83 among all counties. The average annual wage and salary for manufacturing workers is $35,588. This ranks number 86 among all counties. For additional demographic information on Grundy County, see the Census Quick Fact link.







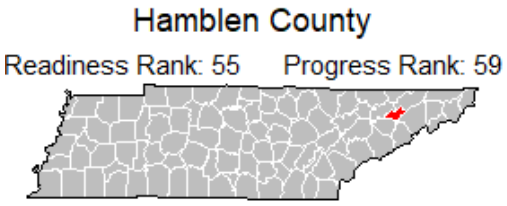


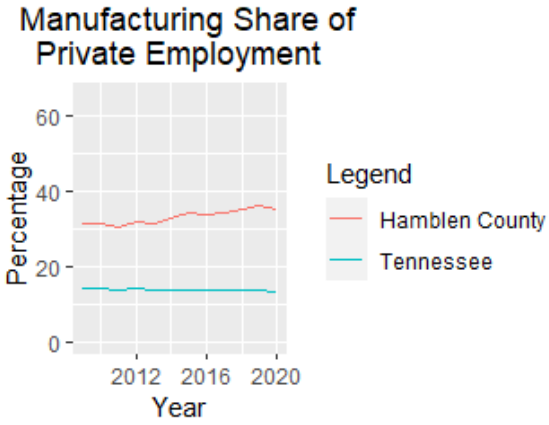
Grundy County's readiness index was 122, ranking it 45th out of 95 counties. The innovation component was the strongest ranking 30th overall. The county's progress index value was 125, ranking it 55th out of 95 counties. For progress, talent and productivity had the highest component rankings at 17th and 9th respectively.

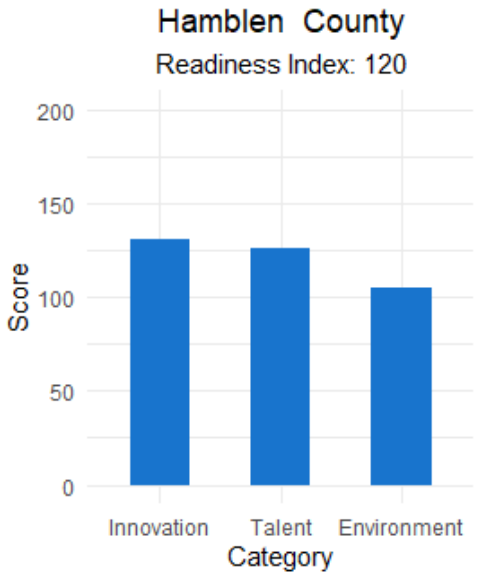
Hamblen County

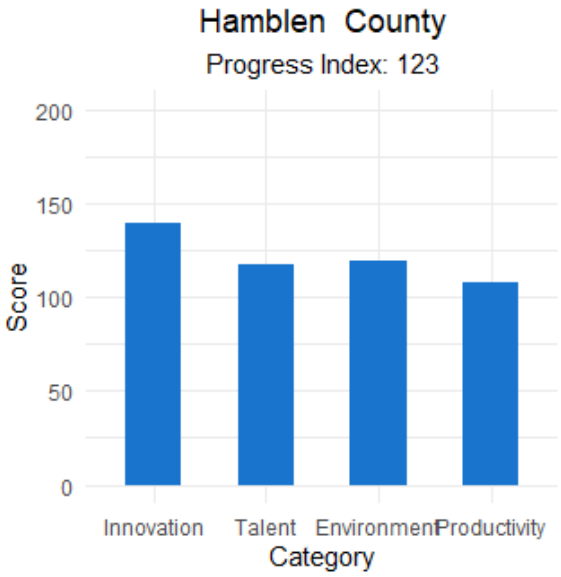
In 2020, the population of Hamblen County was 64,499 and its average annual manufacturing employment (NAICS 31-33) was 9,633.

Total private sector employment was 27,547 and manufacturing employment was 35.0 percent of the total. That is approximately 14.9 manufacturing employees per hundred residents and ranks number 2 among all counties. The average annual wage and salary for manufacturing workers is $49,503. This ranks number 59 among all counties. For additional demographic information on Hamblen County, see the Census Quick Fact link.







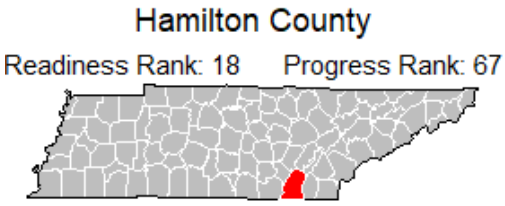


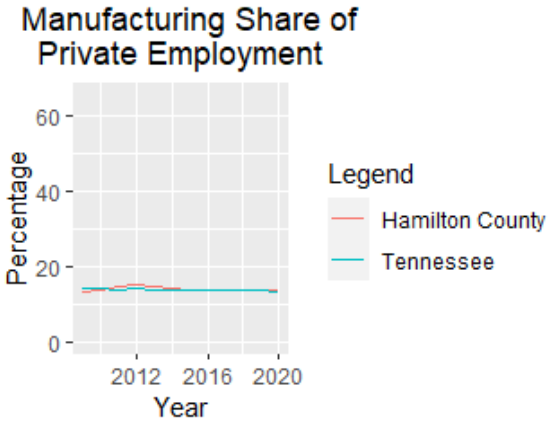
Hamblen County's readiness index was 120, ranking it 55th out of 95 counties. The innovation component was the strongest ranking 24th overall. The county's progress index value was 123, ranking it 59th out of 95 counties. For progress, innovation had the highest component ranking at 23rd overall.

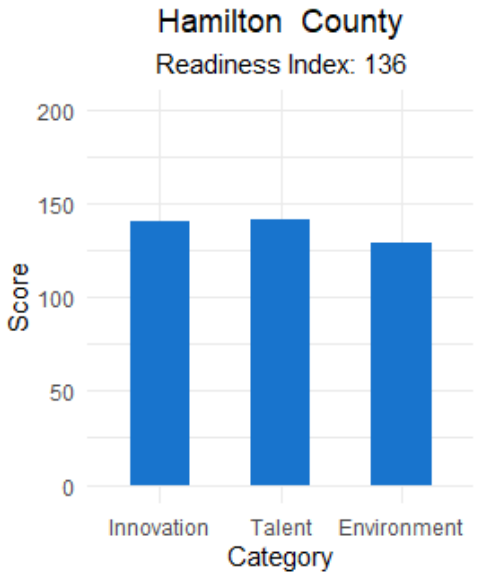
Hamilton County

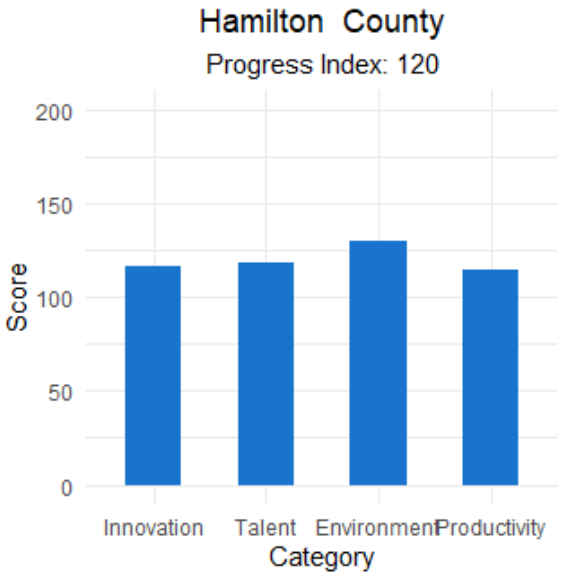
In 2020, the population of Hamilton County was 366,207 and its average annual manufacturing employment (NAICS 31-33) was 23,725.

Total private sector employment was 171,283 and manufacturing employment was 13.9 percent of the total. That is approximately 6.5 manufacturing employees per hundred residents and ranks number 34 among all counties. The average annual wage and salary for manufacturing workers is $65,583. This ranks number 13 among all counties. For additional demographic information on Hamilton County, see the Census Quick Fact link.









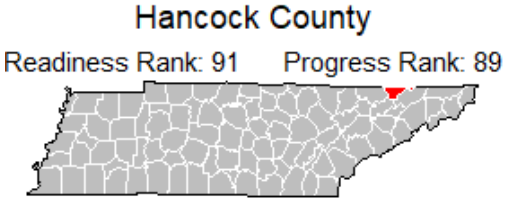
Hamilton County's readiness index was 136, ranking it 18th out of 95 counties. The innovation component was the strongest ranking 16th overall. The county's progress index value was 120, ranking it 67th out of 95 counties. For progress, innovation had the highest component ranking at 47th overall.

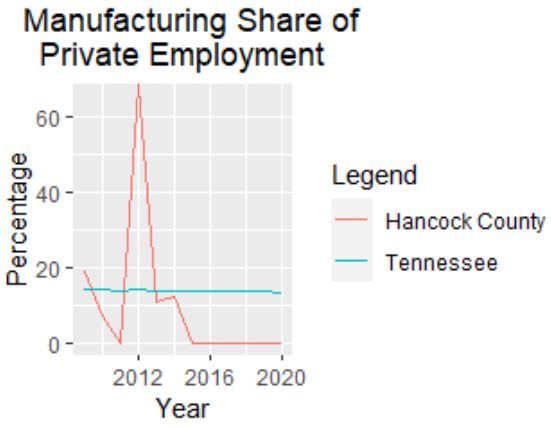
Hancock County

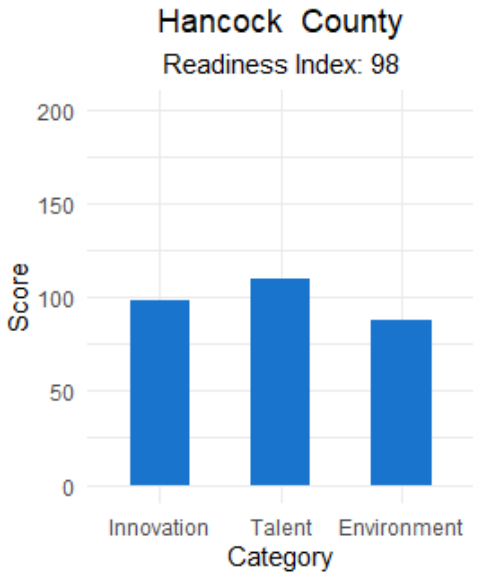
In 2020, the population of Hancock County was 6,662 and its average annual manufacturing employment (NAICS 31-33) was unavailable.

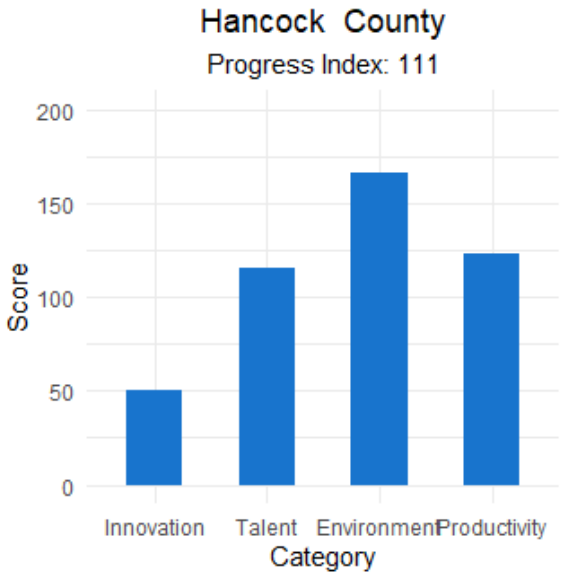
Total private sector employment was 471. Though there were three manufacturing establishments, manufacturing employment and wage information was not disclosable under BLS privacy guidelines.

For additional demographic information on Hancock County, see the Census Quick Fact link.







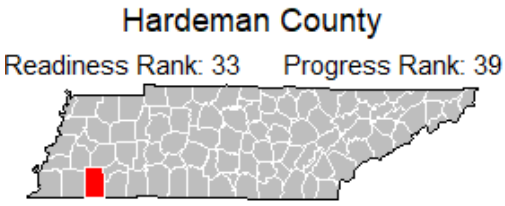


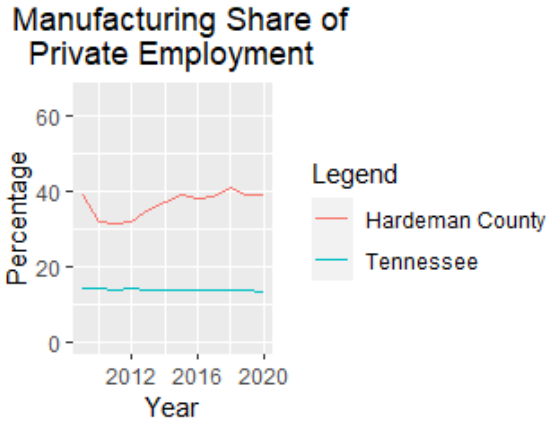
Hancock County's readiness index was 98, ranking it 91st out of 95 counties. The innovation component was the strongest ranking 79th overall. The county's progress index value was 111, ranking it 89th out of 95 counties. For progress, environment was extremely strong with a component ranking of 6th overall.

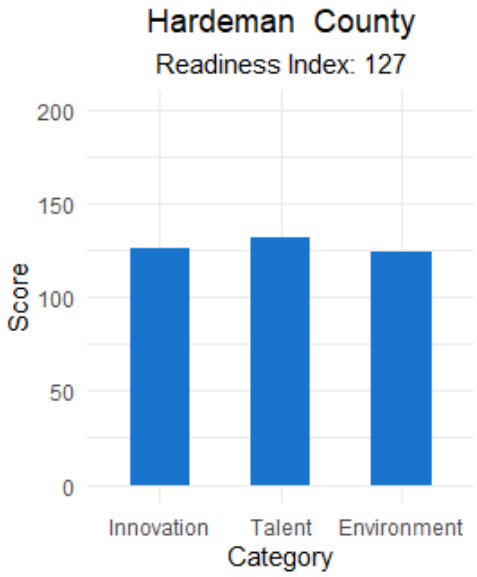
Hardeman County

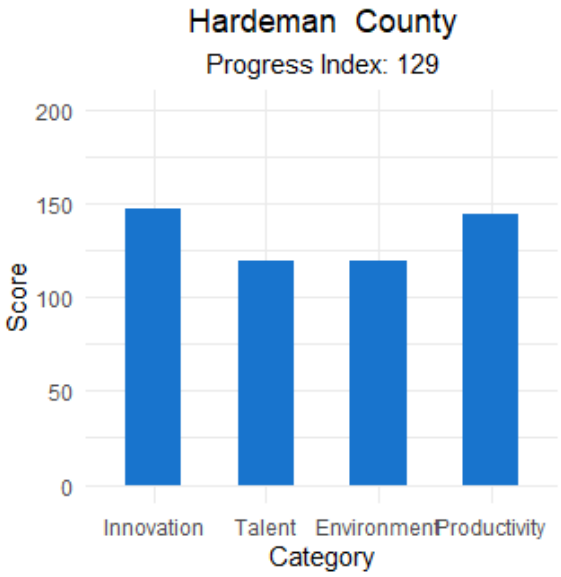
In 2020, the population of Hardeman County was 25,462 and its average annual manufacturing employment (NAICS 31-33) was 1,892.

Total private sector employment was 4,849 and manufacturing employment was 39.0 percent of the total. That is approximately 7.4 manufacturing employees per hundred residents and ranks number 20 among all counties. The average annual wage and salary for manufacturing workers is $55,962. This ranks number 32 among all counties. For additional demographic information on Hardeman County, see the Census Quick Fact link.







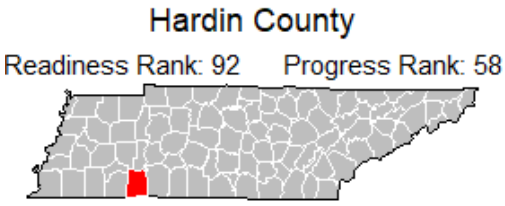


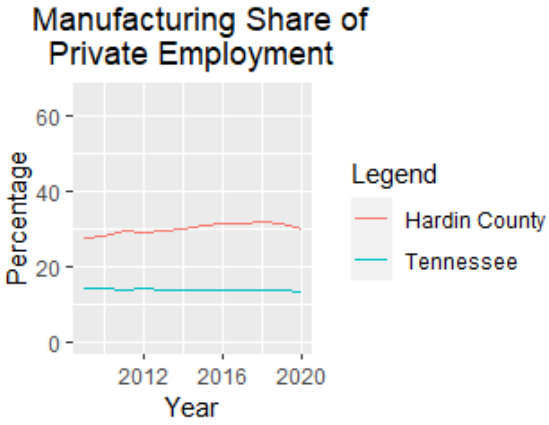
Hardeman County's readiness index was 127, ranking it 33rd out of 95 counties. Readiness component rankings were consistent with the overall ranking and all were in the 30's. The county's progress index value was 129, ranking it 39th out of 95 counties. For progress, innovation and productivity were the strongest components with rankings of 19th and 17th respectively.

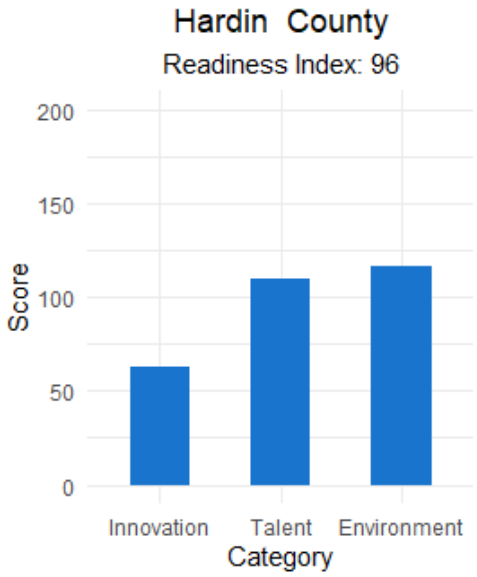
Hardin County

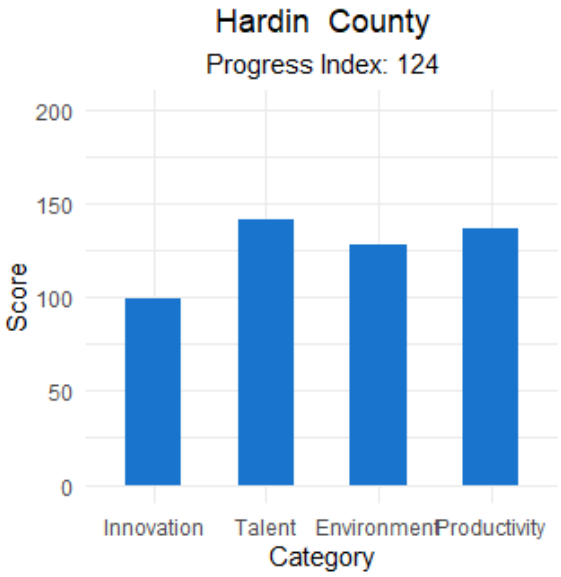
In 2020, the population of Hardin County was 26,831 and its average annual manufacturing employment (NAICS 31-33) was 1,834.

Total private sector employment was 6,166 and manufacturing employment was 29.7 percent of the total. That is approximately 6.8 manufacturing employees per hundred residents and ranks number 28 among all counties. The average annual wage and salary for manufacturing workers is $79,270. This ranks number 5 among all counties. For additional demographic information on Hardin County, see the Census Quick Fact link.







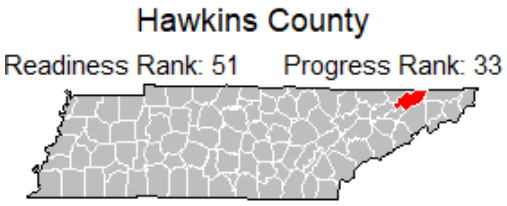


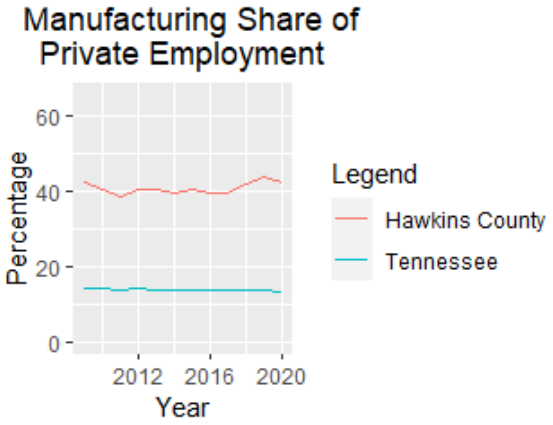
Hardin County's readiness index was 96, ranking it 92nd out of 95 counties. The environment component had the strongest ranking at 59th. The county's progress index value was 124, ranking it 58th out of 95 counties. For progress, talent and productivity were the strongest components with rankings of 33rd and 22nd respectively.

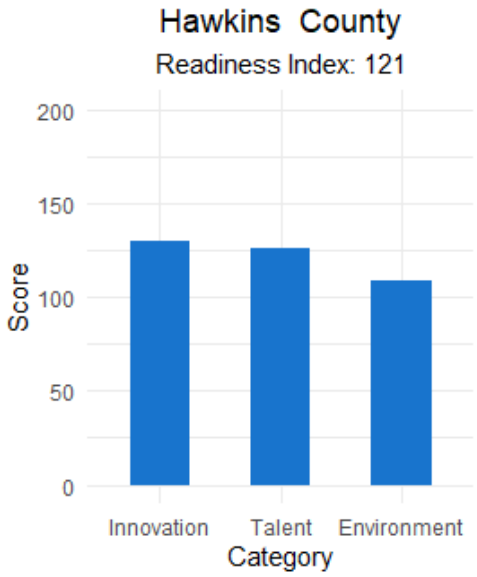
Hawkins County

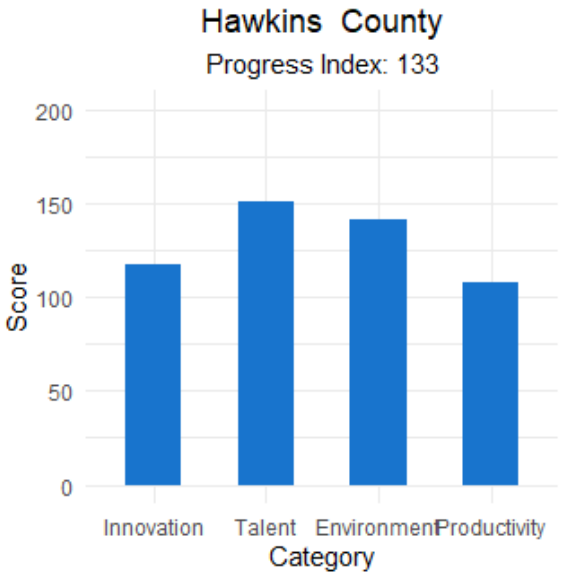
In 2020, the population of Hawkins County was 56,721 and its average annual manufacturing employment (NAICS 31-33) was 4,085.

Total private sector employment was 9,684 and manufacturing employment was 42.2 percent of the total. That is approximately 7.2 manufacturing employees per hundred residents and ranks number 23 among all counties. The average annual wage and salary for manufacturing workers is $58,339. This ranks number 21 among all counties. For additional demographic information on Hawkins County, see the Census Quick Fact link.







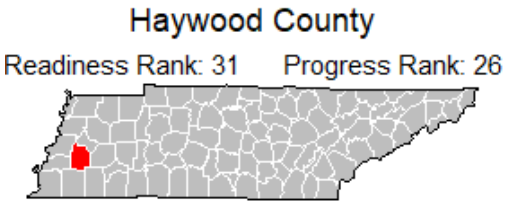


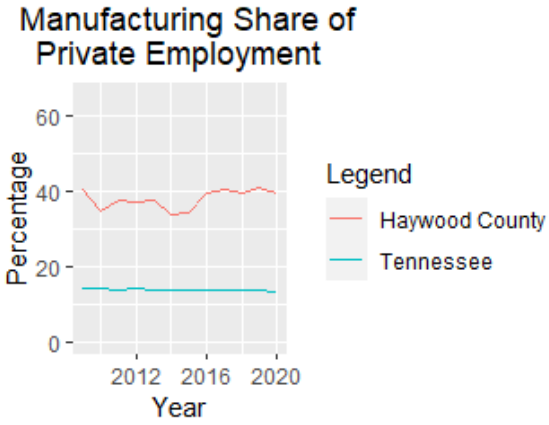
Hawkins County's readiness index was 121, ranking it 51st out of 95 counties. The innovation component had the strongest ranking at 26th. The county's progress index value was 133, ranking it 33rd out of 95 counties. For progress, talent was the strongest component with a ranking of 24th.

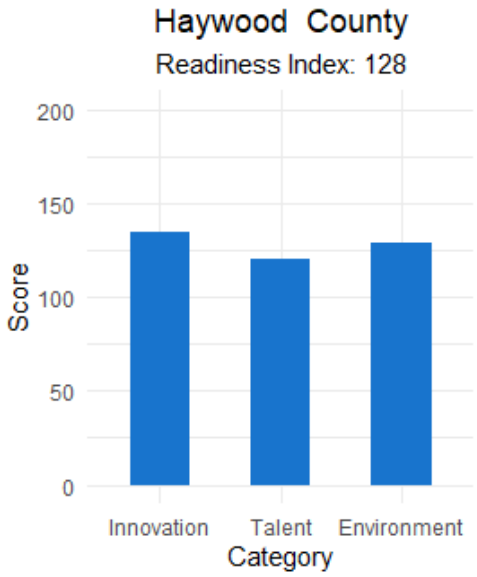
Haywood County

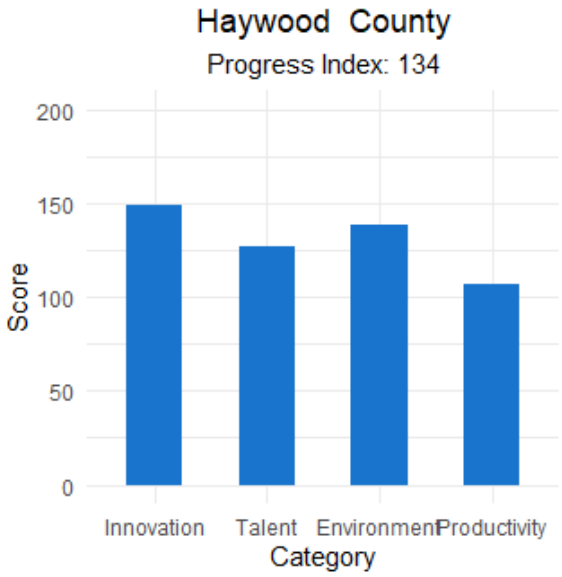
In 2020, the population of Haywood County was 17,864 and its average annual manufacturing employment (NAICS 31-33) was 1,500.

Total private sector employment was 3,819 and manufacturing employment was 39.3 percent of the total. That is approximately 8.4 manufacturing employees per hundred residents and ranks number 14 among all counties. The average annual wage and salary for manufacturing workers is $54,189. This ranks number 40 among all counties. For additional demographic information on Haywood County, see the Census Quick Fact link.







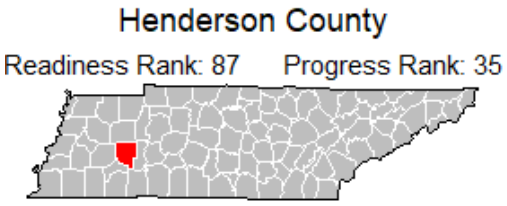


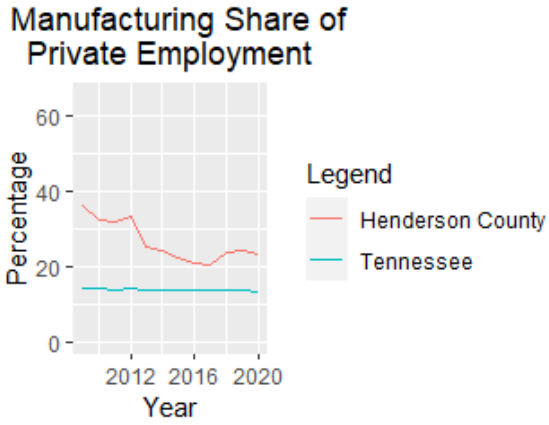
Haywood County's readiness index was 128, ranking it 31st out of 95 counties. The innovation component had the strongest ranking at 18th. The county's progress index value was 134, ranking it 26th out of 95 counties. For progress, innovation was the strongest component with a ranking of 17th.

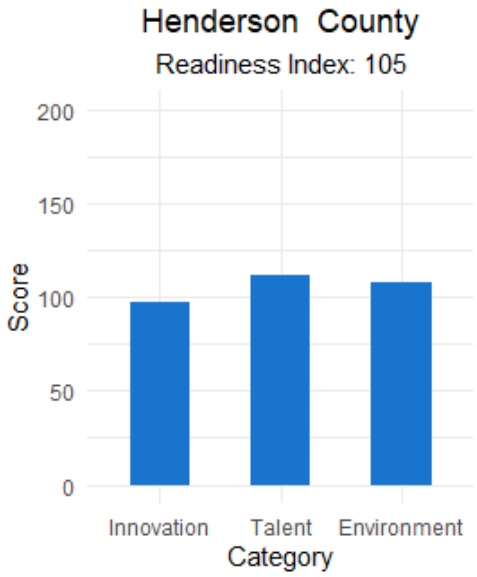
Henderson County

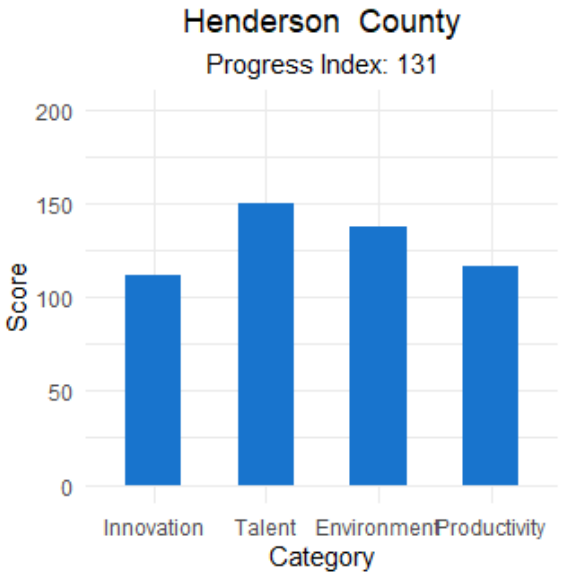
In 2020, the population of Henderson County was 27,842 and its average annual manufacturing employment (NAICS 31-33) was 1,432.

Total private sector employment was 6,208 and manufacturing employment was 23.1 percent of the total. That is approximately 5.1 manufacturing employees per hundred residents and ranks number 45 among all counties. The average annual wage and salary for manufacturing workers is $44,070. This ranks number 72 among all counties. For additional demographic information on Henderson County, see the Census Quick Fact link.







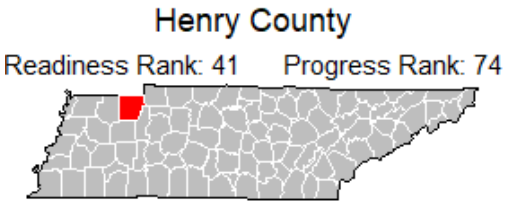


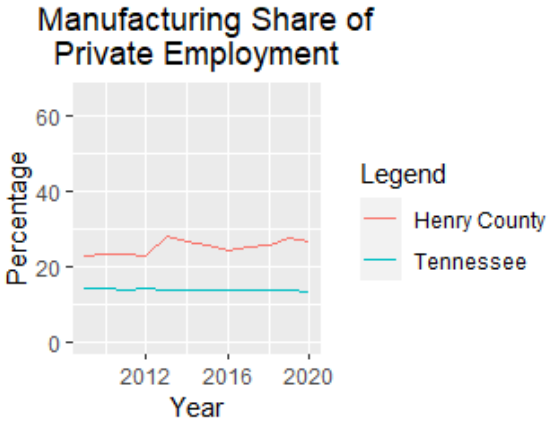
Haywood County's readiness index was 105, ranking it 87th out of 95 counties. The talent and environment components each ranked 76th. The county's progress index value was 131, ranking it 35th out of 95 counties. For progress, talent was the strongest component with a ranking of 25th.

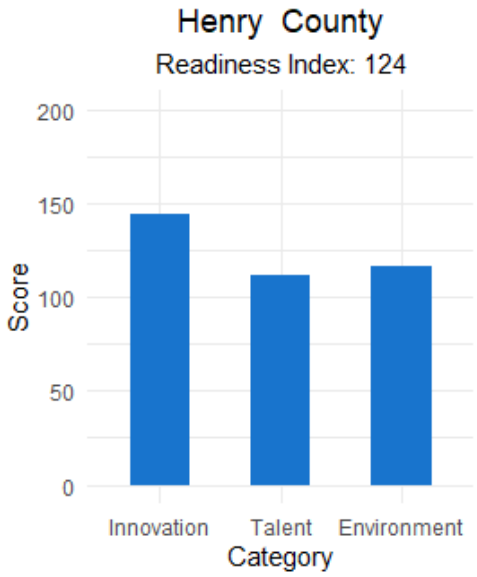
Henry County

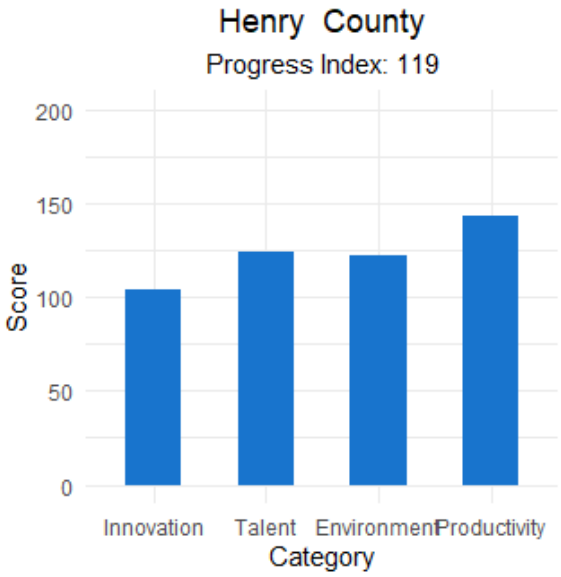
In 2020, the population of Henry County was 32,199 and its average annual manufacturing employment (NAICS 31-33) was 2,279.

Total private sector employment was 8,575 and manufacturing employment was 26.6 percent of the total. That is approximately 7.1 manufacturing employees per hundred residents and ranks number 25 among all counties. The average annual wage and salary for manufacturing workers is $45,934. This ranks number 68 among all counties. For additional demographic information on Henry County, see the Census Quick Fact link.







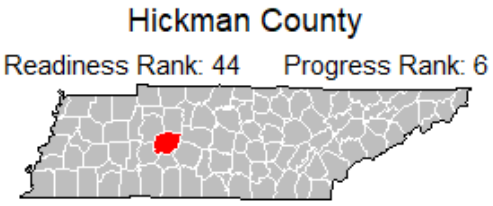


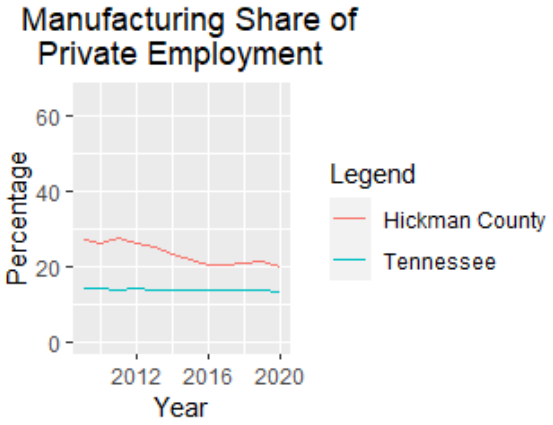
Henry County's readiness index was 124, ranking it 41st out of 95 counties. The innovation component had the strongest ranking at 12th. The county's progress index value was 119, ranking it 74th out of 95 counties. For progress, productivity was the strongest component with a ranking of 18th.

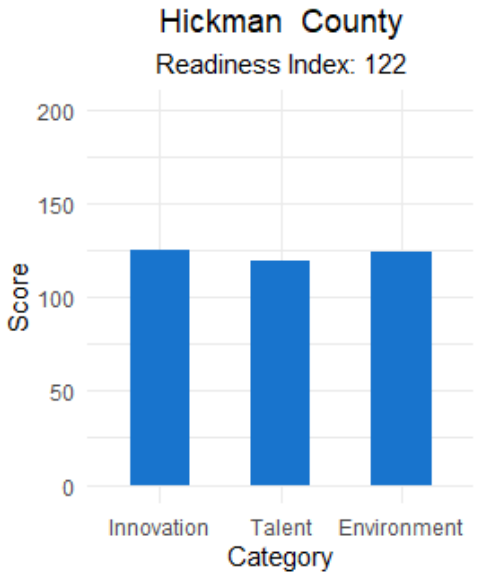
Hickman County

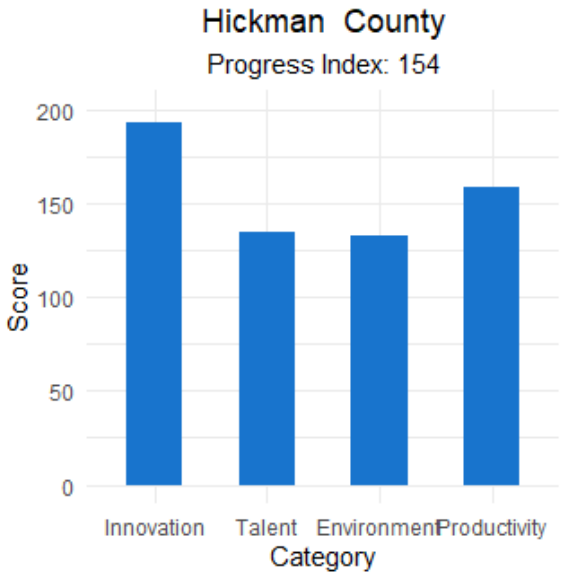
In 2020, the population of Hickman County was 24,925 and its average annual manufacturing employment (NAICS 31-33) was 509.

Total private sector employment was 2,548 and manufacturing employment was 20.0 percent of the total. That is approximately 2.0 manufacturing employees per hundred residents and ranks number 79 among all counties. The average annual wage and salary for manufacturing workers is $51,956. This ranks number 45 among all counties. For additional demographic information on Hickman County, see the Census Quick Fact link.







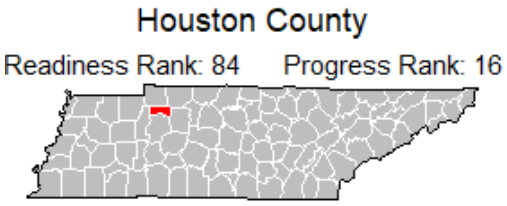


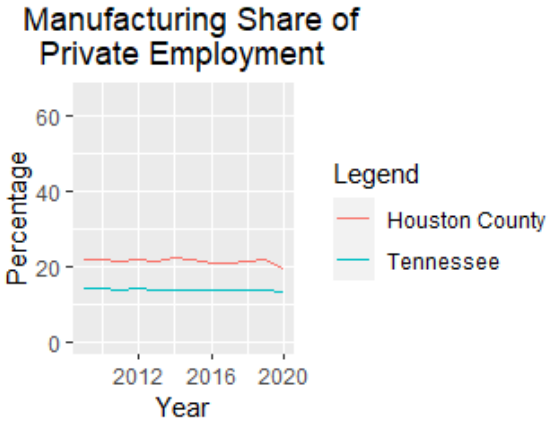
Hickman County's readiness index was 122, ranking it 44th out of 95 counties. The innovation component had the strongest ranking at 38th. The county's progress index value was 154, ranking it 6th out of 95 counties. For progress, innovation and productivity were the strongest components with rankings of 6th and 8th respectively.

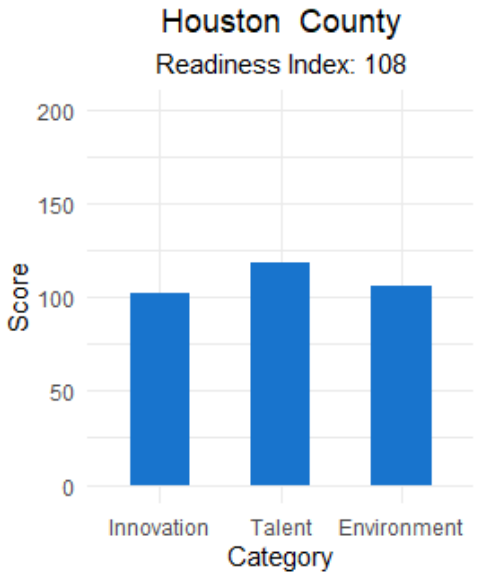
Houston County

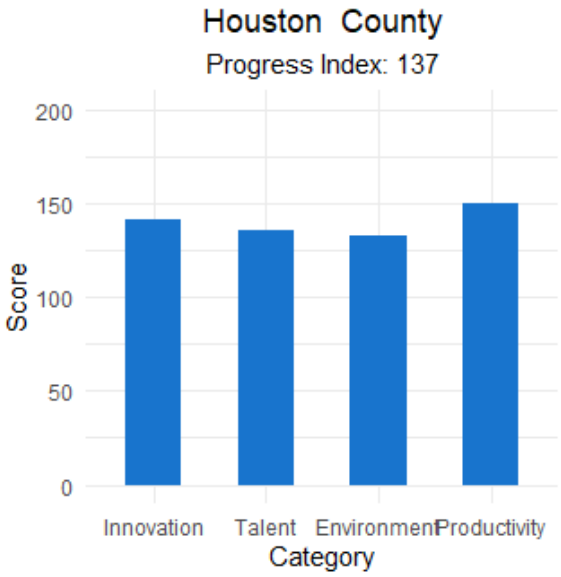
In 2020, the population of Houston County was 8,283 and its average annual manufacturing employment (NAICS 31-33) was 174.

Total private sector employment was 902 and manufacturing employment was 19.3 percent of the total. That is approximately 2.1 manufacturing employees per hundred residents and ranks number 78 among all counties. The average annual wage and salary for manufacturing workers is $45,783. This ranks number 69 among all counties. For additional demographic information on Houston County, see the Census Quick Fact link.







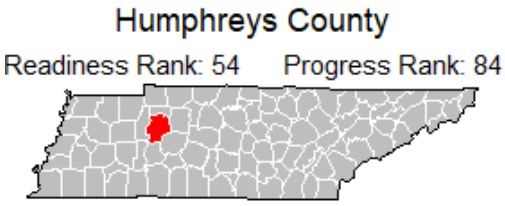


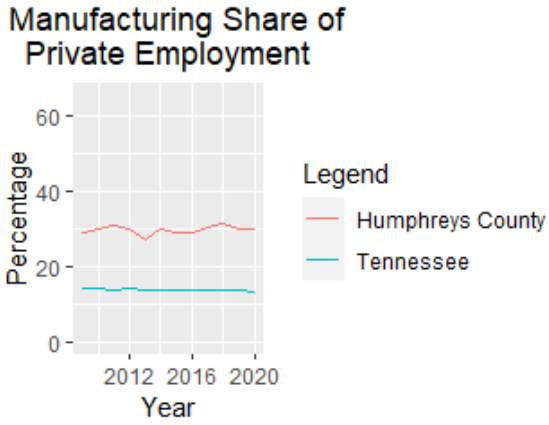
Houston County's readiness index was 108, ranking it 84th out of 95 counties. The talent component had the strongest ranking at 64th. The county's progress index value was 137, ranking it 16th out of 95 counties. For progress, innovation and productivity were the strongest components with rankings of 21st and 13th respectively.

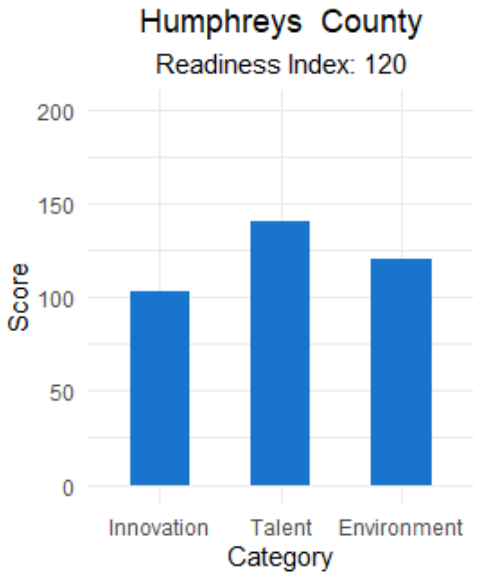
Humphreys County

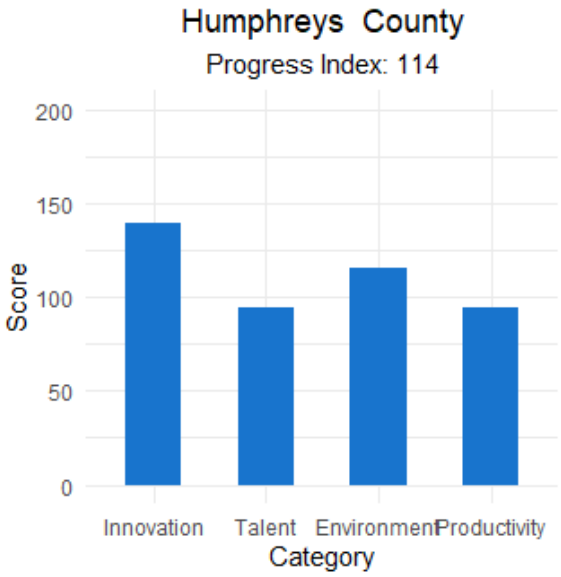
In 2020, the population of Humphreys County was 18,990 and its average annual manufacturing employment (NAICS 31-33) was 1,406.

Total private sector employment was 4,706 and manufacturing employment was 29.9 percent of the total. That is approximately 7.4 manufacturing employees per hundred residents and ranks number 21 among all counties. The average annual wage and salary for manufacturing workers is $88,577. This ranks number 1 among all counties. For additional demographic information on Humphreys County, see the Census Quick Fact link.







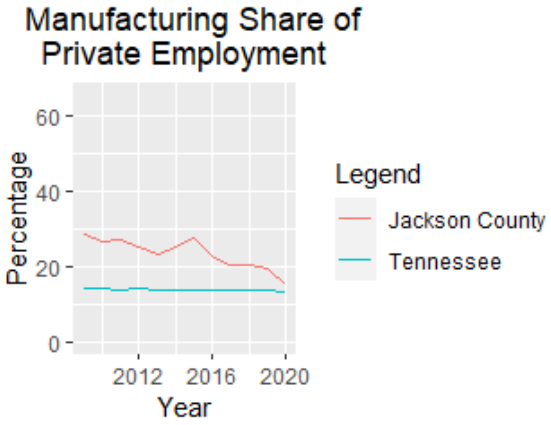


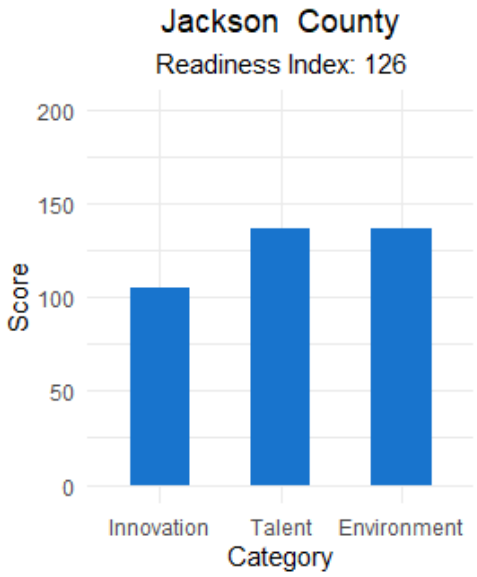
Humphrey County's readiness index was 120, ranking it 54th out of 95 counties. The talent component had the strongest ranking at 25th. The county's progress index value was 114, ranking it 84th out of 95 counties. For progress, innovation was the strongest component with a ranking of 22nd.

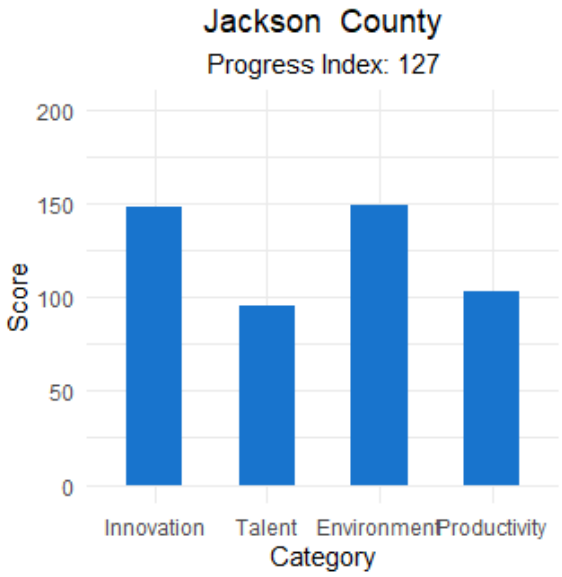
Jackson County

In 2020, the population of Jackson County was 11,617 and its average annual manufacturing employment (NAICS 31-33) was 137.

Total private sector employment was 890 and manufacturing employment was 15.4 percent of the total. That is approximately 1.2 manufacturing employees per hundred residents and ranks number 89 among all counties. The average annual wage and salary for manufacturing workers is $33,860. This ranks number 88 among all counties. For additional demographic information on Jackson County, see the Census Quick Fact link.





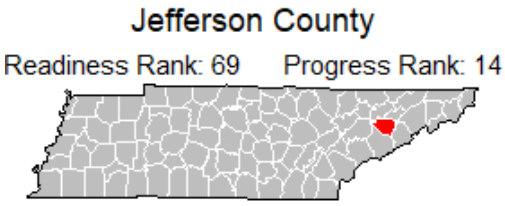


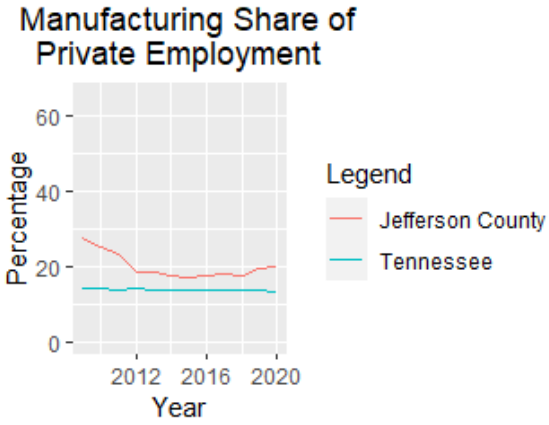
Jackson County's readiness index was 126, ranking it 36th out of 95 counties. The environment component had the strongest ranking at 20th. The county's progress index value was 127, ranking it 43rd out of 95 counties. For progress, innovation was the strongest component with a ranking of 18th.

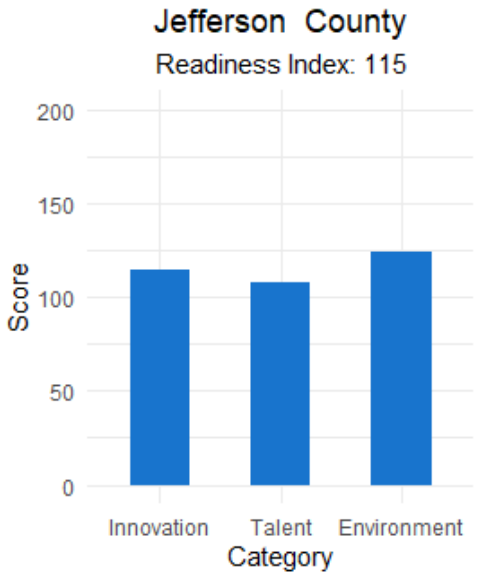
Jefferson County

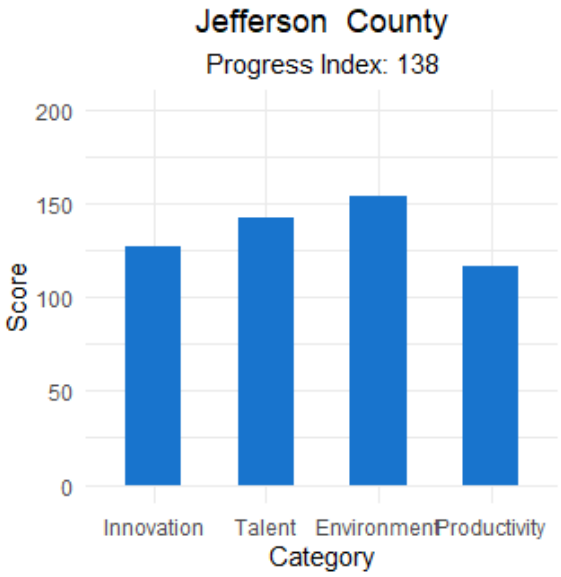
In 2020, the population of Jefferson County was 54,683 and its average annual manufacturing employment (NAICS 31-33) was 2,090.

Total private sector employment was 10,589 and manufacturing employment was 19.7 percent of the total. That is approximately 3.8 manufacturing employees per hundred residents and ranks number 58 among all counties. The average annual wage and salary for manufacturing workers is $69,647. This ranks number 10 among all counties. For additional demographic information on Jefferson County, see the Census Quick Fact link.







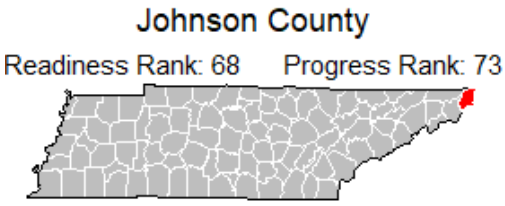


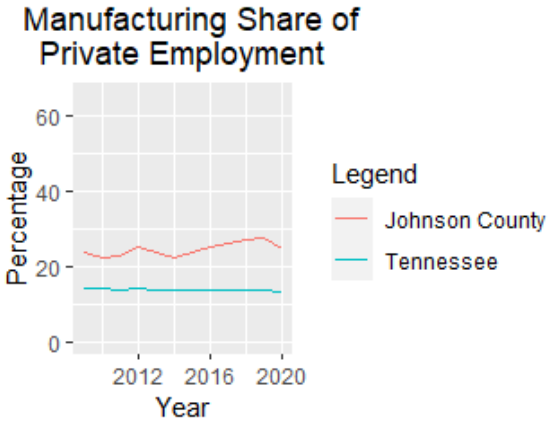
Jefferson County's readiness index was 115, ranking it 69th out of 95 counties. The environment component had the strongest ranking at 38th. The county's progress index value was 138, ranking it 14th out of 95 counties. For progress, environment was the strongest component with a ranking of 14th.

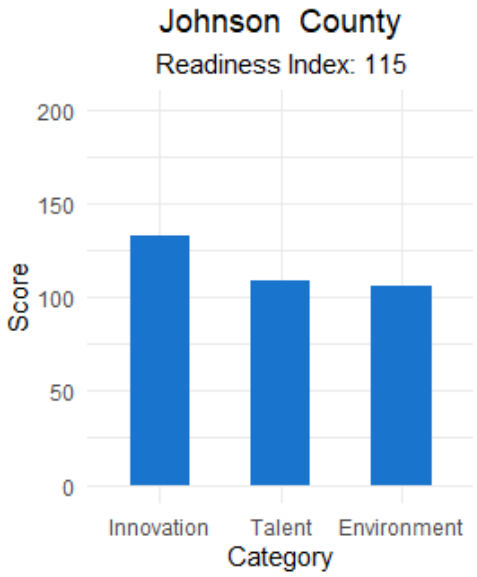
Johnson County

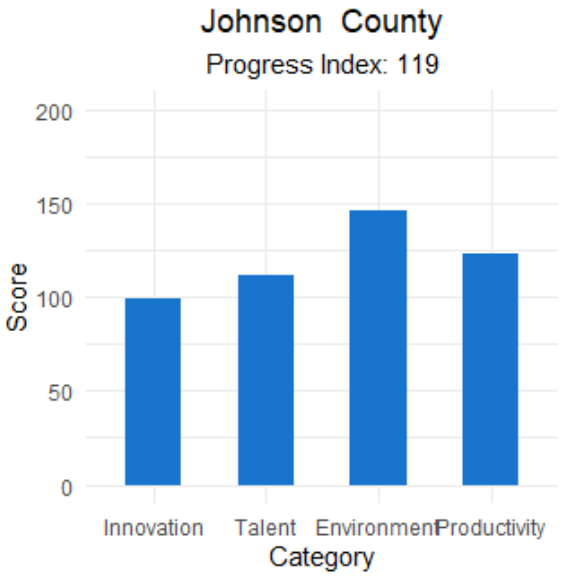
In 2020, the population of Johnson County was 17,948 and its average annual manufacturing employment (NAICS 31-33) was 775.

Total private sector employment was 3,135 and manufacturing employment was 24.7 percent of the total. That is approximately 4.3 manufacturing employees per hundred residents and ranks number 52 among all counties. The average annual wage and salary for manufacturing workers is $72,237. This ranks number 8 among all counties. For additional demographic information on Johnson County, see the Census Quick Fact link.







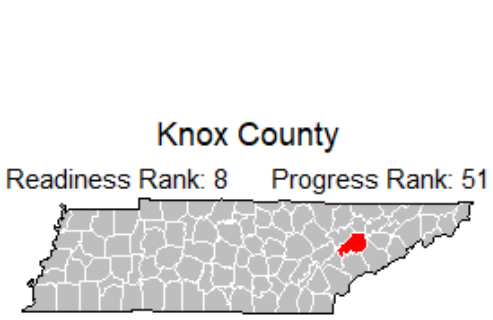


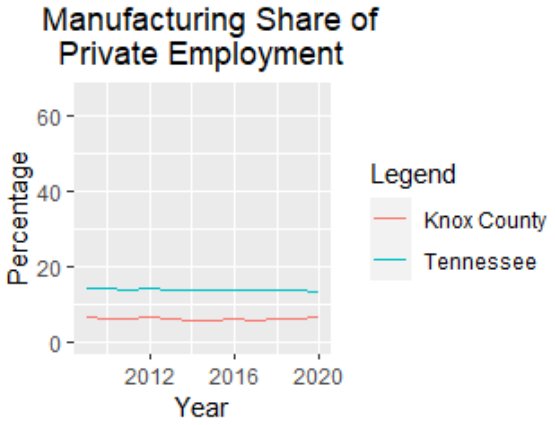
Johnson County's readiness index was 115, ranking it 68th out of 95 counties. The innovation component had the strongest ranking at 21st. The county's progress index value was 119, ranking it 73rd out of 95 counties. For progress, environment was the strongest component with a ranking of 25th.

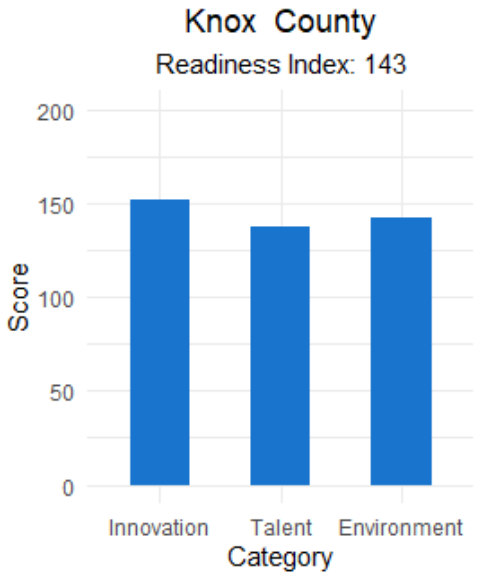
Knox County

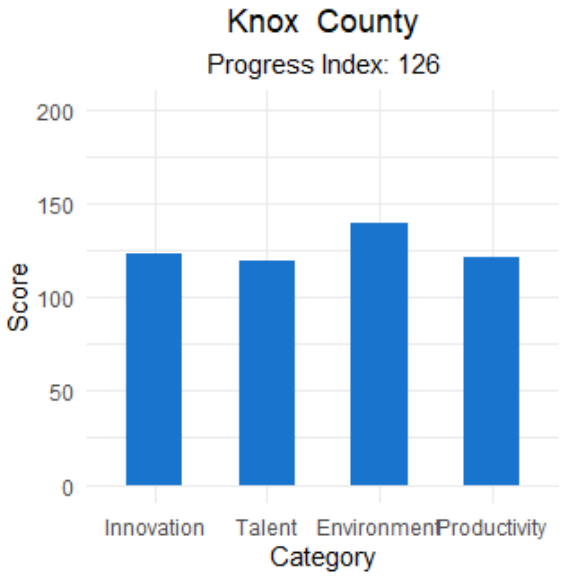
In 2020, the population of Knox County was 478,971 and its average annual manufacturing employment (NAICS 31-33) was 12,945.

Total private sector employment was 201,911 and manufacturing employment was 6.4 percent of the total. That is approximately 2.7 manufacturing employees per hundred residents and ranks number 72 among all counties. The average annual wage and salary for manufacturing workers is $60,864. This ranks number 20 among all counties. For additional demographic information on Knox County, see the Census Quick Fact link.









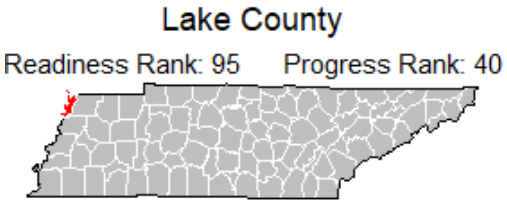
Knox County's readiness index was 143, ranking it 8th out of 95 counties. The innovation component had the strongest ranking at 9th. The county's progress index value was 126, ranking it 51st out of 95 counties. For progress, innovation and productivity were the strongest components with each ranked at 38th.

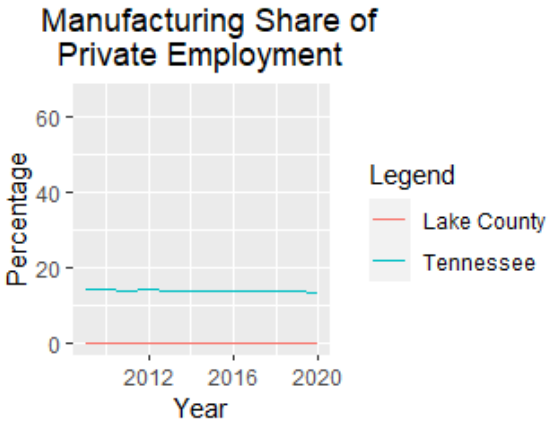
Lake County

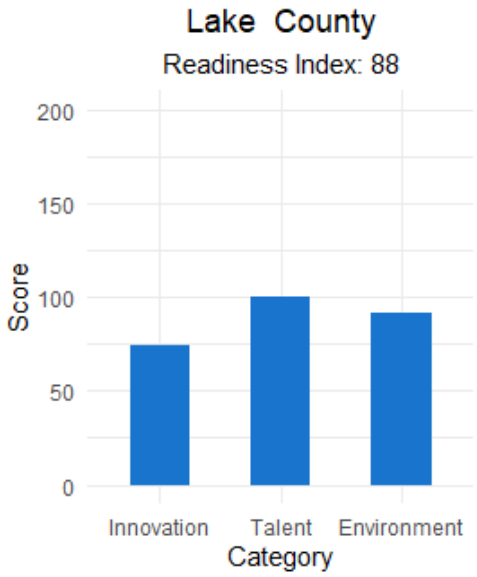
In 2020, the population of Lake County was 7,005 and its average annual manufacturing employment (NAICS 31-33) was not available.

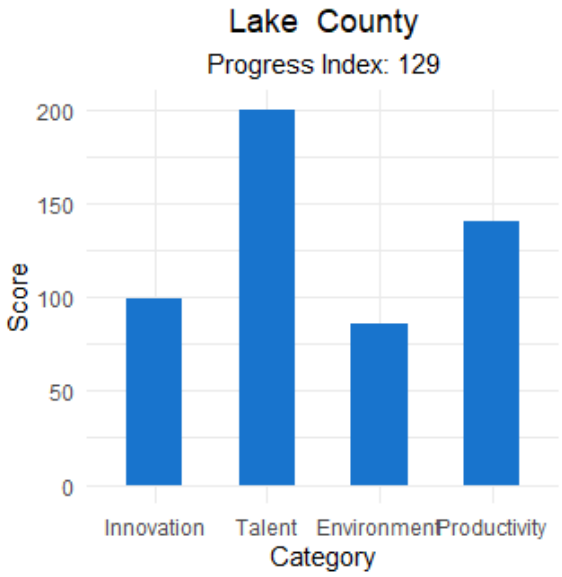
Total private sector employment was 717. Though there were two manufacturing establishments, manufacturing employment and wage information was not disclosable under BLS privacy guidelines.

For additional demographic information on Lake County, see the Census Quick Fact link.







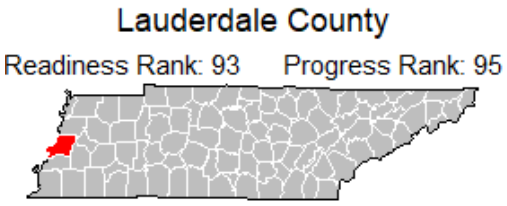


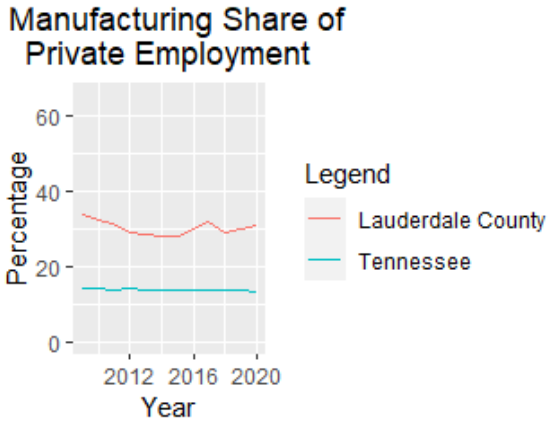
Lake County's readiness index was 88, ranking it 95th out of 95 counties. The environment component had the strongest ranking of the three at 90th. The county's progress index value was 129, ranking it 40th out of 95 counties. For progress, talent was an extremely strong and Lake tied for 2nd with Trousdale County in this component ranking.

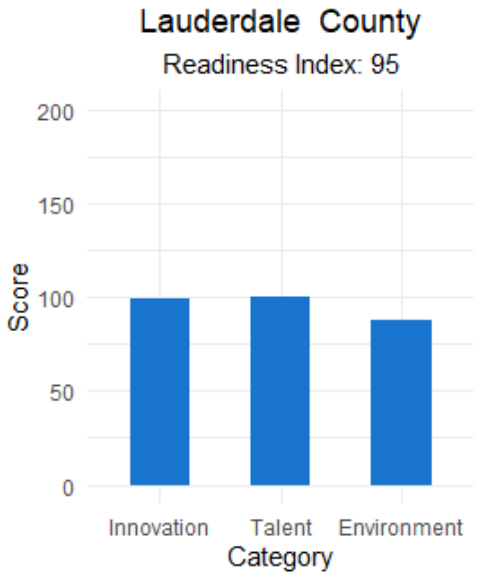
Lauderdale County

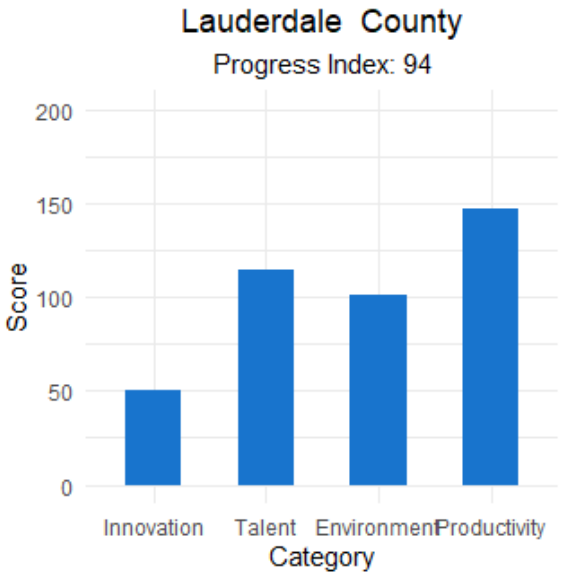
In 2020, the population of Lauderdale County was 25,143 and its average annual manufacturing employment (NAICS 31-33) was 1,442.

Total private sector employment was 4,683 and manufacturing employment was 30.8 percent of the total. That is approximately 5.7 manufacturing employees per hundred residents and ranks number 41 among all counties. The average annual wage and salary for manufacturing workers is $50,808. This ranks number 52 among all counties. For additional demographic information on Lauderdale County, see the Census Quick Fact link.







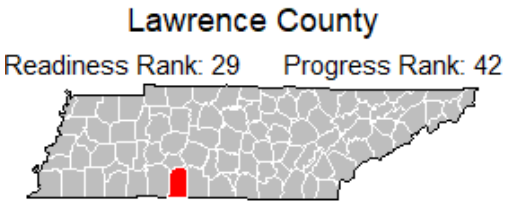


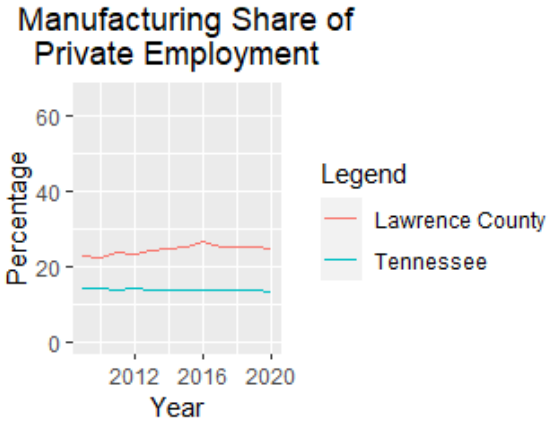
Lauderdale County's readiness index was 95, ranking it 93rd out of 95 counties. The innovation component had the strongest ranking at 77th. The county's progress index value was 94, ranking it 95th out of 95 counties. For progress, productivity was the strongest component with a ranking of 16th.

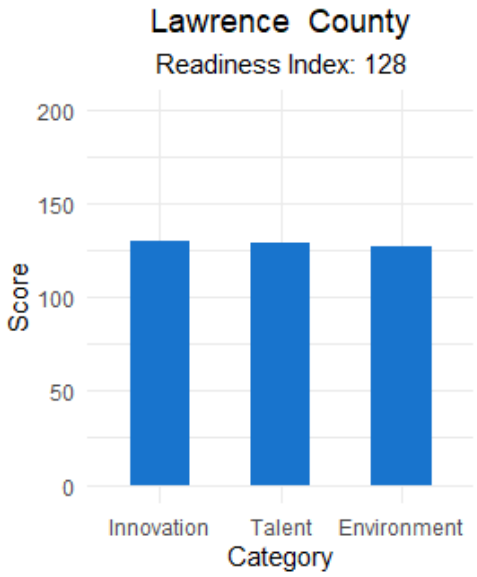
Lawrence County

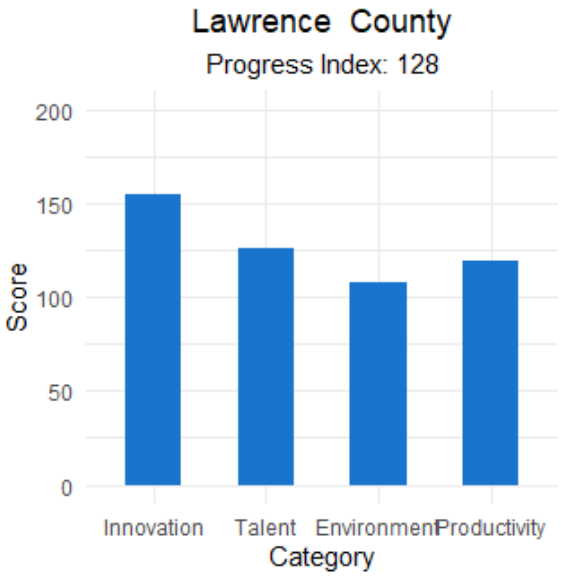
In 2020, the population of Lawrence County was 44,159 and its average annual manufacturing employment (NAICS 31-33) was 2,162.

Total private sector employment was 8,778 and manufacturing employment was 24.6 percent of the total. That is approximately 4.9 manufacturing employees per hundred residents and ranks number 47 among all counties. The average annual wage and salary for manufacturing workers is $45,451. This ranks number 70 among all counties. For additional demographic information on Lawrence County, see the Census Quick Fact link.







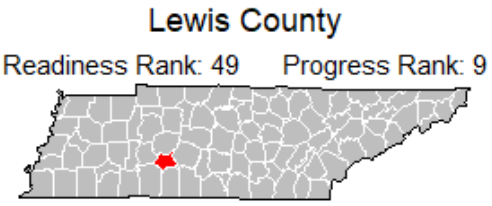


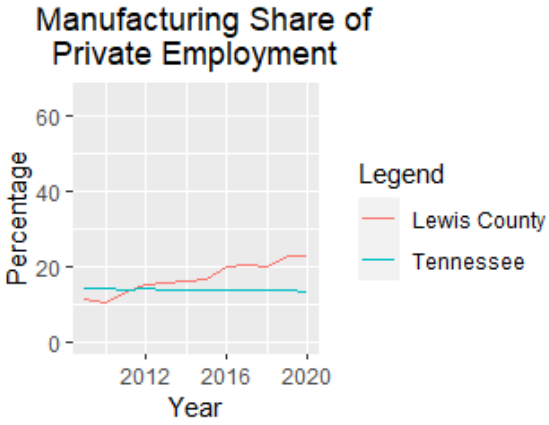
Lawrence County's readiness index was 128, ranking it 29th out of 95 counties. The innovation component had the strongest ranking at 27th. The county's progress index value was 128, ranking it 42nd out of 95 counties. For progress, innovation was the strongest component with a ranking of 16th.

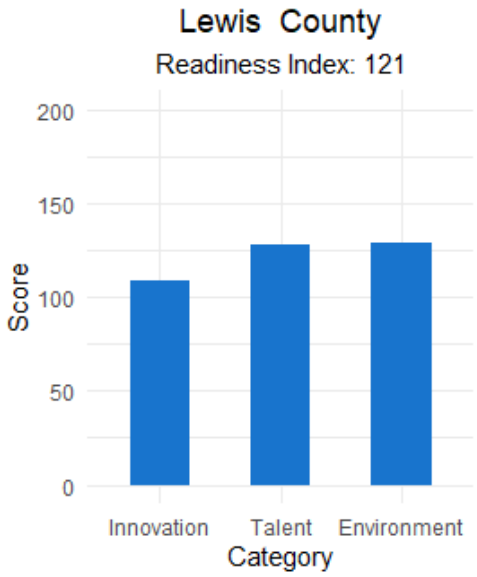
Lewis County

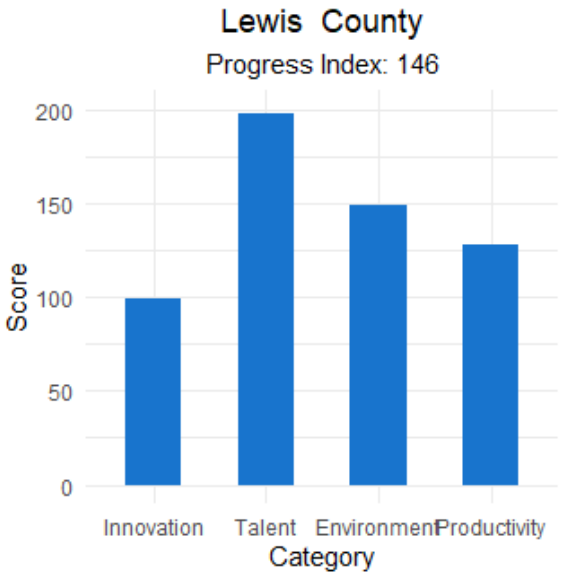
In 2020, the population of Lewis County was 12,582 and its average annual manufacturing employment (NAICS 31-33) was 505.

Total private sector employment was 2,208 and manufacturing employment was 22.9 percent of the total. That is approximately 4.0 manufacturing employees per hundred residents and ranks number 55 among all counties. The average annual wage and salary for manufacturing workers is $54,077. This ranks number 41 among all counties. For additional demographic information on Lewis County, see the Census Quick Fact link.







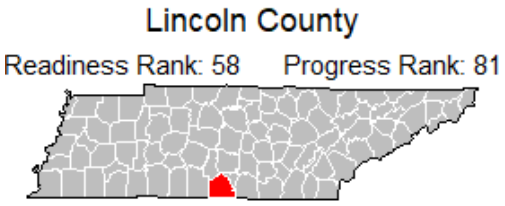


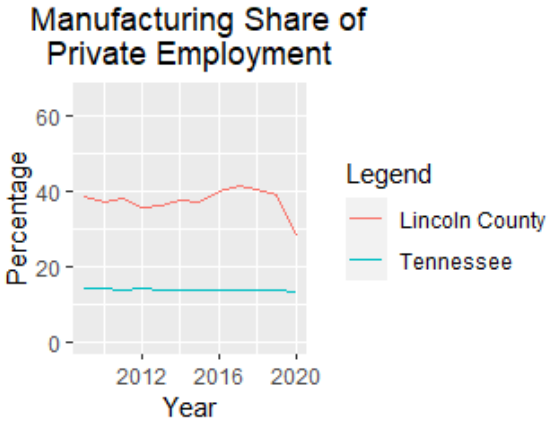
Lewis County's readiness index was 121, ranking it 49th out of 95 counties. The environment component had the strongest ranking at 34th. The county's progress index value was 146, ranking it 9th out of 95 counties. For progress, talent was an extremely strong component with a ranking of 3rd.

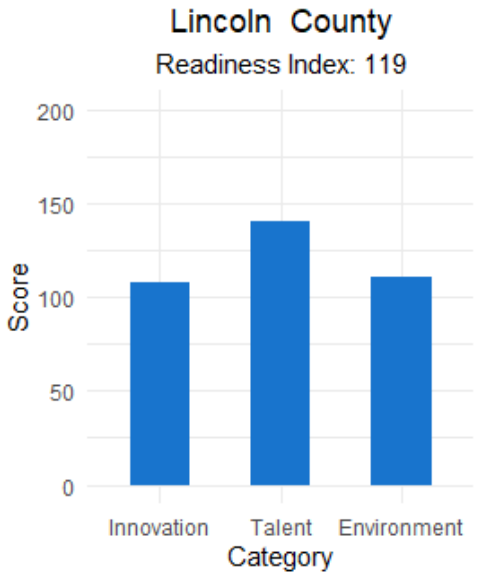
Lincoln County

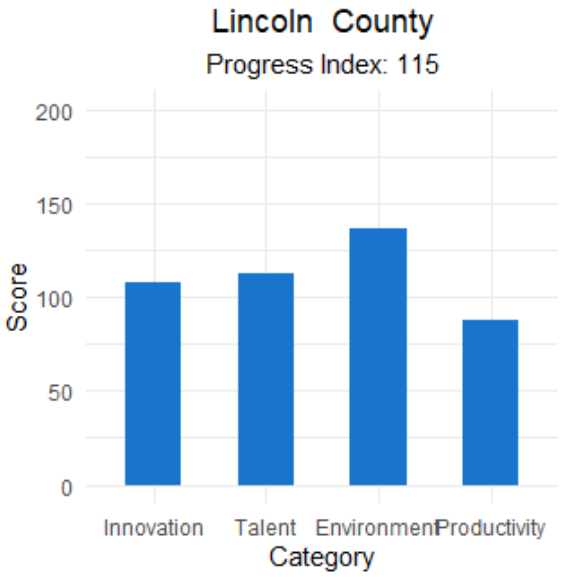
In 2020, the population of Lincoln County was 35,319 and its average annual manufacturing employment (NAICS 31-33) was 1,892.

Total private sector employment was 6,816 and manufacturing employment was 27.8 percent of the total. That is approximately 5.4 manufacturing employees per hundred residents and ranks number 43 among all counties. The average annual wage and salary for manufacturing workers is $51,864. This ranks number 46 among all counties. For additional demographic information on Lincoln County, see the Census Quick Fact link.







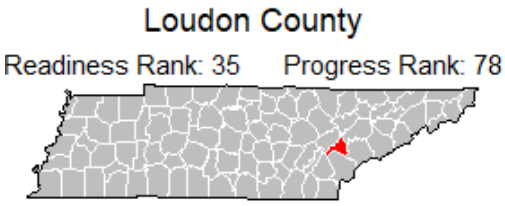


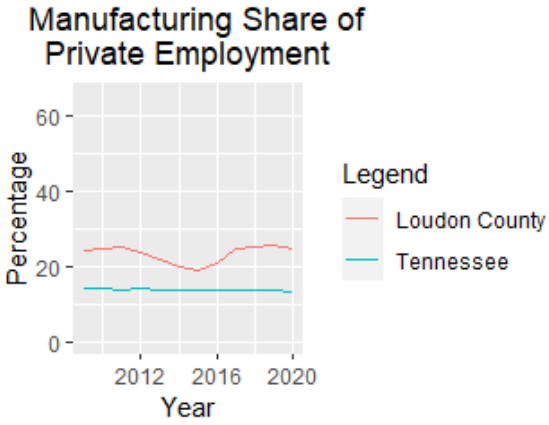
Lincoln County's readiness index was 119, ranking it 58th out of 95 counties. The talent component had the strongest ranking at 24th. The county's progress index value was 115, ranking it 81st out of 95 counties. For progress, environment was the strongest component with a ranking of 43rd.

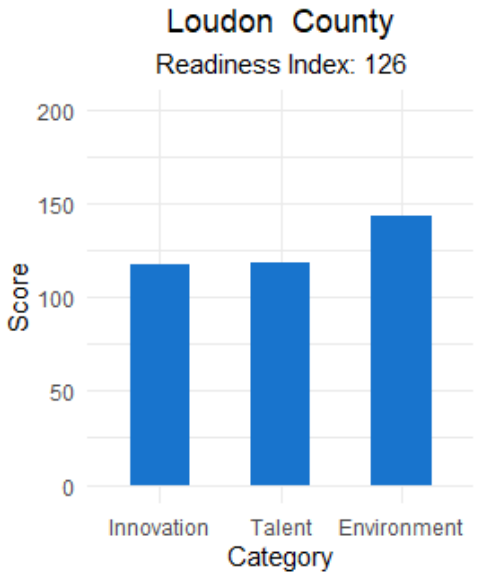
Loudon County

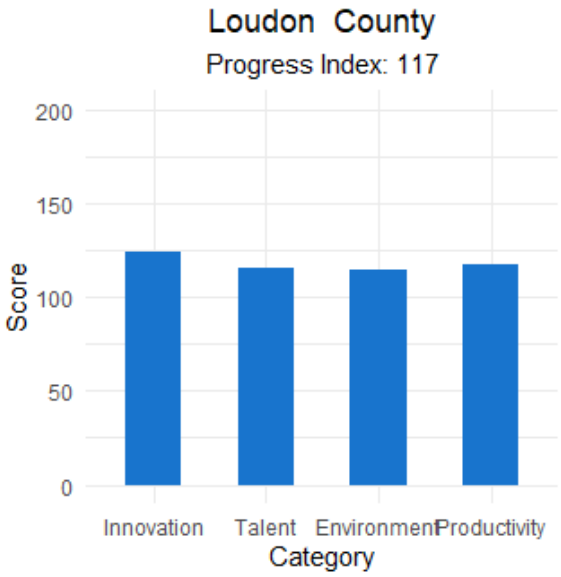
In 2020, the population of Loudon County was 54,886 and its average annual manufacturing employment (NAICS 31-33) was 3,639.

Total private sector employment was 14,645 and manufacturing employment was 24.8 percent of the total. That is approximately 6.6 manufacturing employees per hundred residents and ranks number 31 among all counties. The average annual wage and salary for manufacturing workers is $64,720. This ranks number 15 among all counties. For additional demographic information on Loudon County, see the Census Quick Fact link.







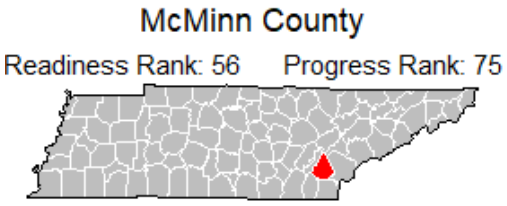


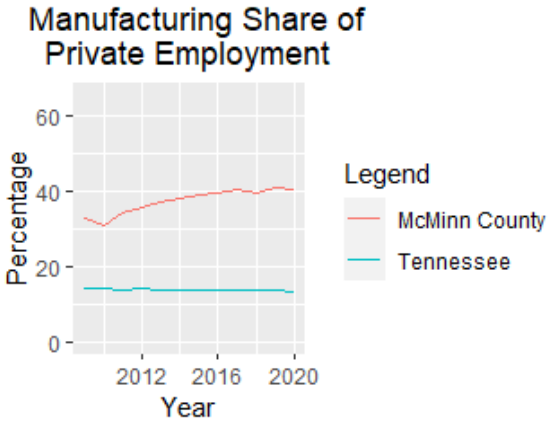
Loudon County's readiness index was 126, ranking it 35th out of 95 counties. The environment component had the strongest ranking at 13th. The county's progress index value was 117, ranking it 78th out of 95 counties. For progress, innovation was the strongest component with a ranking of 32nd.

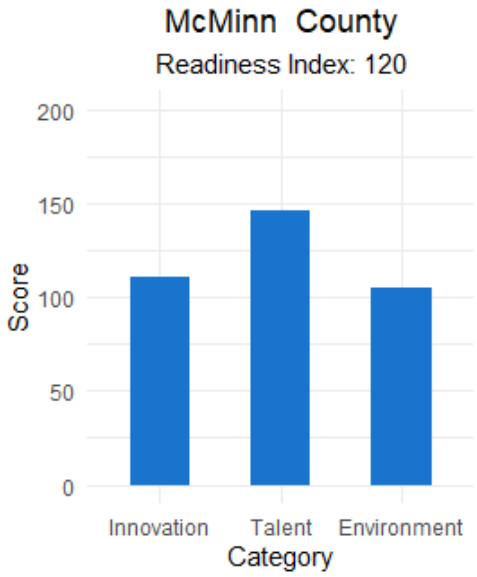
McMinn County

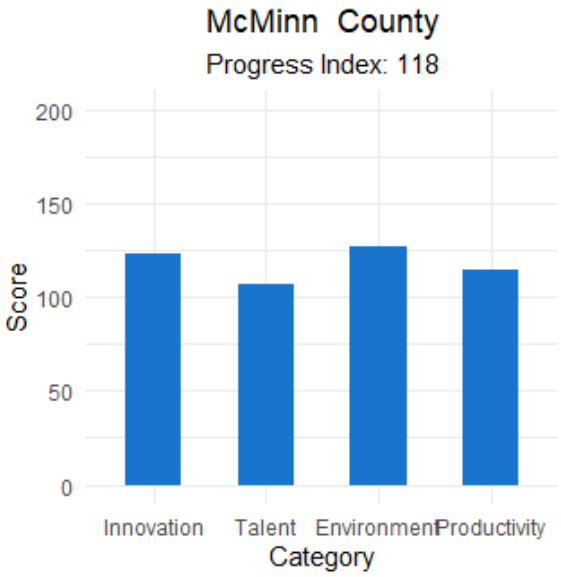
In 2020, the population of McMinn County was 53,276 and its average annual manufacturing employment (NAICS 31-33) was 6,427.

Total private sector employment was 15,858 and manufacturing employment was 40.5 percent of the total. That is approximately 12.1 manufacturing employees per hundred residents and ranks number 3 among all counties. The average annual wage and salary for manufacturing workers is $63,332. This ranks number 17 among all counties. For additional demographic information on McMinn County, see the Census Quick Fact link.







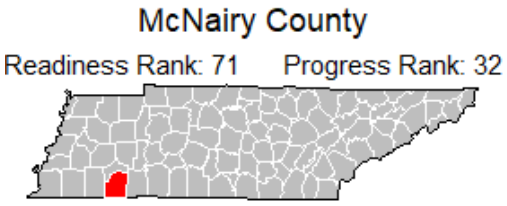


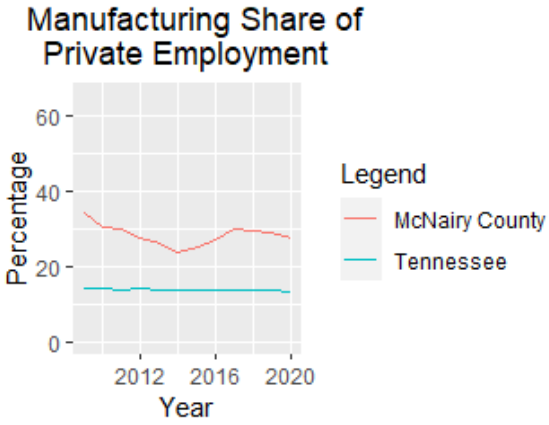
McMinn County's readiness index was 120, ranking it 56th out of 95 counties. The talent component had the strongest ranking at 13th. The county's progress index value was 118, ranking it 75th out of 95 counties. For progress, innovation was the strongest component with a ranking of 33rd.

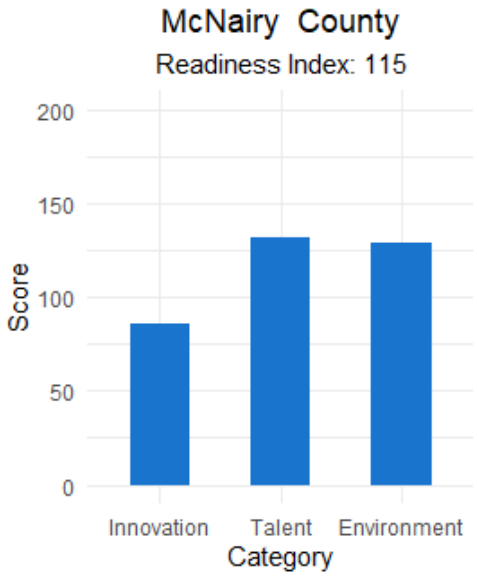
McNairy County

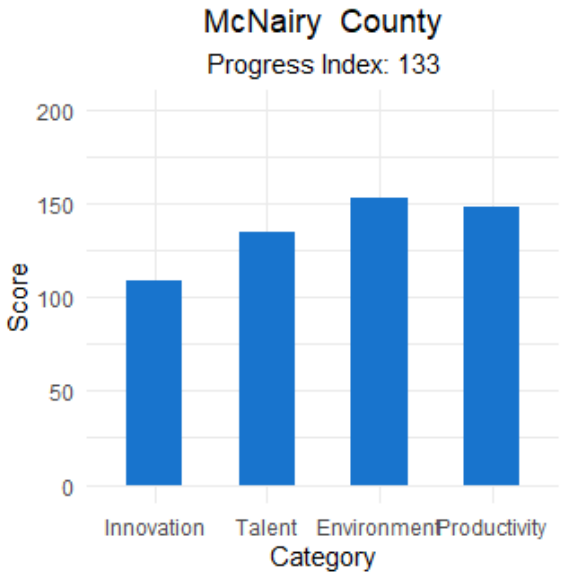
In 2020, the population of McNairy County was 25,866 and its average annual manufacturing employment (NAICS 31-33) was 1,078.

Total private sector employment was 3,954 and manufacturing employment was 27.3 percent of the total. That is approximately 4.2 manufacturing employees per hundred residents and ranks number 54 among all counties. The average annual wage and salary for manufacturing workers is $42,304. This ranks number 77 among all counties. For additional demographic information on McNairy County, see the Census Quick Fact link.







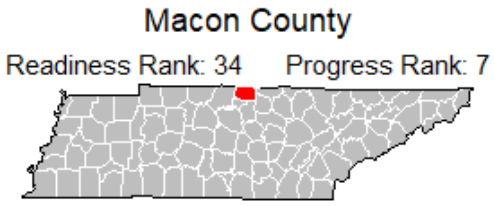


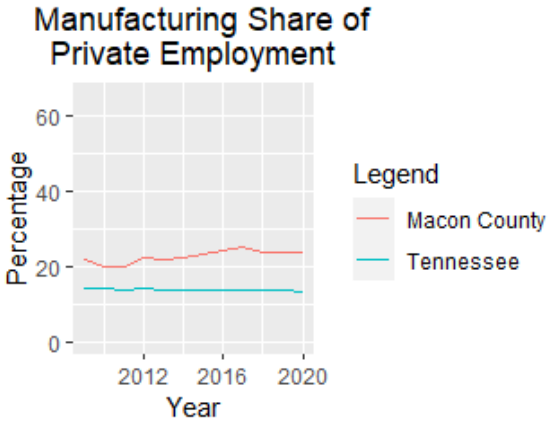
McNairy County's readiness index was 115, ranking it 71st out of 95 counties. The environment component had the strongest ranking at 30th. The county's progress index value was 133, ranking it 32nd out of 95 counties. For progress, productivity and environment were the strongest components with rankings of 15th and 17th respectively.

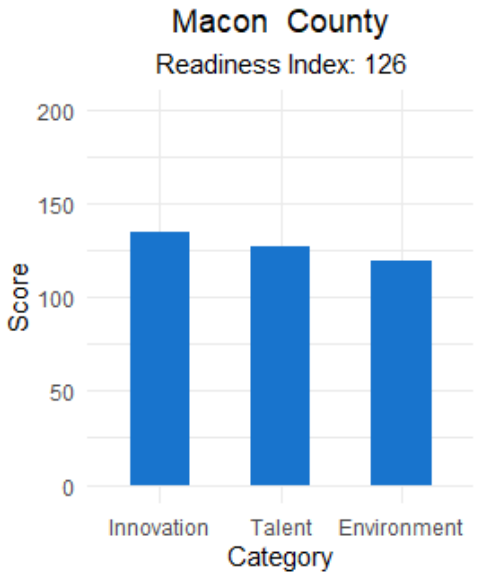
Macon County

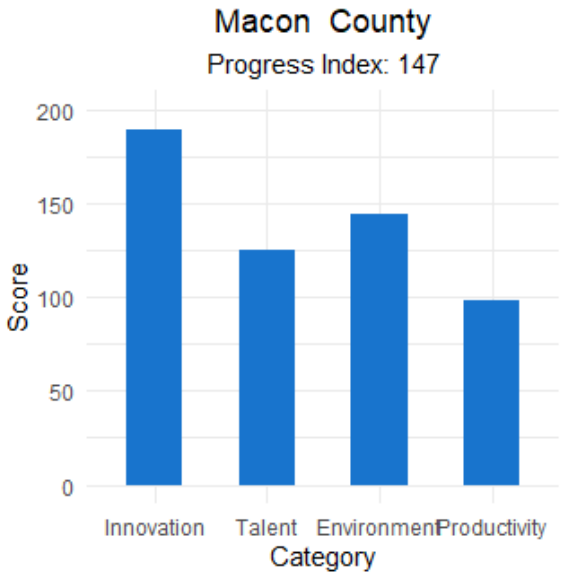
In 2020, the population of Macon County was 25,216 and its average annual manufacturing employment (NAICS 31-33) was 877.

Total private sector employment was 3,704 and manufacturing employment was 23.7 percent of the total. That is approximately 3.5 manufacturing employees per hundred residents and ranks number 63 among all counties. The average annual wage and salary for manufacturing workers is $35,746. This ranks number 85 among all counties. For additional demographic information on Macon County, see the Census Quick Fact link.







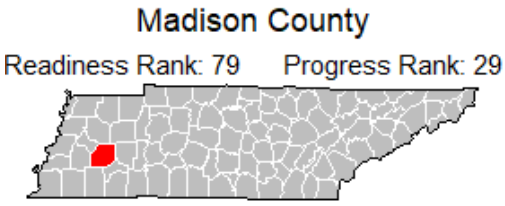


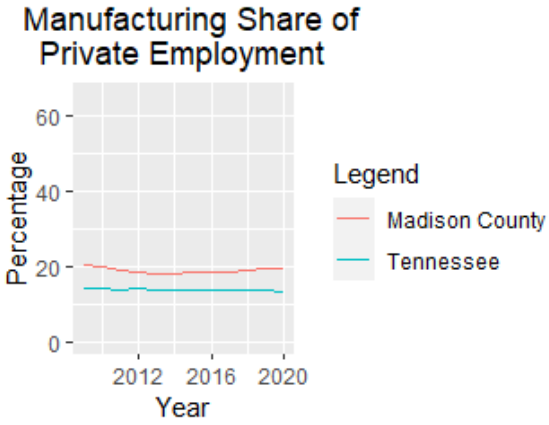
Macon County's readiness index was 126, ranking it 34th out of 95 counties. The innovation component had the strongest ranking at 19th. The county's progress index value was 147, ranking it 7th out of 95 counties. For progress, innovation was extremely strong ranking at 7th.

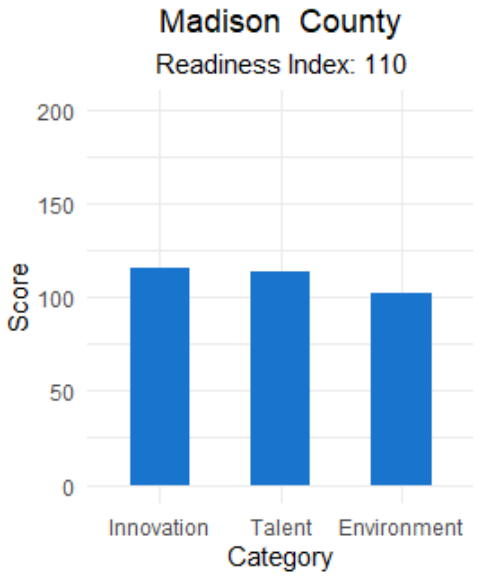
Madison County

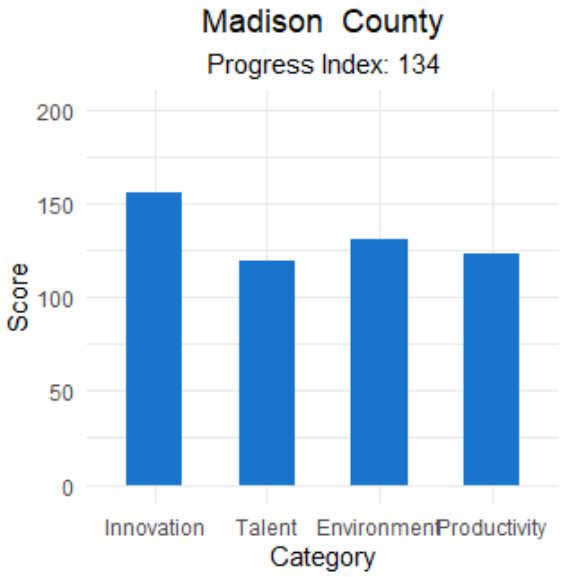
In 2020, the population of Madison County was 98,823 and its average annual manufacturing employment (NAICS 31-33) was 8,895.

Total private sector employment was 45,362 and manufacturing employment was 19.6 percent of the total. That is approximately 9.0 manufacturing employees per hundred residents and ranks number 8 among all counties. The average annual wage and salary for manufacturing workers is $63,316. This ranks number 18 among all counties. For additional demographic information on Madison County, see the Census Quick Fact link.







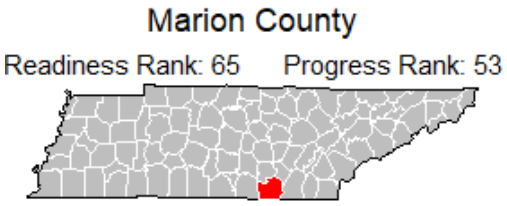


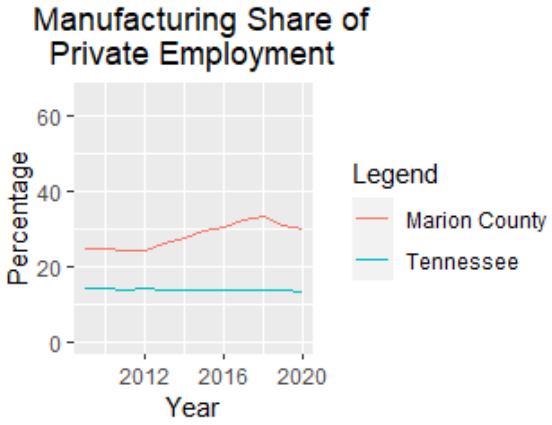
Madison County's readiness index was 110, ranking it 79th out of 95 counties. The innovation component had the strongest ranking at 52nd. The county's progress index value was 134, ranking it 29th out of 95 counties. For progress, innovation was the strongest component with a ranking of 7th.

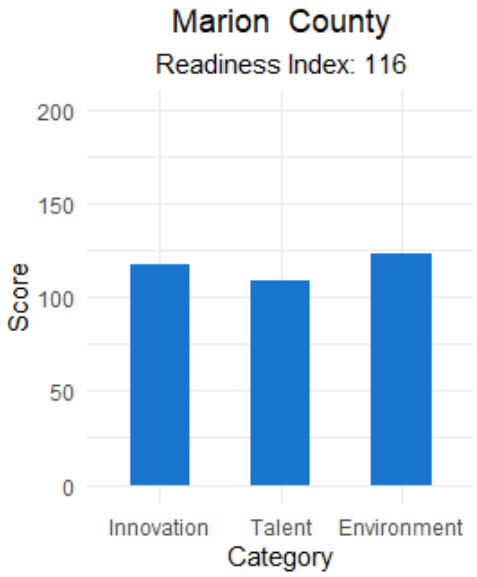
Marion County

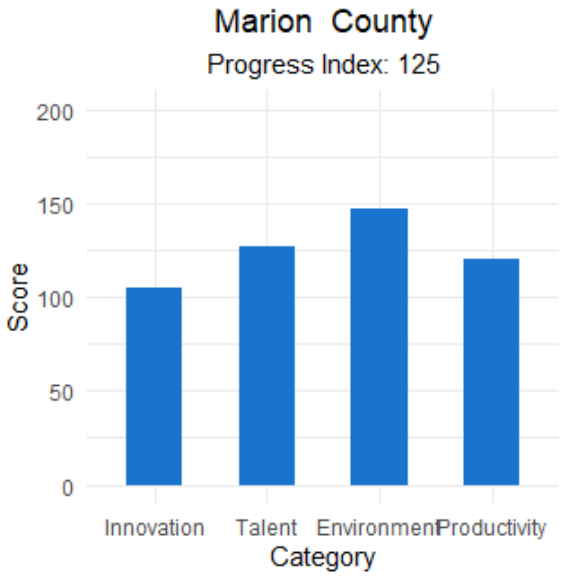
In 2020, the population of Marion County was 28,837 and its average annual manufacturing employment (NAICS 31-33) was 1,794.

Total private sector employment was 6,031 and manufacturing employment was 29.7 percent of the total. That is approximately 6.2 manufacturing employees per hundred residents and ranks number 37 among all counties. The average annual wage and salary for manufacturing workers is $56,353. This ranks number 30 among all counties. For additional demographic information on Marion County, see the Census Quick Fact link.







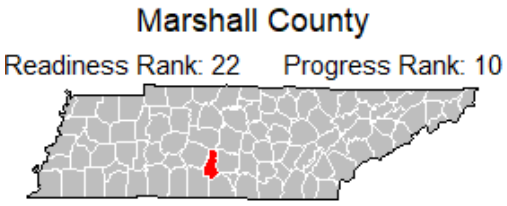


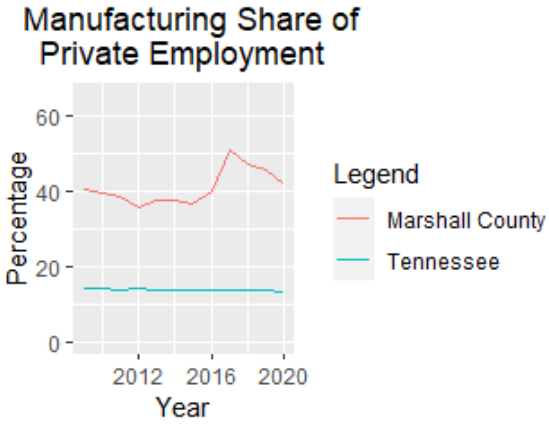
Marion County's readiness index was 116, ranking it 76th out of 95 counties. The environment component had the strongest ranking at 42nd. The county's progress index value was 125, ranking it 53rd out of 95 counties. For progress, environment was the strongest component with a ranking of 23rd.

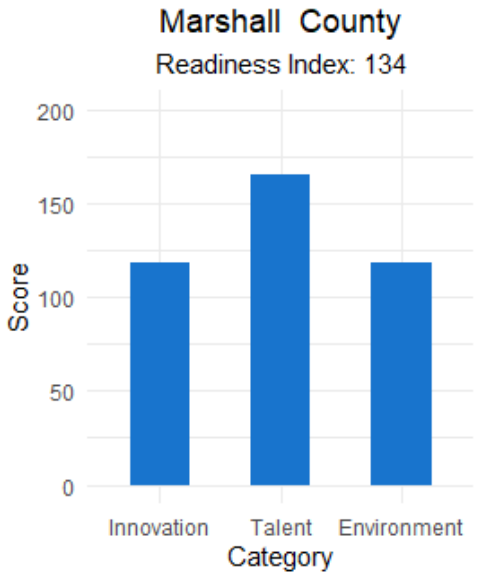
Marshall County

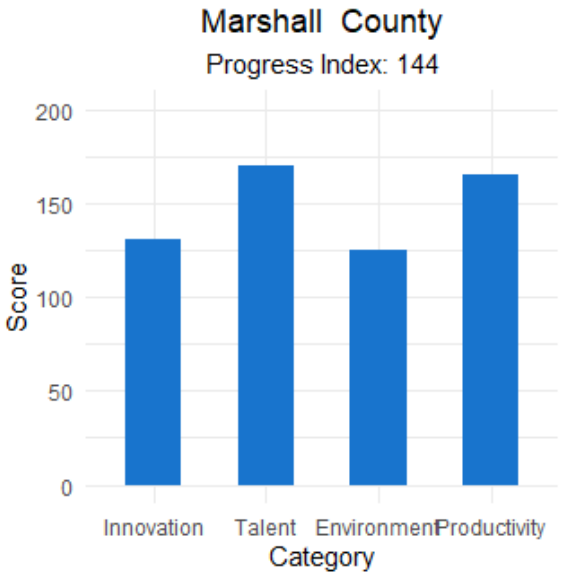
In 2020, the population of Marshall County was 34,318 and its average annual manufacturing employment (NAICS 31-33) was 3,014.

Total private sector employment was 7,209 and manufacturing employment was 41.8 percent of the total. That is approximately 8.8 manufacturing employees per hundred residents and ranks number 9 among all counties. The average annual wage and salary for manufacturing workers is $57,082. This ranks number 27 among all counties. For additional demographic information on Marshall County, see the Census Quick Fact link.







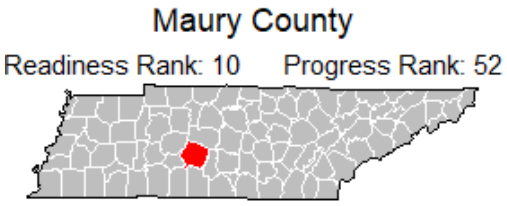


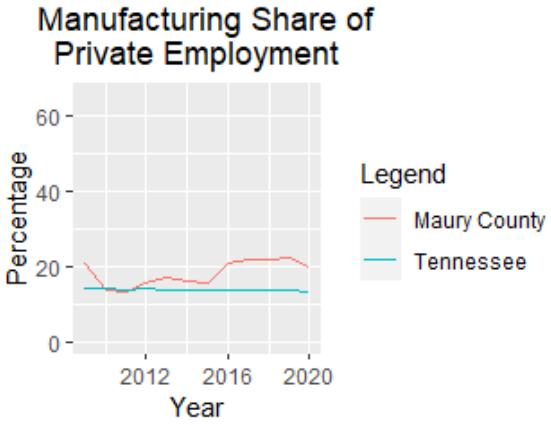
Marshall County's readiness index was 134, ranking it 22nd out of 95 counties. The talent component had an extremely strong ranking of 1st among counties. The county's progress index value was 144, ranking it 10th out of 95 counties. For progress, productivity was the strongest component with a ranking of 6th.

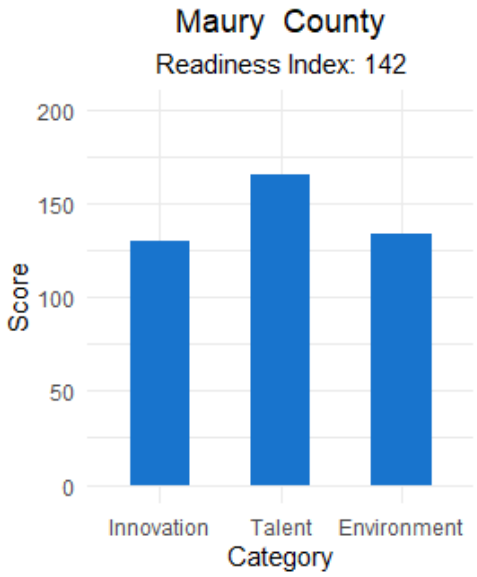
Maury County

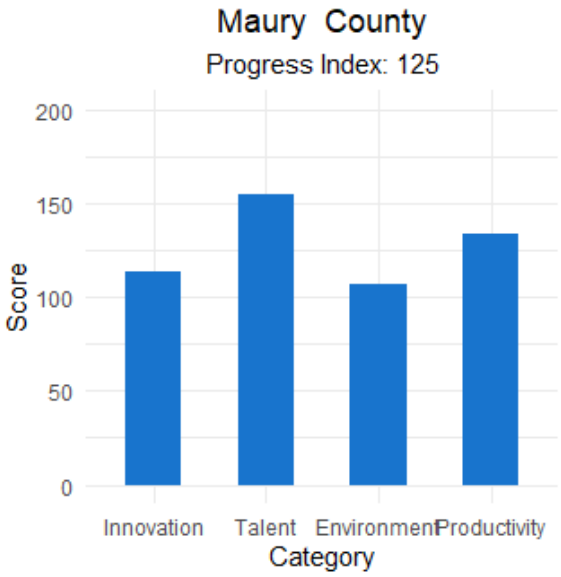
In 2020, the population of Maury County was 100,974 and its average annual manufacturing employment (NAICS 31-33) was 5,760.

Total private sector employment was 28,743 and manufacturing employment was 20.0 percent of the total. That is approximately 5.7 manufacturing employees per hundred residents and ranks number 42 among all counties. The average annual wage and salary for manufacturing workers is $77,157. This ranks number 6 among all counties. For additional demographic information on Maury County, see the Census Quick Fact link.







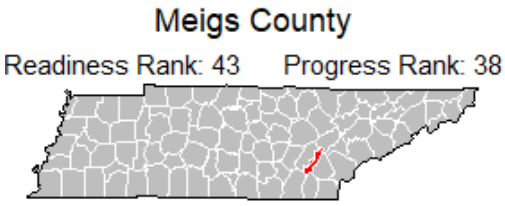


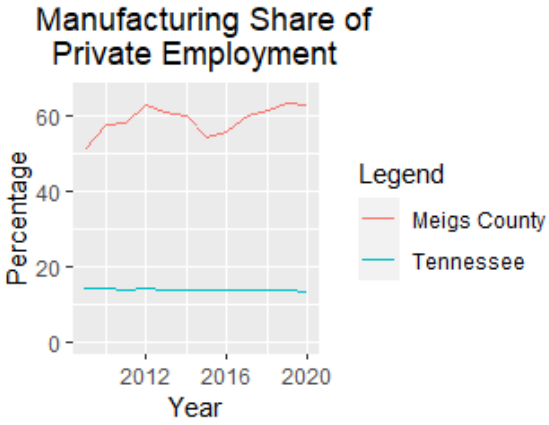
Maury County's readiness index was 142, ranking it 10th out of 95 counties. The talent component had an extremely strong ranking of 2nd among counties. The county's progress index value was 125, ranking it 52nd out of 95 counties. For progress, talent was the strongest component with a ranking of 19th.

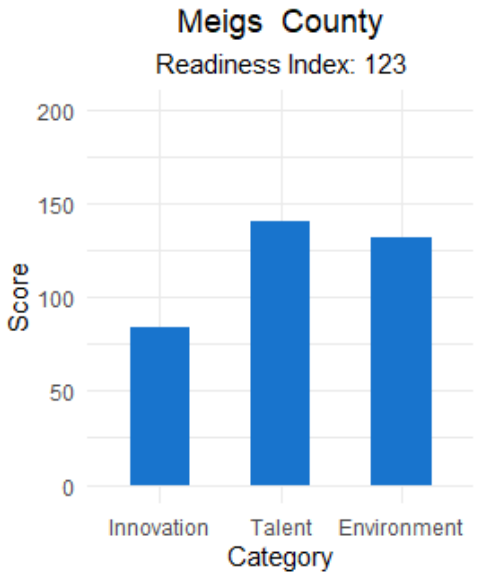
Meigs County

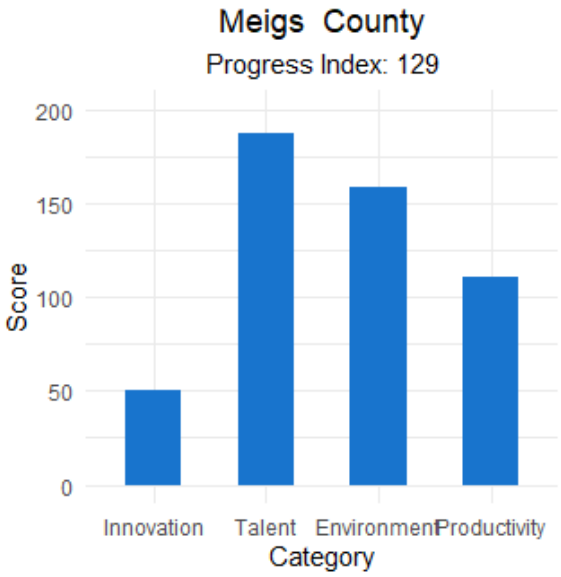
In 2020, the population of Meigs County was 12,758 and its average annual manufacturing employment (NAICS 31-33) was 1,063.

Total private sector employment was 1,695 and manufacturing employment was 62.7 percent of the total. That is approximately 8.3 manufacturing employees per hundred residents and ranks number 15 among all counties. The average annual wage and salary for manufacturing workers is $47,305. This ranks number 62 among all counties. For additional demographic information on Meigs County, see the Census Quick Fact link.







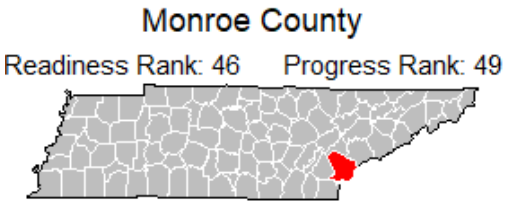


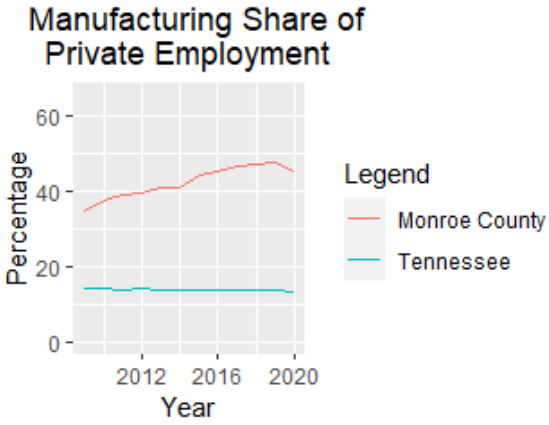
Meigs County's readiness index was 123, ranking it 43rd out of 95 counties. The talent component had a ranking of 23rd among counties. The county's progress index value was 129, ranking it 38th out of 95 counties. For progress, talent and environment were the strongest components with rankings of 5th and 7th respectively.

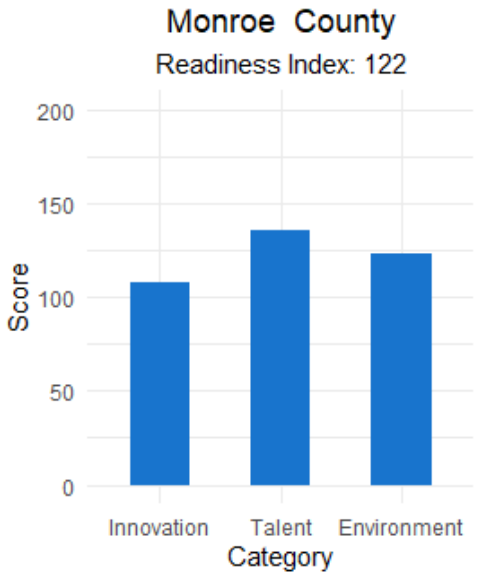
Monroe County

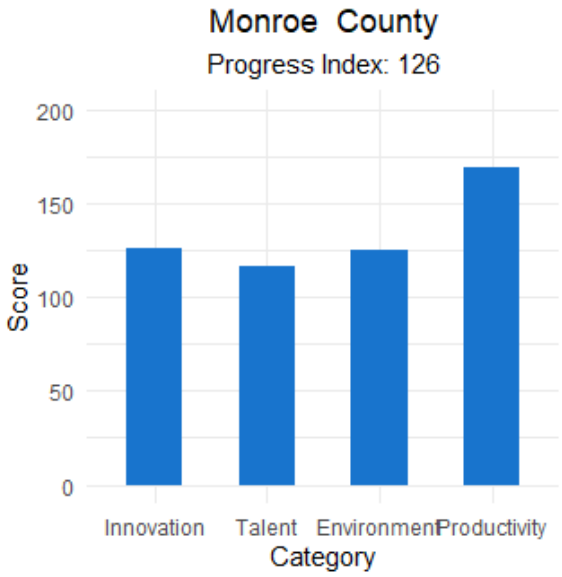
In 2020, the population of Monroe County was 46,250 and its average annual manufacturing employment (NAICS 31-33) was 5,356.

Total private sector employment was 11,913 and manufacturing employment was 45.0 percent of the total. That is approximately 11.6 manufacturing employees per hundred residents and ranks number 4 among all counties. The average annual wage and salary for manufacturing workers is $50,585. This ranks number 53 among all counties. For additional demographic information on Monroe County, see the Census Quick Fact link.







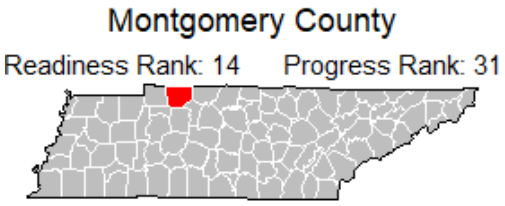


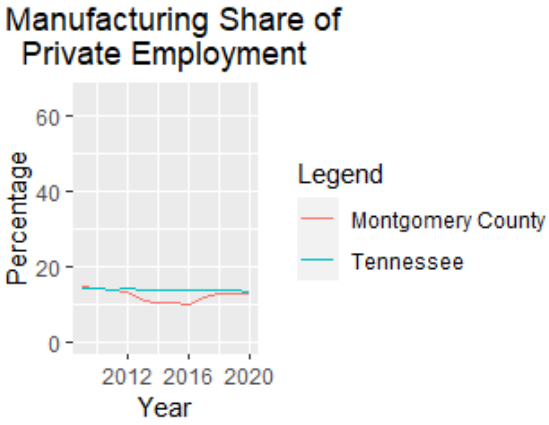
Monroe County's readiness index was 122, ranking it 46th out of 95 counties. The talent component had a ranking of 31st among counties. The county's progress index value was 126, ranking it 49th out of 95 counties. For progress, productivity was the strongest component with a ranking of 4th.

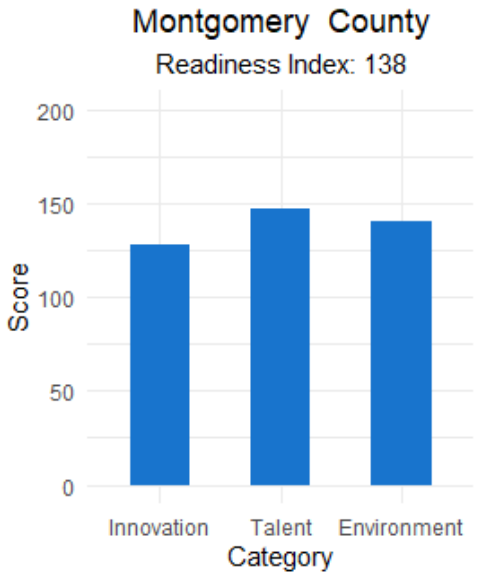
Montgomery County

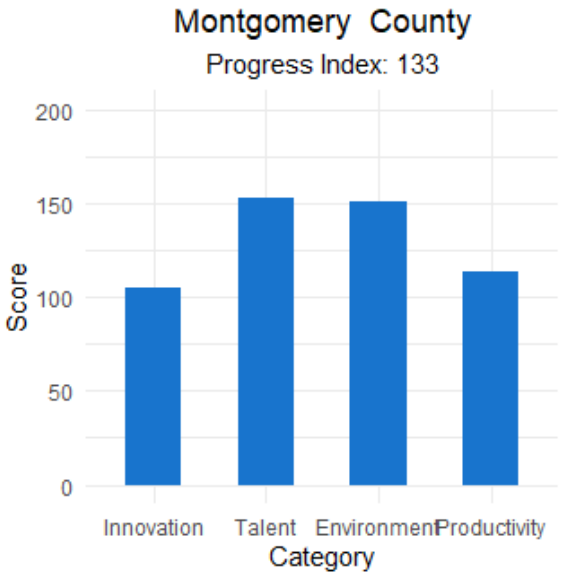
In 2020, the population of Montgomery County was 220,069 and its average annual manufacturing employment (NAICS 31-33) was 5,680.

Total private sector employment was 44,298 and manufacturing employment was 12.8 percent of the total. That is approximately 2.6 manufacturing employees per hundred residents and ranks number 74 among all counties. The average annual wage and salary for manufacturing workers is $55,629. This ranks number 34 among all counties. For additional demographic information on Montgomery County, see the Census Quick Fact link.









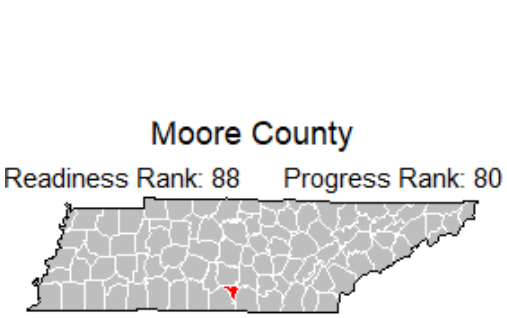
Montgomery County's readiness index was 138, ranking it 14th out of 95 counties. The talent component had a ranking of 12th among counties. The county's progress index value was 133, ranking it 31st out of 95 counties. For progress, talent and environment were the strongest components with rankings of 22nd and 19th respectively.

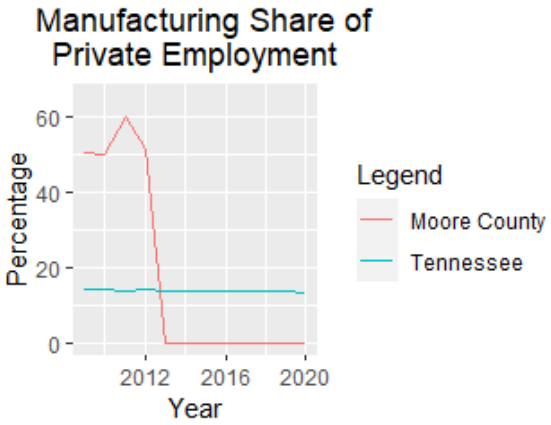
Moore County

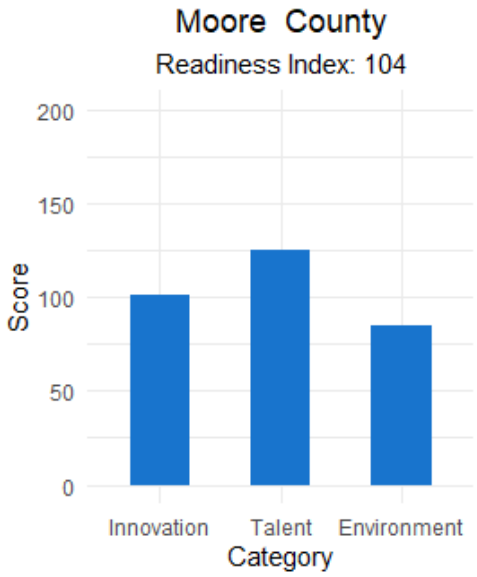
In 2020, the population of Moore County was 6,461 and its average annual manufacturing employment (NAICS 31-33) was not available.

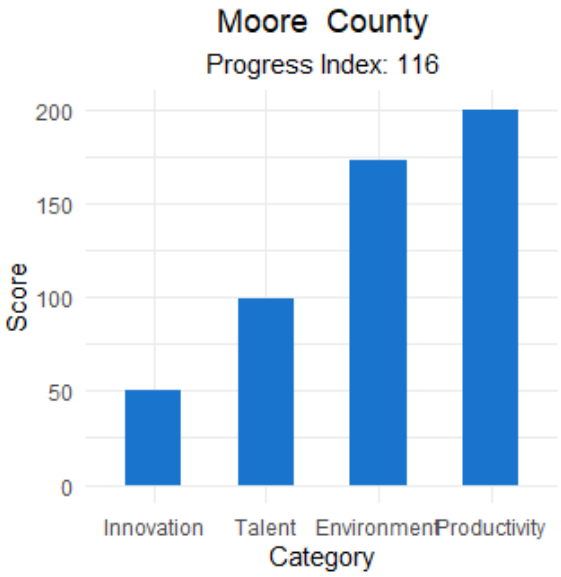
Total private sector employment was 1,410. and manufacturing employment was 0.0 percent of the total. Though there were two manufacturing establishments, manufacturing employment and wage information was not disclosable under BLS privacy guidelines.

For additional demographic information on Moore County, see the Census Quick Fact link.







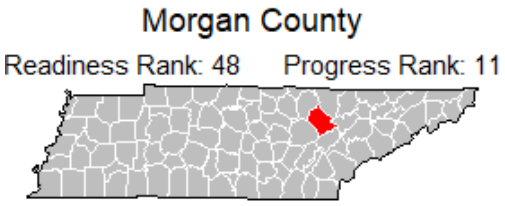


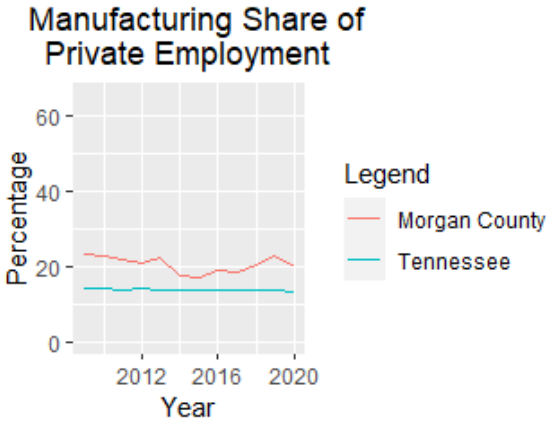
Moore County's readiness index was 104, ranking it 88th out of 95 counties. Talent had the strongest component ranking at 53rd. The county's progress index value was 116, ranking it 80th out of 95 counties. For progress, environment and productivity were very strong components with rankings of 3rd and 1st respectively.

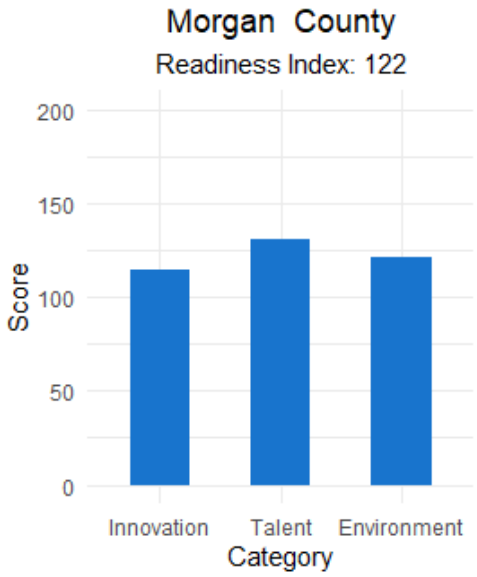
Morgan County

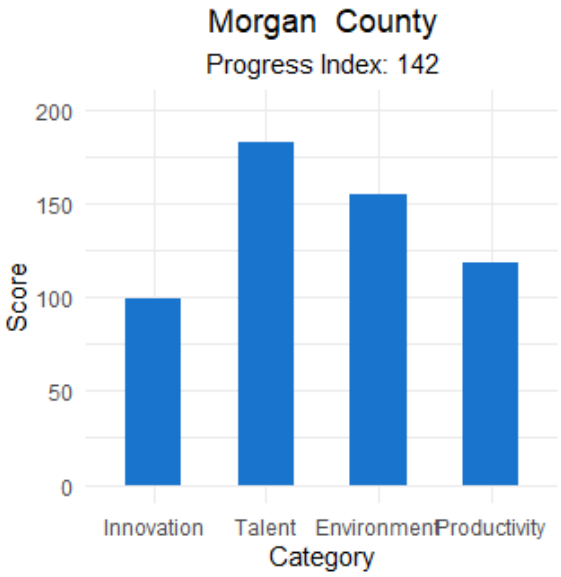
In 2020, the population of Morgan County was 21,035 and its average annual manufacturing employment (NAICS 31-33) was 318.

Total private sector employment was 1,580 and manufacturing employment was 20.1 percent of the total. That is approximately 1.5 manufacturing employees per hundred residents and ranks number 86 among all counties. The average annual wage and salary for manufacturing workers is $51,102. This ranks number 51 among all counties. For additional demographic information on Morgan County, see the Census Quick Fact link.







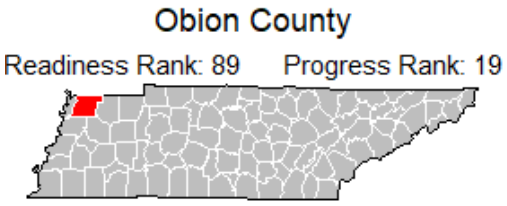


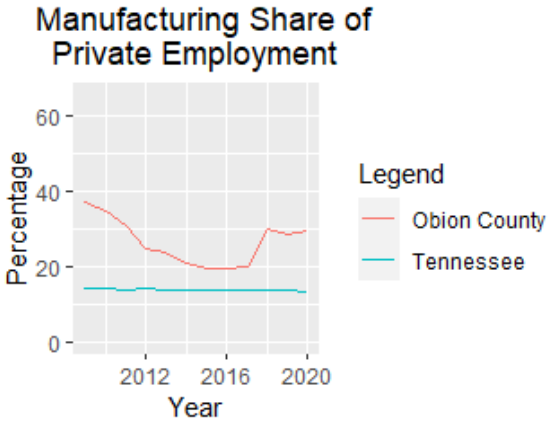
Morgan County's readiness index was 122, ranking it 48th out of 95 counties. Talent had the strongest component ranking at 40th. The county's progress index value was 142, ranking it 11th out of 95 counties. For progress, talent and environment were strong components with rankings of 6th and 12th respectively.

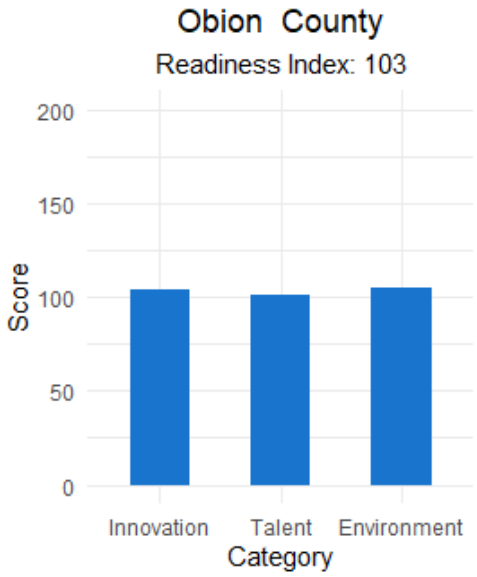
Obion County

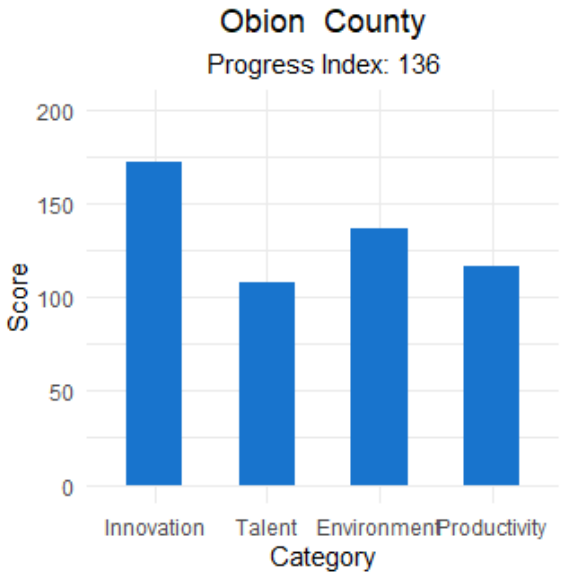
In 2020, the population of Obion County was 30,787 and its average annual manufacturing employment (NAICS 31-33) was 2,637.

Total private sector employment was 9,021 and manufacturing employment was 29.2 percent of the total. That is approximately 8.6 manufacturing employees per hundred residents and ranks number 12 among all counties. The average annual wage and salary for manufacturing workers is $47,160. This ranks number 63 among all counties. For additional demographic information on Obion County, see the Census Quick Fact link.







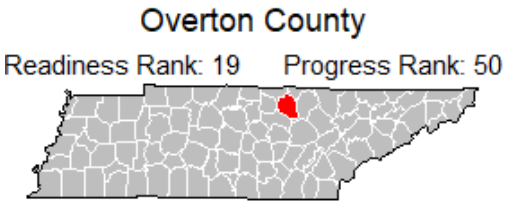


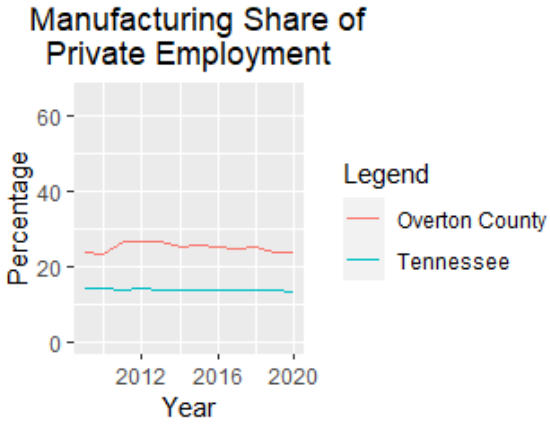
Obion County's readiness index was 103, ranking it 89th out of 95 counties. Talent had the strongest component ranking at 71st. The county's progress index value was 136, ranking it 19th out of 95 counties. For progress, innovation was the strongest component with a ranking of 9th.

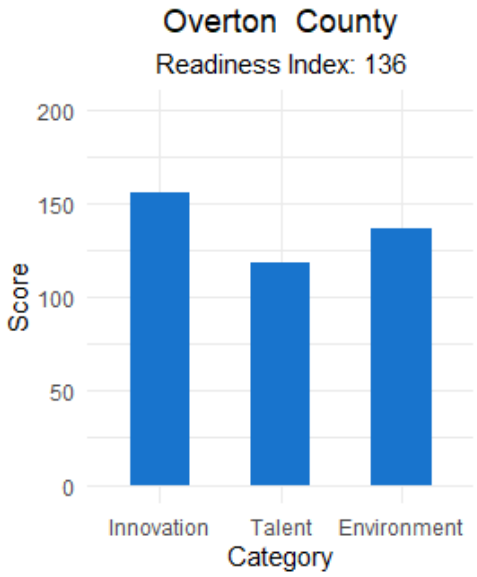
Overton County

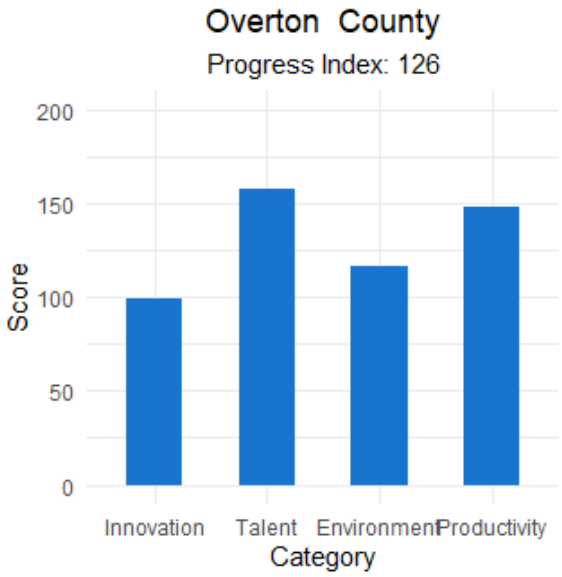
In 2020, the population of Overton County was 22,511 and its average annual manufacturing employment (NAICS 31-33) was 865.

Total private sector employment was 3,684 and manufacturing employment was 23.5 percent of the total. That is approximately 3.8 manufacturing employees per hundred residents and ranks number 57 among all counties. The average annual wage and salary for manufacturing workers is $46,684. This ranks number 66 among all counties. For additional demographic information on Overton County, see the Census Quick Fact link.







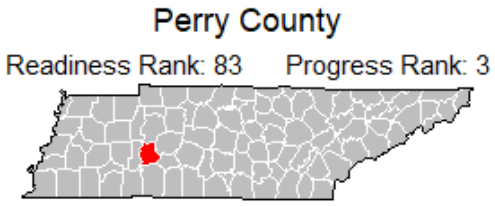


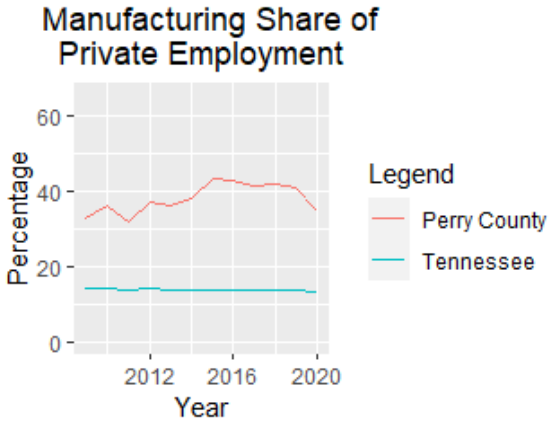
Overton County's readiness index was 136, ranking it 19th out of 95 counties. Innovation had the strongest component ranking at 7th. The county's progress index value was 126, ranking it 50th out of 95 counties. For progress, talent and productivity were the strongest components with rankings of 16th and 14th respectively.

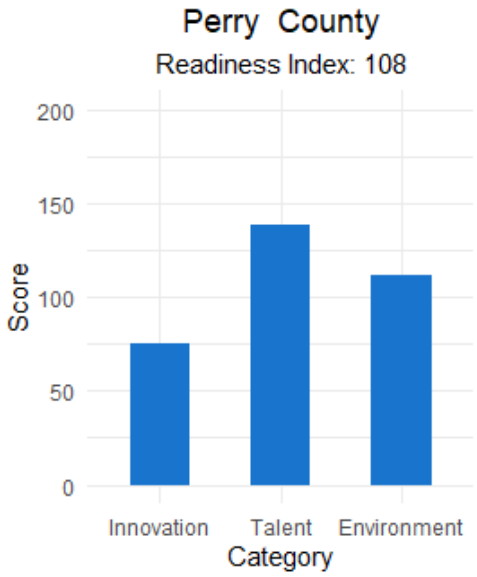
Perry County

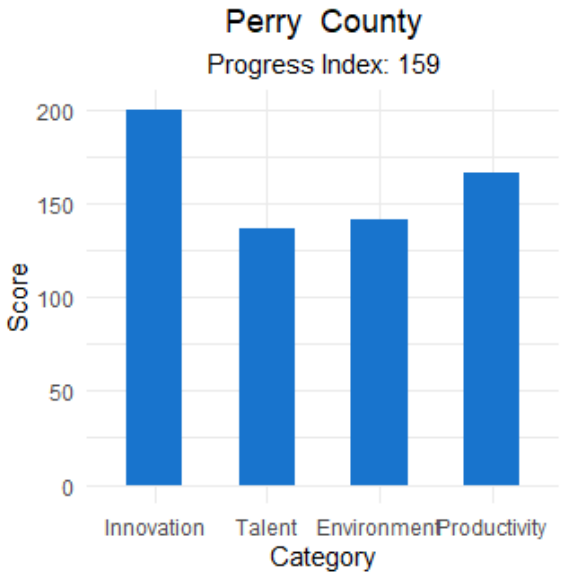
In 2020, the population of Perry County was 8,366 and its average annual manufacturing employment (NAICS 31-33) was 407.

Total private sector employment was 1,170 and manufacturing employment was 34.8 percent of the total. That is approximately 4.9 manufacturing employees per hundred residents and ranks number 48 among all counties. The average annual wage and salary for manufacturing workers is $35,102. This ranks number 87 among all counties. For additional demographic information on Perry County, see the Census Quick Fact link.







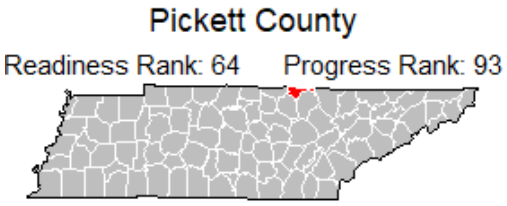


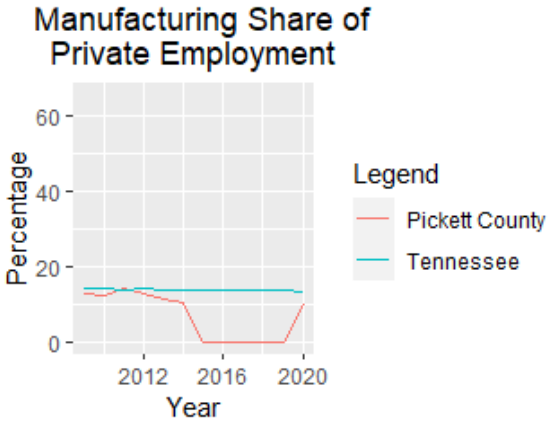
Perry County's readiness index was 108, ranking it 83rd out of 95 counties. Talent had the strongest component ranking at 27th. The county's progress index value was 159, ranking it 3rd out of 95 counties. For progress, innovation and productivity were very strong components with rankings of 2nd and 5th respectively.

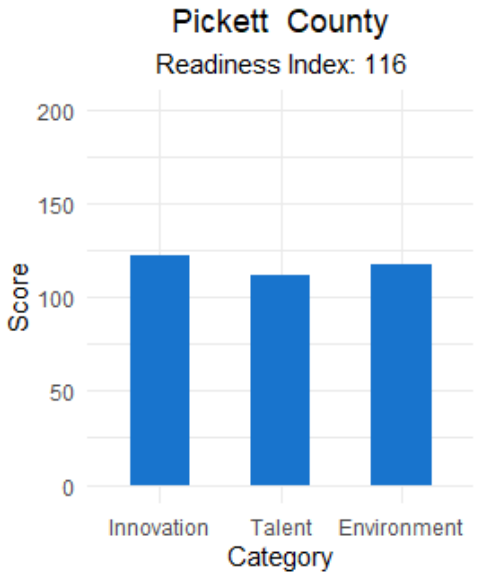
Pickett County

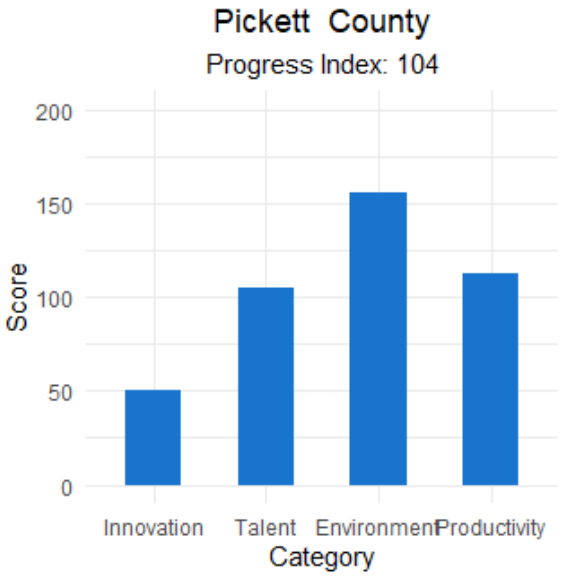
In 2020, the population of Pickett County was 5,001 and its average annual manufacturing employment (NAICS 31-33) was 68.

Total private sector employment was 675 and manufacturing employment was 10.1 percent of the total. That is approximately 1.4 manufacturing employees per hundred residents and ranks number 88 among all counties. The average annual wage and salary for manufacturing workers is $28,641. This ranks number 92 among all counties. For additional demographic information on Pickett County, see the Census Quick Fact link.







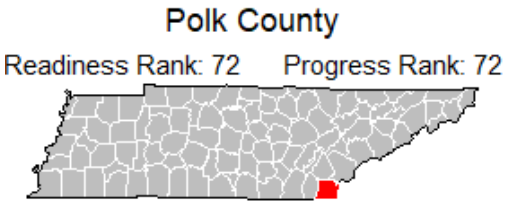


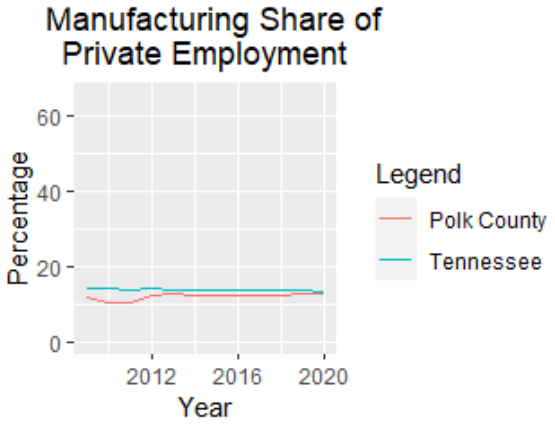
Pickett County's readiness index was 116, ranking it 64th out of 95 counties. Talent had the strongest component ranking at 43rd. The county's progress index value was 104, ranking it 93rd out of 95 counties. For progress, environment was the strongest component with a ranking of 11th.

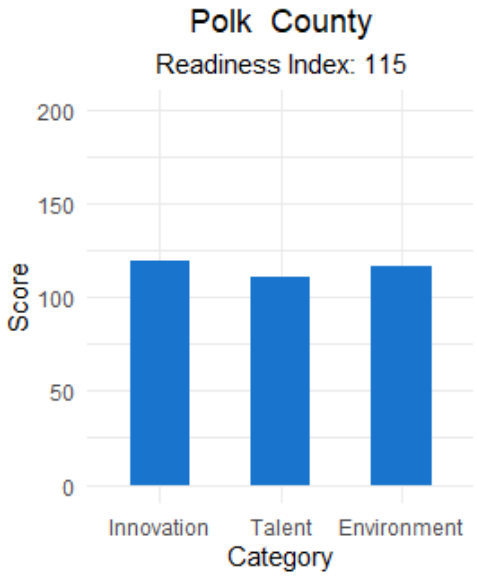
Polk County

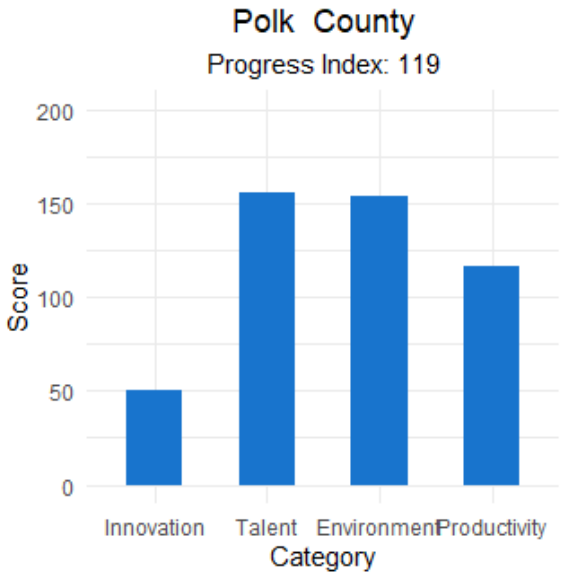
In 2020, the population of Polk County was 17,544 and its average annual manufacturing employment (NAICS 31-33) was 206.

Total private sector employment was 1,608 and manufacturing employment was 12.8 percent of the total. That is approximately 1.2 manufacturing employees per hundred residents and ranks number 90 among all counties. The average annual wage and salary for manufacturing workers is $38,253. This ranks number 83 among all counties. For additional demographic information on Polk County, see the Census Quick Fact link.







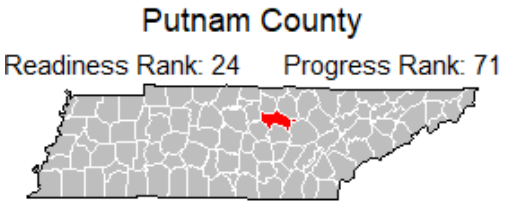


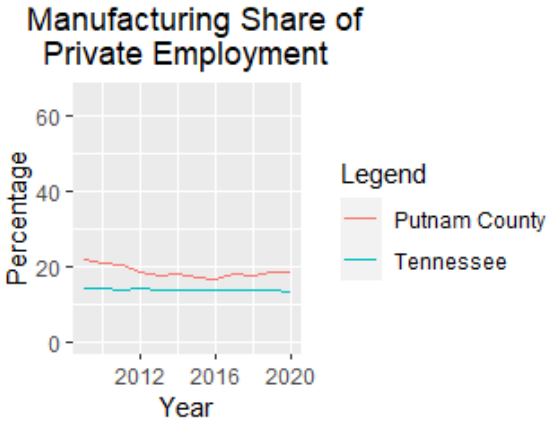
Polk County's readiness index was 115, ranking it 72nd out of 95 counties. Innovation had the strongest component ranking at 46th. The county's progress index value was 119, ranking it 72nd out of 95 counties. For progress, talent and environment were the strongest components with rankings of 18th and 15th respectively.

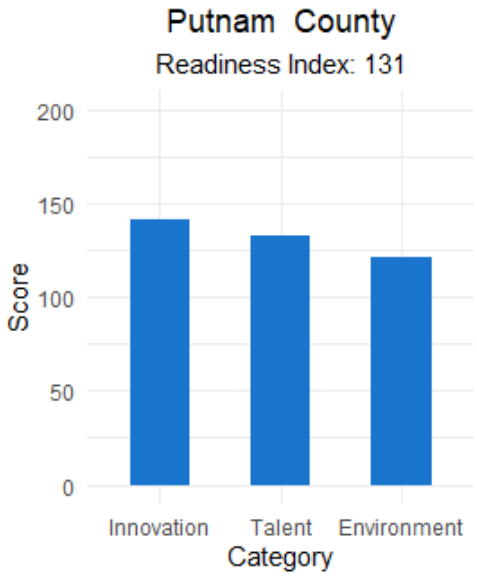
Putnam County

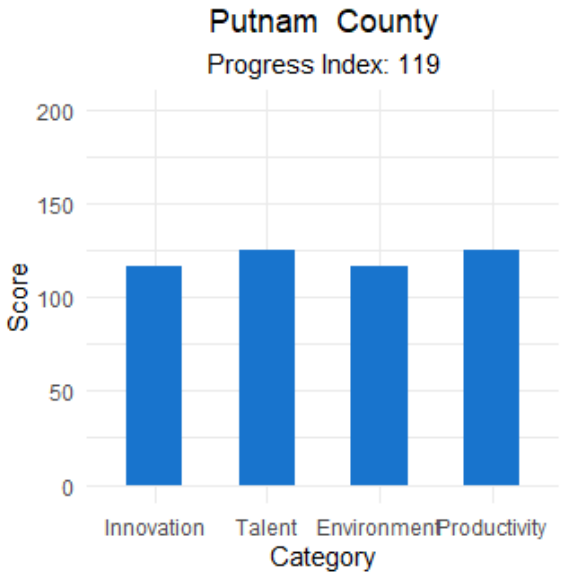
In 2020, the population of Putnam County was 79,854 and its average annual manufacturing employment (NAICS 31-33) was 5,321.

Total private sector employment was 28,532 and manufacturing employment was 18.6 percent of the total. That is approximately 6.7 manufacturing employees per hundred residents and ranks number 30 among all counties. The average annual wage and salary for manufacturing workers is $49,990. This ranks number 56 among all counties. For additional demographic information on Putnam County, see the Census Quick Fact link.







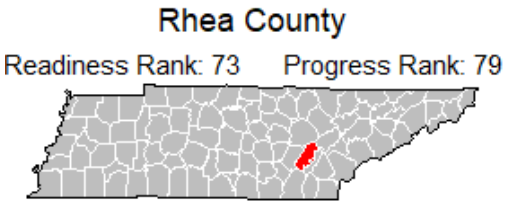


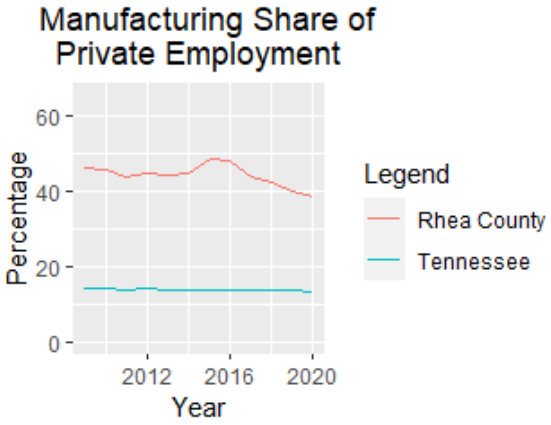
Putnam County's readiness index was 131, ranking it 24th out of 95 counties. Innovation had the strongest component ranking at 14th. The county's progress index value was 119, ranking it 71st out of 95 counties. For progress, innovation and productivity were the strongest components with rankings of 48th and 31st respectively.

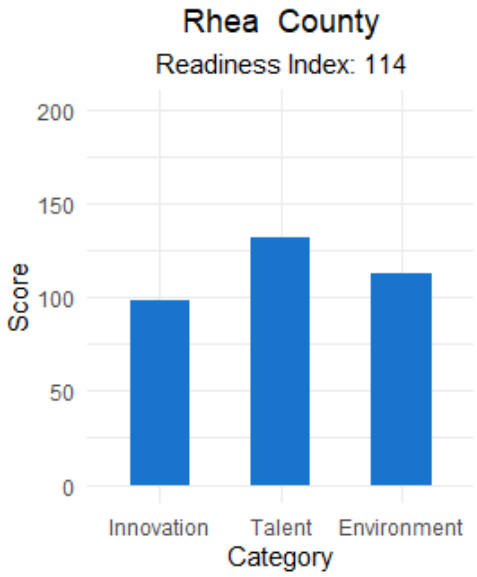
Rhea County

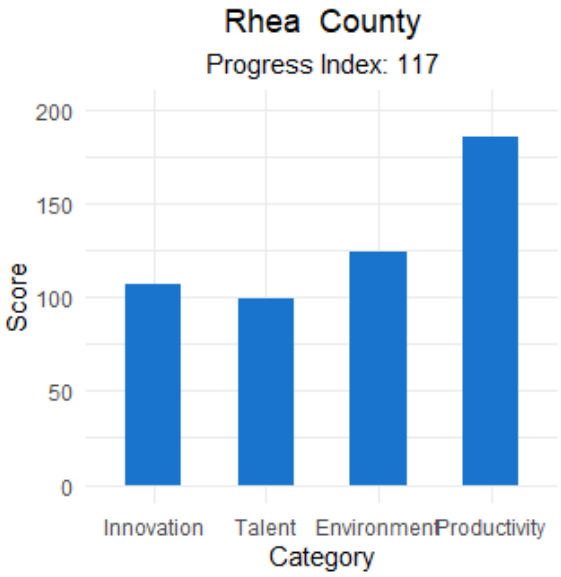
In 2020, the population of Rhea County was 32,870 and its average annual manufacturing employment (NAICS 31-33) was 2,869.

Total private sector employment was 7,456 and manufacturing employment was 38.5 percent of the total. That is approximately 8.7 manufacturing employees per hundred residents and ranks number 10 among all counties. The average annual wage and salary for manufacturing workers is $55,611. This ranks number 35 among all counties. For additional demographic information on Rhea County, see the Census Quick Fact link.







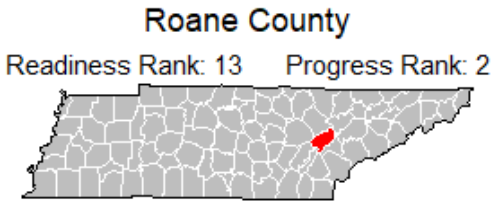


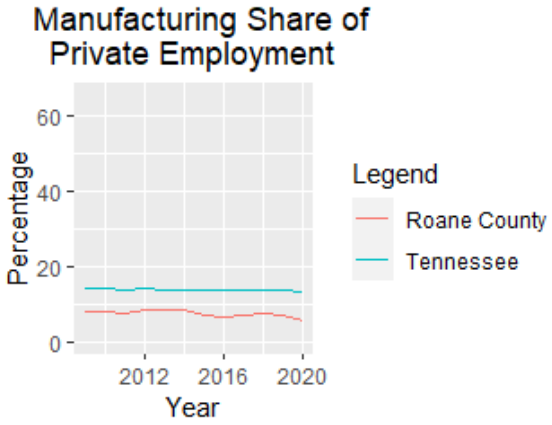
Rhea County's readiness index was 114, ranking it 73rd out of 95 counties. Talent had the strongest component ranking at 34th. The county's progress index value was 117, ranking it 79th out of 95 counties. For progress, productivity was the strongest component with a ranking of 7th.

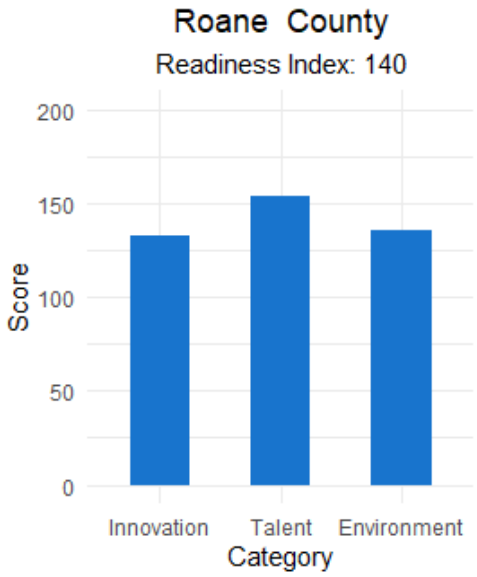
Roane County

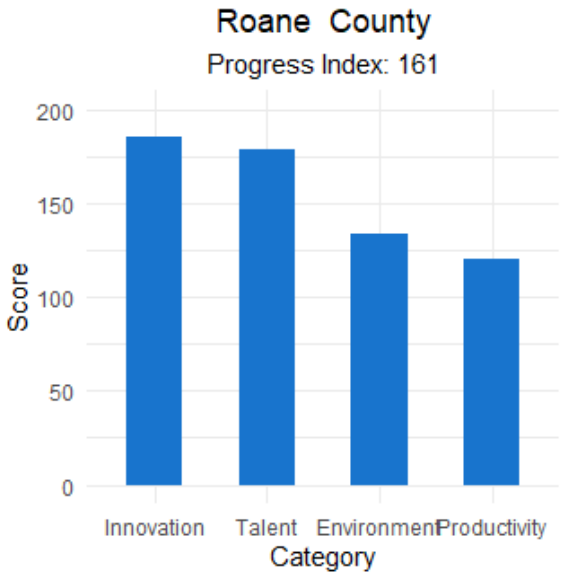
In 2020, the population of Roane County was 53,404 and its average annual manufacturing employment (NAICS 31-33) was 899.

Total private sector employment was 15,895 and manufacturing employment was 5.7 percent of the total. That is approximately 1.7 manufacturing employees per hundred residents and ranks number 84 among all counties. The average annual wage and salary for manufacturing workers is $50,459. This ranks number 54 among all counties. For additional demographic information on Roane County, see the Census Quick Fact link.







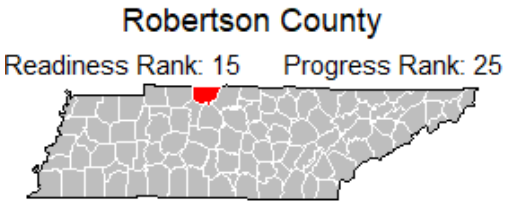


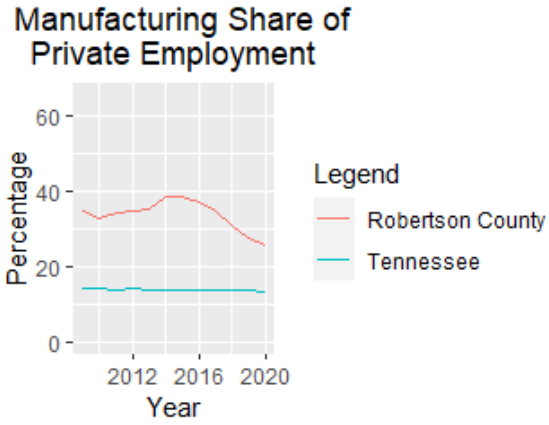
Roane County's readiness index was 140, ranking it 13th out of 95 counties. Talent had the strongest component ranking at 9th. The county's progress index value was 161, ranking it 2nd out of 95 counties. For progress, innovation and talent were the strongest components with rankings of 8th and 9th respectively.

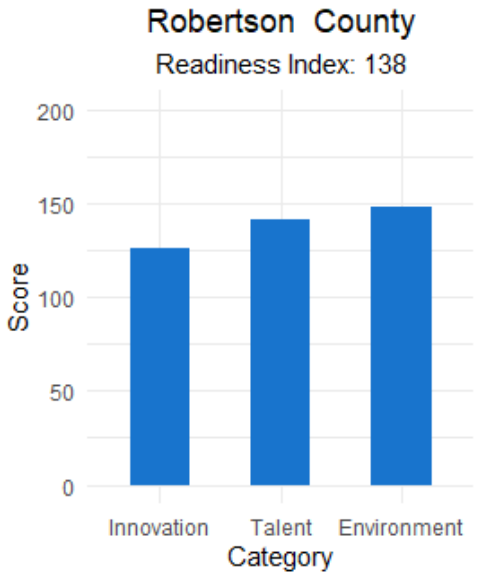
Robertson County

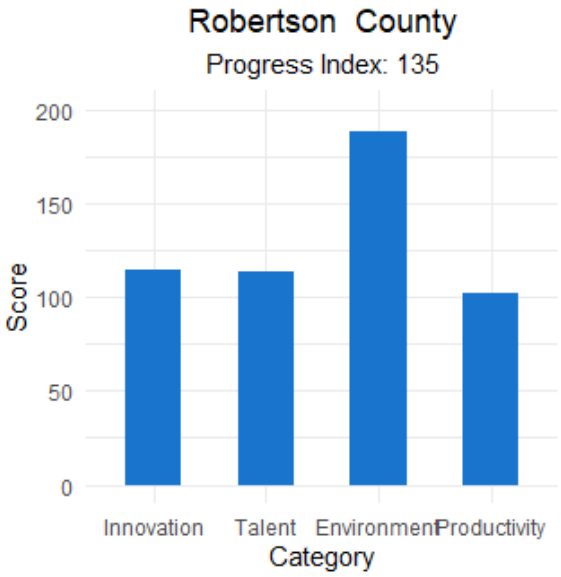
In 2020, the population of Robertson County was 72,803 and its average annual manufacturing employment (NAICS 31-33) was 4,695.

Total private sector employment was 18,200 and manufacturing employment was 25.8 percent of the total. That is approximately 6.4 manufacturing employees per hundred residents and ranks number 35 among all counties. The average annual wage and salary for manufacturing workers is $56,170. This ranks number 31 among all counties. For additional demographic information on Robertson County, see the Census Quick Fact link.







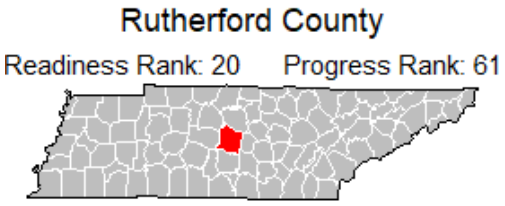


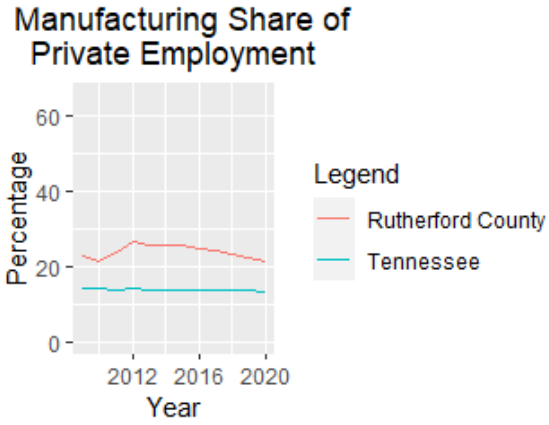
Robertson County's readiness index was 138, ranking it 15th out of 95 counties. Environment had the strongest component ranking at 10th. The county's progress index value was 135, ranking it 25th out of -

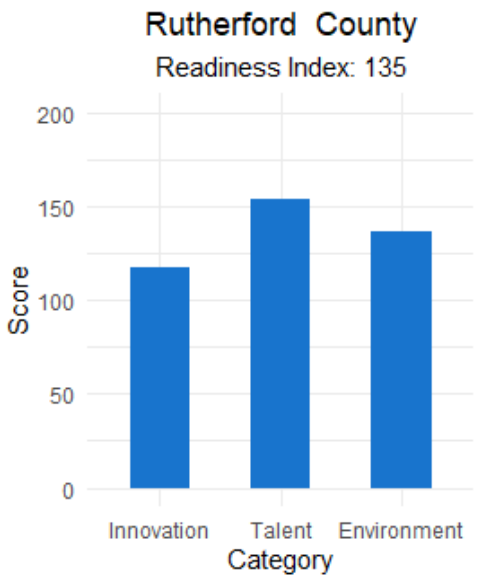
Rutherford County

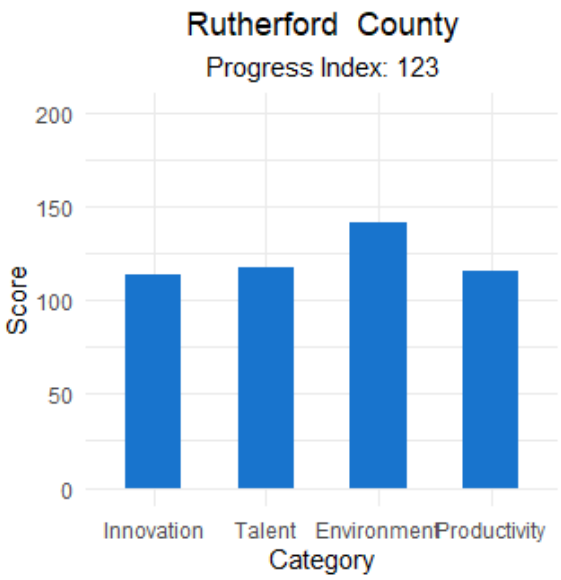
In 2020, the population of Rutherford County was 341,486 and its average annual manufacturing employment (NAICS 31-33) was 23,467.

Total private sector employment was 110,561 and manufacturing employment was 21.2 percent of the total. That is approximately 6.9 manufacturing employees per hundred residents and ranks number 27 among all counties. The average annual wage and salary for manufacturing workers is $73,731. This ranks number 7 among all counties. For additional demographic information on Rutherford County, see the Census Quick Fact link.







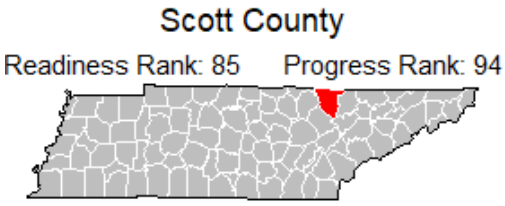


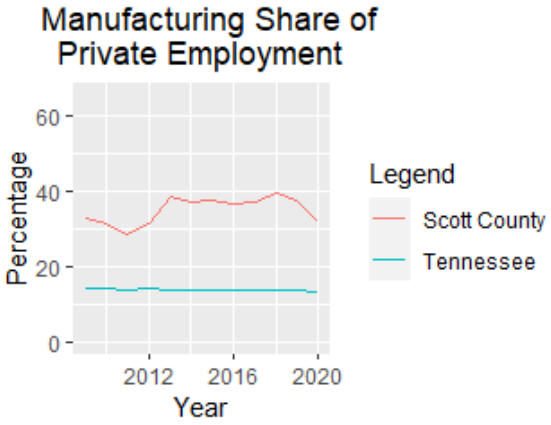
Rutherford County's readiness index was 135, ranking it 20th out of 95 counties. Talent had the strongest component ranking at 8th. The county's progress index value was 123, ranking it 61st out of 95 counties. For progress, environment was the strongest component with a ranking of 35th.

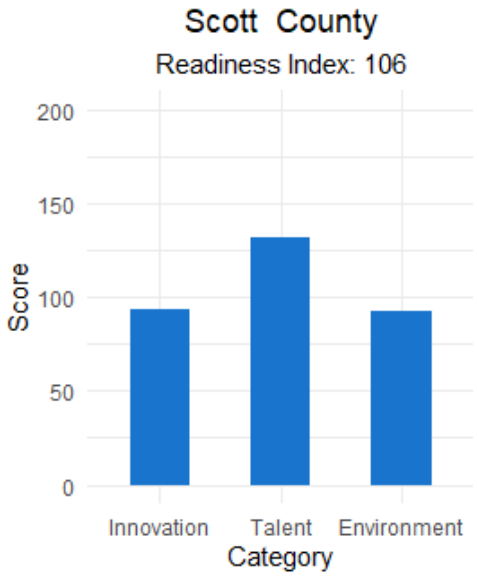
Scott County

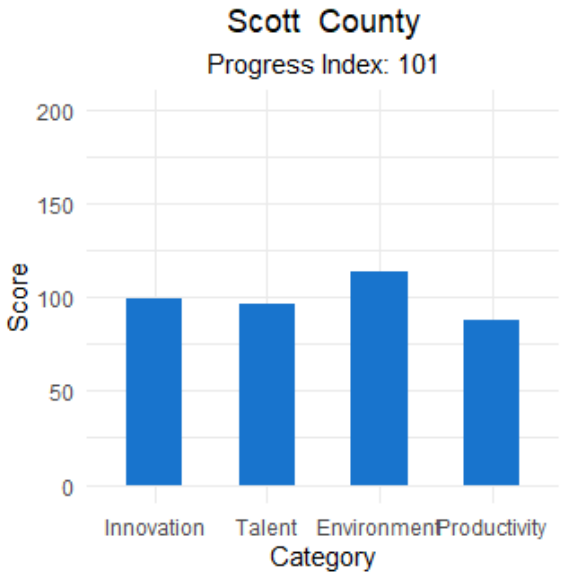
In 2020, the population of Scott County was 21,850 and its average annual manufacturing employment (NAICS 31-33) was 1,286.

Total private sector employment was 4,050 and manufacturing employment was 31.8 percent of the total. That is approximately 5.9 manufacturing employees per hundred residents and ranks number 39 among all counties. The average annual wage and salary for manufacturing workers is $33,693. This ranks number 89 among all counties. For additional demographic information on Scott County, see the Census Quick Fact link.







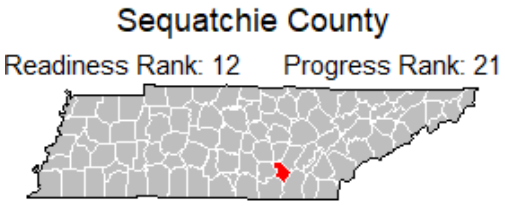


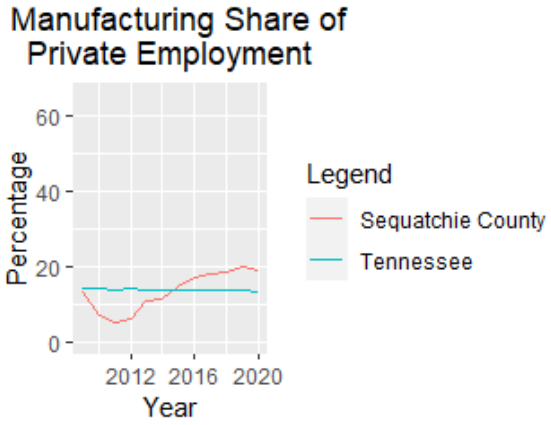
Scott County's readiness index was 106, ranking it 85th out of 95 counties. Talent had the strongest component ranking at 35th. The county's progress index value was 101, ranking it 94th out of 95 counties. For progress, innovation was the strongest component with a ranking of 76th.

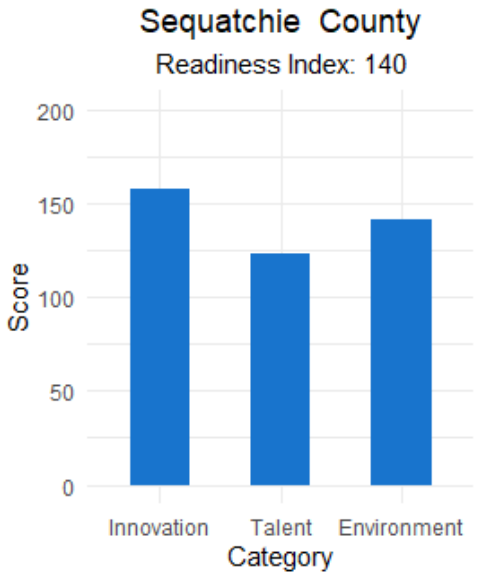
Sequatchie County

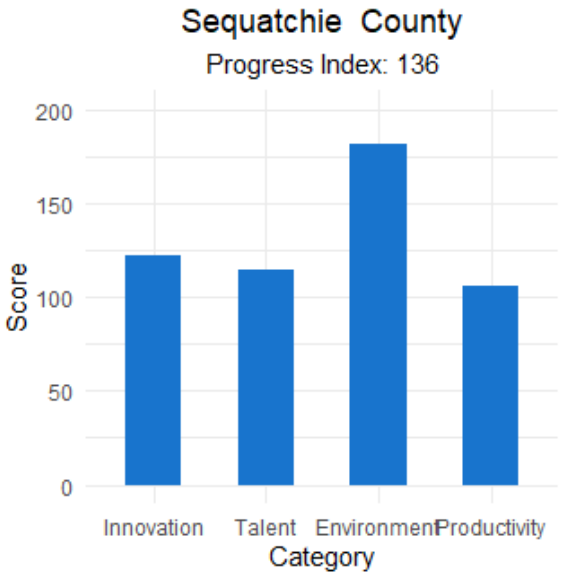
In 2020, the population of Sequatchie County was 15,826 and its average annual manufacturing employment (NAICS 31-33) was 409.

Total private sector employment was 2,166 and manufacturing employment was 18.9 percent of the total. That is approximately 2.6 manufacturing employees per hundred residents and ranks number 73 among all counties. The average annual wage and salary for manufacturing workers is $47,903. This ranks number 60 among all counties. For additional demographic information on Sequatchie County, see the Census Quick Fact link.







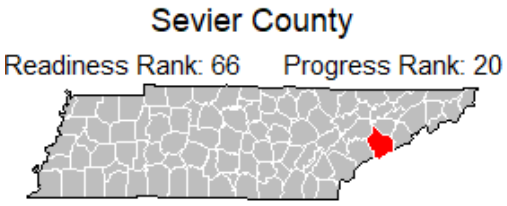


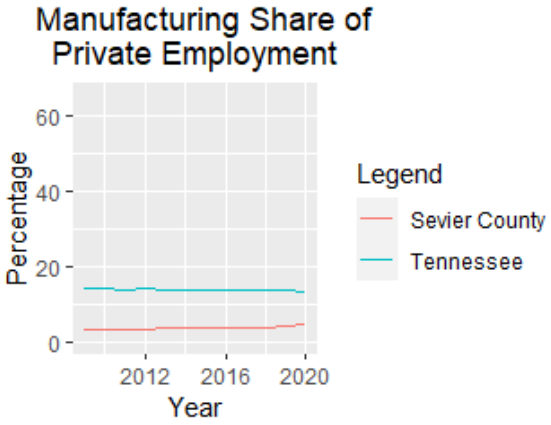
Sequatchie County's readiness index was 140, ranking it 12th out of 95 counties. Innovation had the strongest component ranking at 4th. The county's progress index value was 136, ranking it 21st out of 95 counties. For progress, environment was the strongest component with a ranking of 2nd.

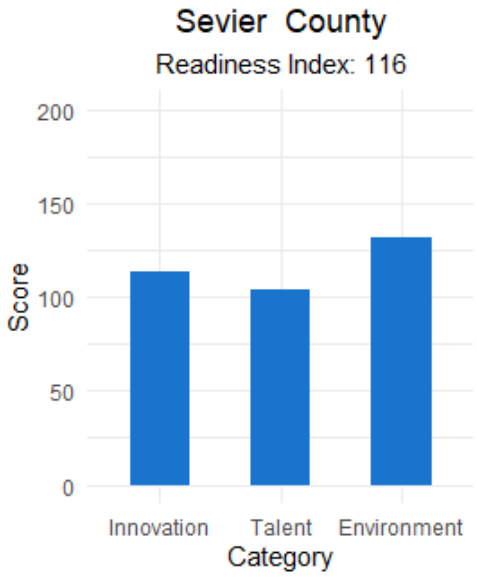
Sevier County

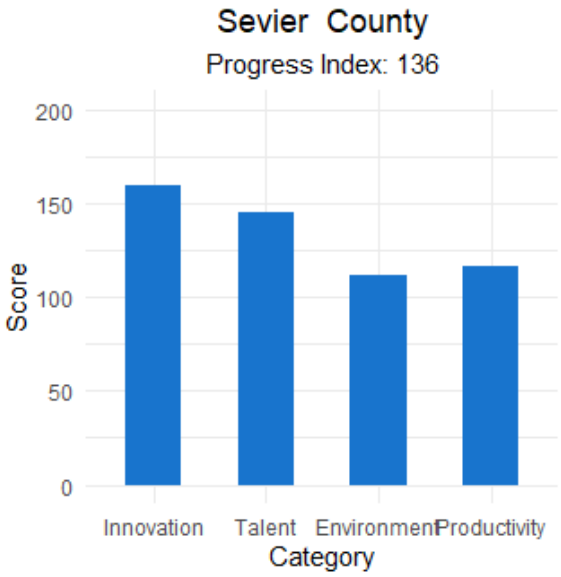
In 2020, the population of Sevier County was 98,380 and its average annual manufacturing employment (NAICS 31-33) was 1,973.

Total private sector employment was 40,319 and manufacturing employment was 4.9 percent of the total. That is approximately 2.0 manufacturing employees per hundred residents and ranks number 81 among all counties. The average annual wage and salary for manufacturing workers is $51,604. This ranks number 48 among all counties. For additional demographic information on Sevier County, see the Census Quick Fact link.







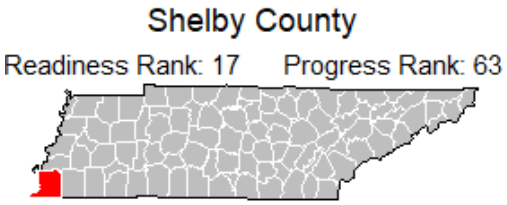


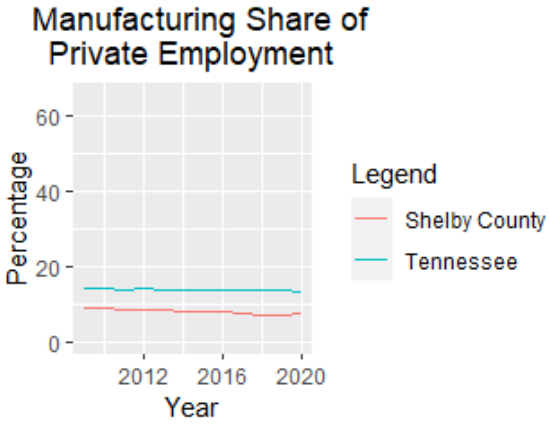
Sevier County's readiness index was 116, ranking it 66th out of 95 counties. Environment had the strongest component ranking at 28th. The county's progress index value was 136, ranking it 20th out of 95 counties. For progress, innovation was the strongest component with a ranking of 13th.

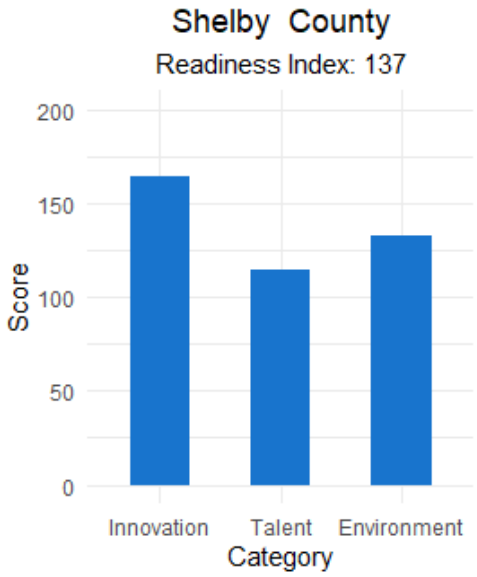
Shelby County

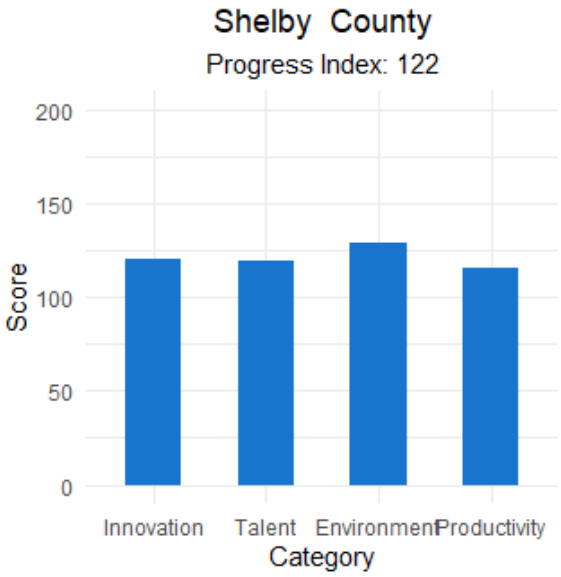
In 2020, the population of Shelby County was 929,744 and its average annual manufacturing employment (NAICS 31-33) was 31,194.

Total private sector employment was 414,783 and manufacturing employment was 7.5 percent of the total. That is approximately 3.4 manufacturing employees per hundred residents and ranks number 66 among all counties. The average annual wage and salary for manufacturing workers is $82,642. This ranks number 4 among all counties. For additional demographic information on Shelby County, see the Census Quick Fact link.







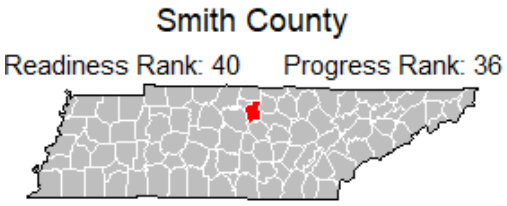


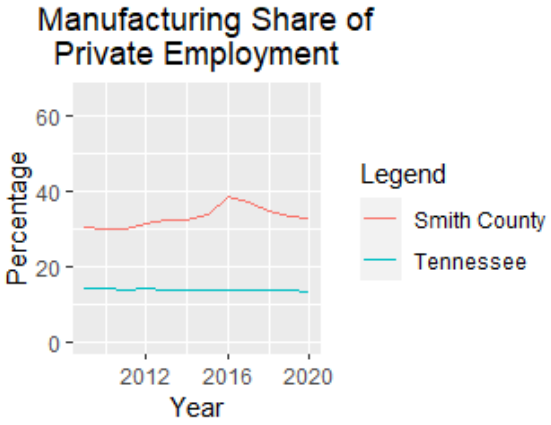
Shelby County's readiness index was 137, ranking it 17th out of 95 counties. Innovation had the strongest component ranking at 2nd. The county's progress index value was 122, ranking it 63rd out of 95 counties. For progress, innovation was the strongest component with a ranking of 40th.

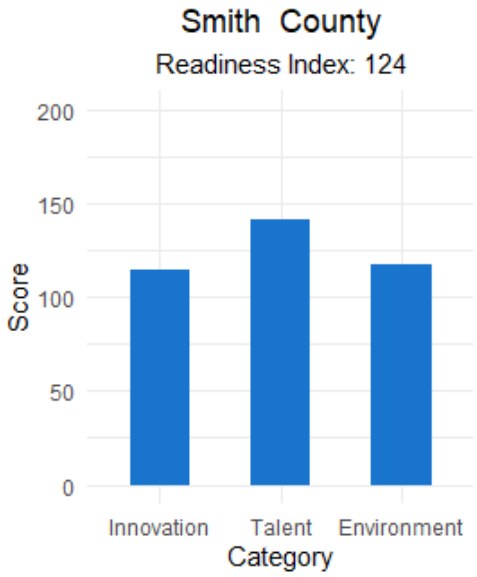
Smith County

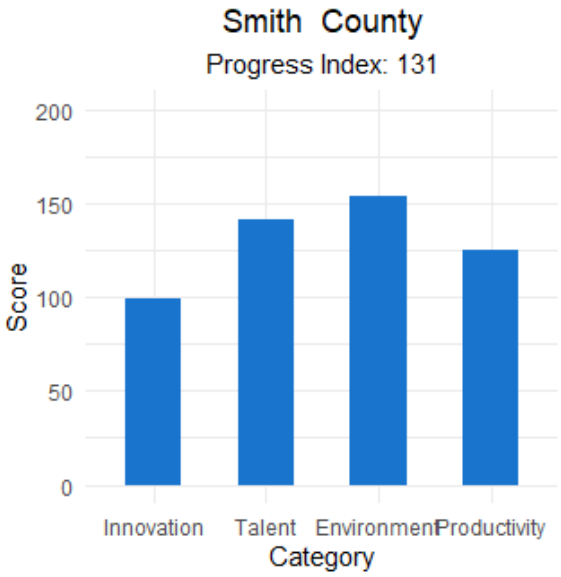
In 2020, the population of Smith County was 19,904 and its average annual manufacturing employment (NAICS 31-33) was 1,295.

Total private sector employment was 3,942 and manufacturing employment was 32.9 percent of the total. That is approximately 6.5 manufacturing employees per hundred residents and ranks number 32 among all counties. The average annual wage and salary for manufacturing workers is $55,000. This ranks number 38 among all counties. For additional demographic information on Smith County, see the Census Quick Fact link.







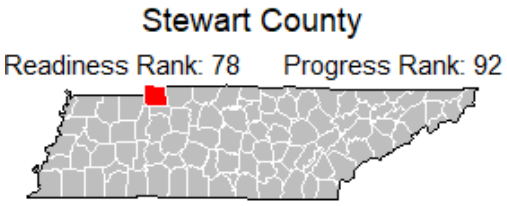


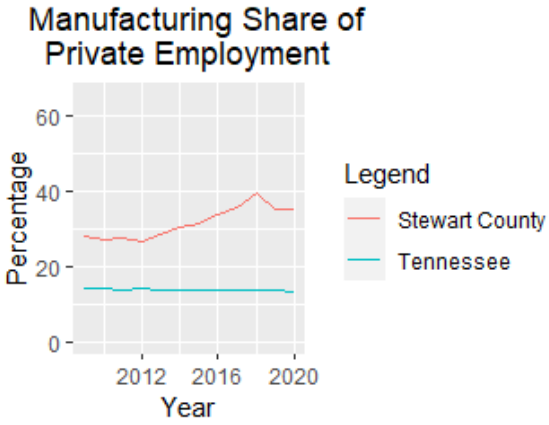
Smith County's readiness index was 124, ranking it 40th out of 95 counties. Talent had the strongest component ranking at 18th. The county's progress index value was 131, ranking it 36th out of 95 counties. For progress, environment was the strongest component with a ranking of 13th.

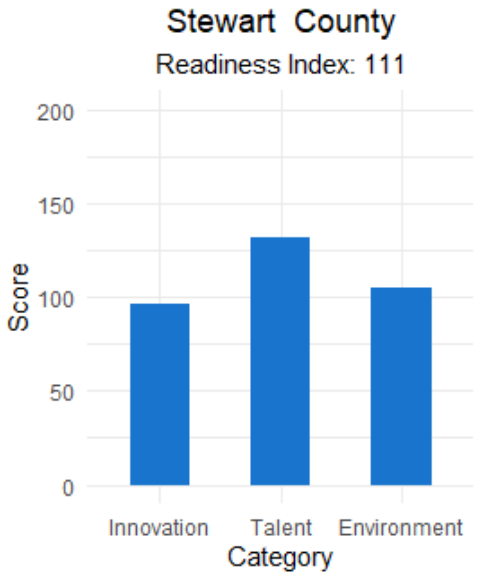
Stewart County

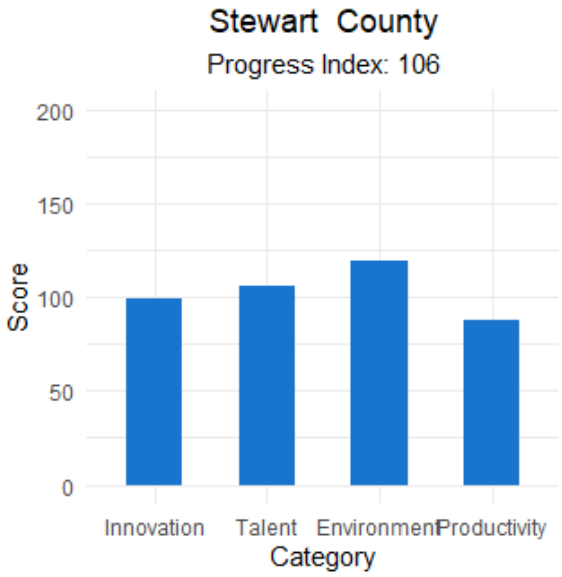
In 2020, the population of Stewart County was 13,657 and its average annual manufacturing employment (NAICS 31-33) was 635.

Total private sector employment was 1,808 and manufacturing employment was 35.1 percent of the total. That is approximately 4.6 manufacturing employees per hundred residents and ranks number 49 among all counties. The average annual wage and salary for manufacturing workers is $41,906. This ranks number 78 among all counties. For additional demographic information on Stewart County, see the Census Quick Fact link.







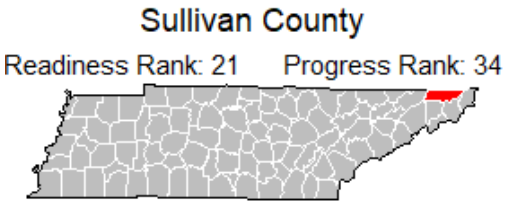


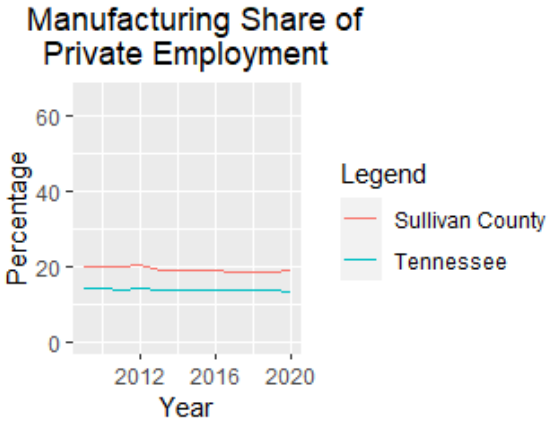
Stewart County's readiness index was 111, ranking it 78th out of 95 counties. Talent had the strongest component ranking at 38th. The county's progress index value was 106, ranking it 92nd out of 95 counties. For progress, innovation was the strongest component with a ranking of 76th.

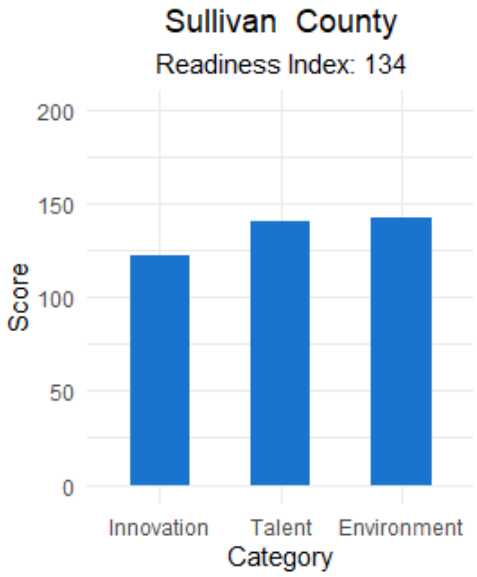
Sullivan County

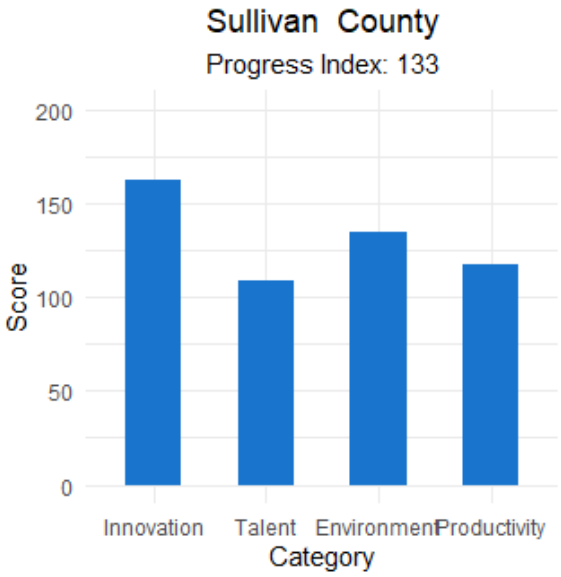
In 2020, the population of Sullivan County was 158,163 and its average annual manufacturing employment (NAICS 31-33) was 11,072.

Total private sector employment was 58,905 and manufacturing employment was 18.8 percent of the total. That is approximately 7.0 manufacturing employees per hundred residents and ranks number 26 among all counties. The average annual wage and salary for manufacturing workers is $84,476. This ranks number 3 among all counties. For additional demographic information on Sullivan County, see the Census Quick Fact link.







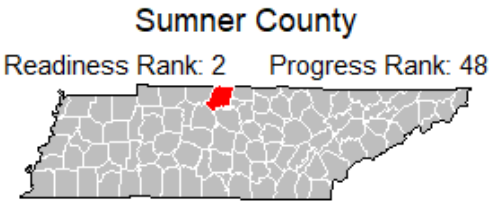


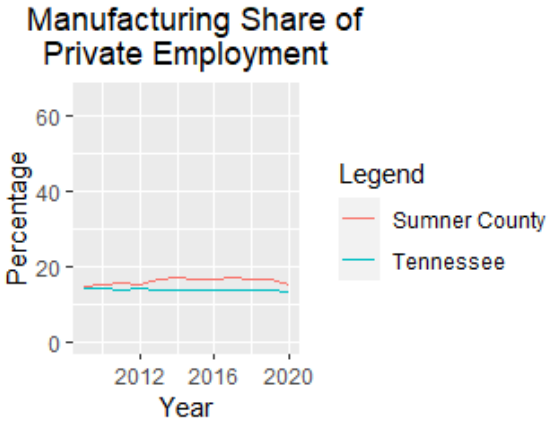
Sullivan County's readiness index was 134, ranking it 21st out of 95 counties. Talent had the strongest component ranking at 22nd. The county's progress index value was 133, ranking it 34th out of 95 counties. For progress, innovation was the strongest component with a ranking of 11th.

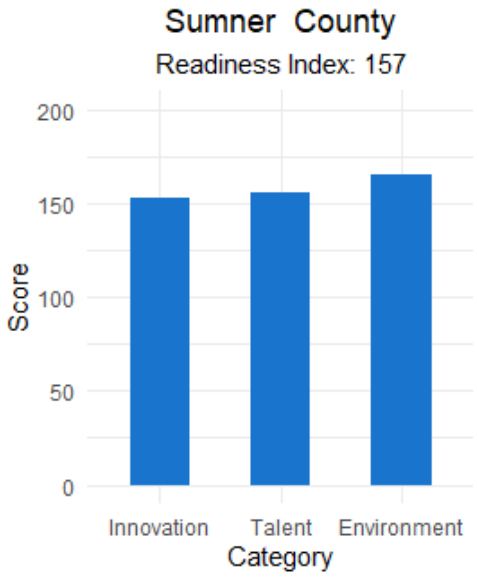
Sumner County

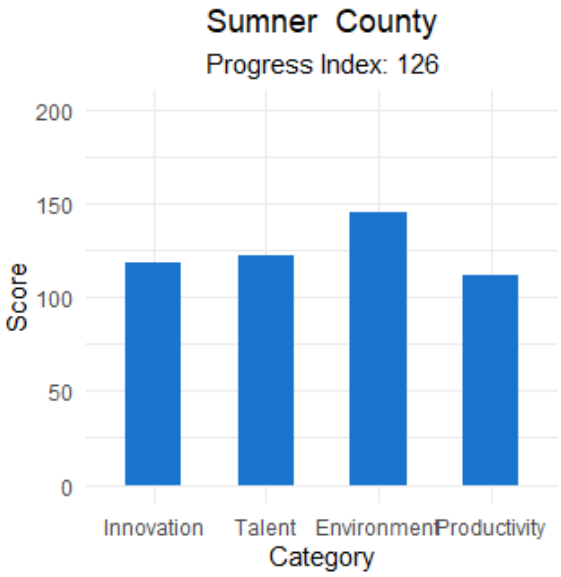
In 2020, the population of Sumner County was 196,281 and its average annual manufacturing employment (NAICS 31-33) was 7,075.

Total private sector employment was 46,613 and manufacturing employment was 15.2 percent of the total. That is approximately 3.6 manufacturing employees per hundred residents and ranks number 62 among all counties. The average annual wage and salary for manufacturing workers is $57,448. This ranks number 26 among all counties. For additional demographic information on Sumner County, see the Census Quick Fact link.







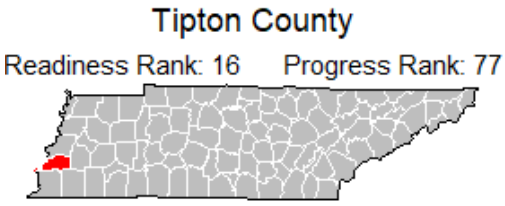


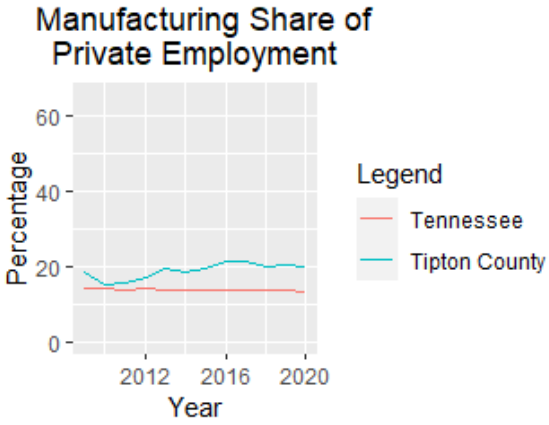
Sumner County's readiness index was 157, ranking it 2nd out of 95 counties. All three readiness components ranked in the top ten of their respective categories. The county's progress index value was 126, ranking it 48th out of 95 counties. For progress, environment was the strongest component with a ranking of 27th.

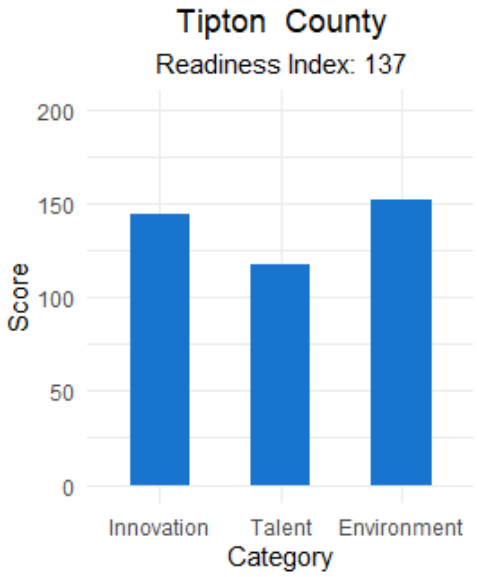
Tipton County

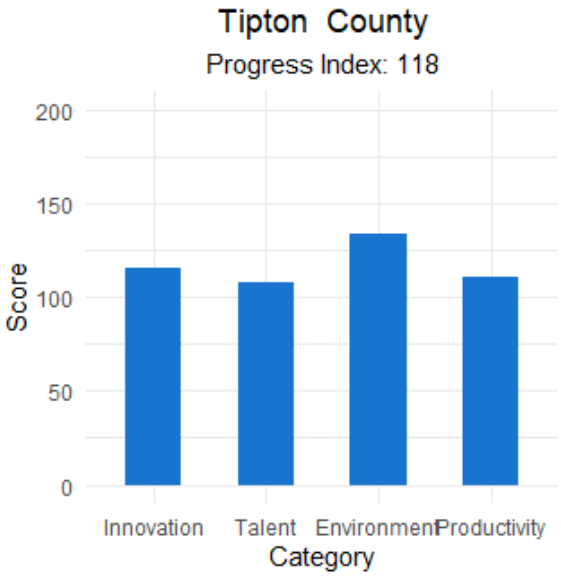
In 2020, the population of Tipton County was 60,970 and its average annual manufacturing employment (NAICS 31-33) was 1,780.

Total private sector employment was 8,913 and manufacturing employment was 20.0 percent of the total. That is approximately 2.9 manufacturing employees per hundred residents and ranks number 69 among all counties. The average annual wage and salary for manufacturing workers is $51,291. This ranks number 50 among all counties. For additional demographic information on Tipton County, see the Census Quick Fact link.







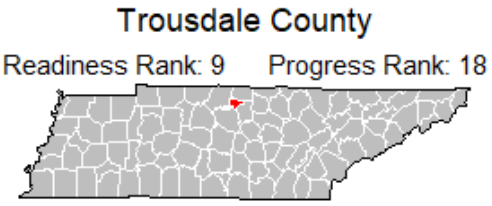


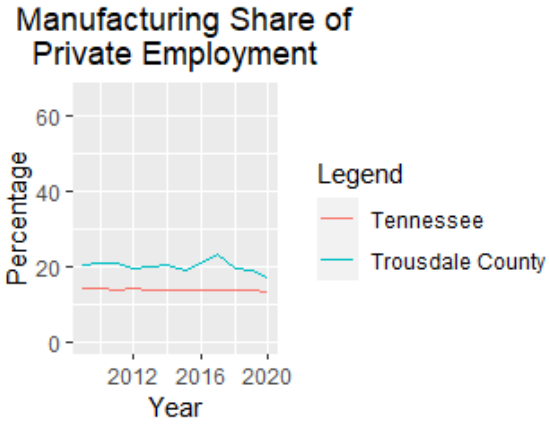
Tipton County's readiness index was 137, ranking it 16th out of 95 counties. Environment had the strongest component ranking at 7th. The county's progress index value was 118, ranking it 77th out of 95 counties. For progress, environment was also the strongest component with a ranking of 49th.

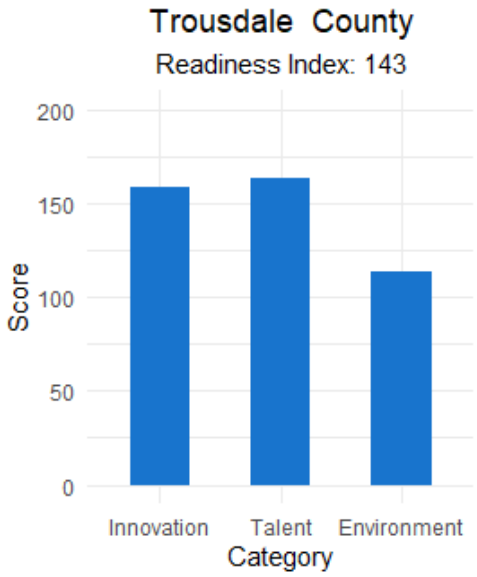
Trousdale County

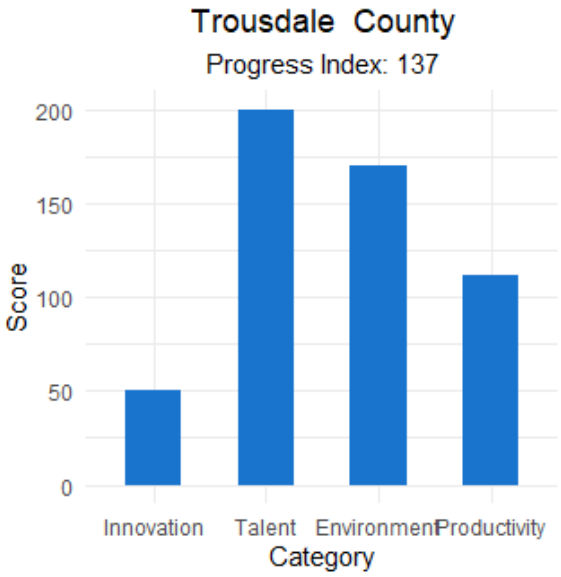
In 2020, the population of Trousdale County was 11,615 and its average annual manufacturing employment (NAICS 31-33) was 228.

Total private sector employment was 1,319 and manufacturing employment was 17.3 percent of the total. That is approximately 2.0 manufacturing employees per hundred residents and ranks number 82 among all counties. The average annual wage and salary for manufacturing workers is $46,978. This ranks number 65 among all counties. For additional demographic information on Trousdale County, see the Census Quick Fact link.







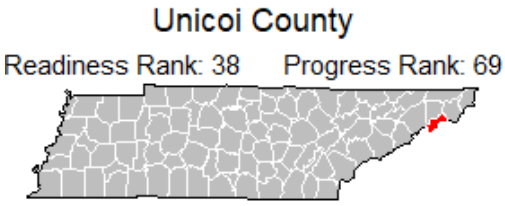


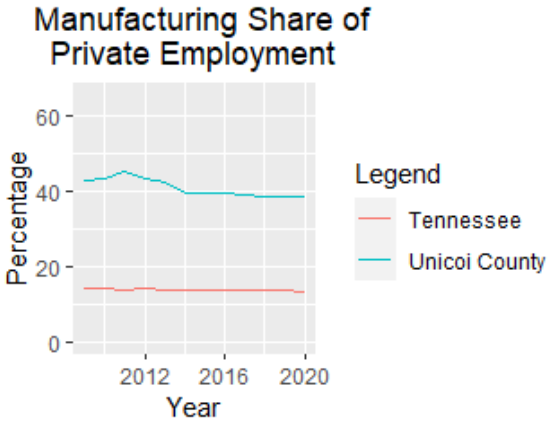
Trousdale County's readiness index was 143, ranking it 9th out of 95 counties. Innovation and talent had the strongest component rankings at 3rd and 4th respectively. The county's progress index value was 137, ranking it 18th out of 95 counties. For progress, talent and environment were the strongest components again with rankings of 2nd and 4threspectively.

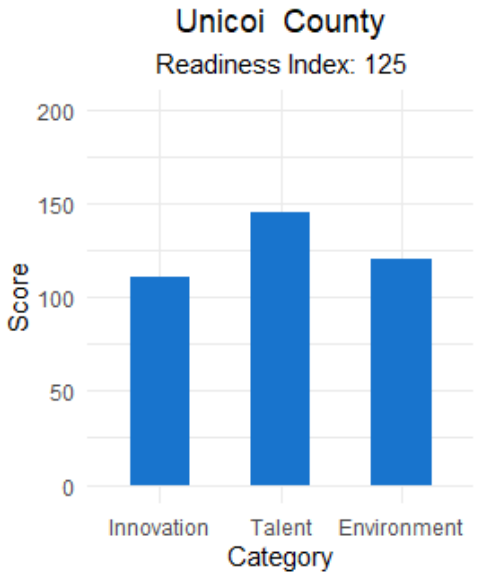
Unicoi County

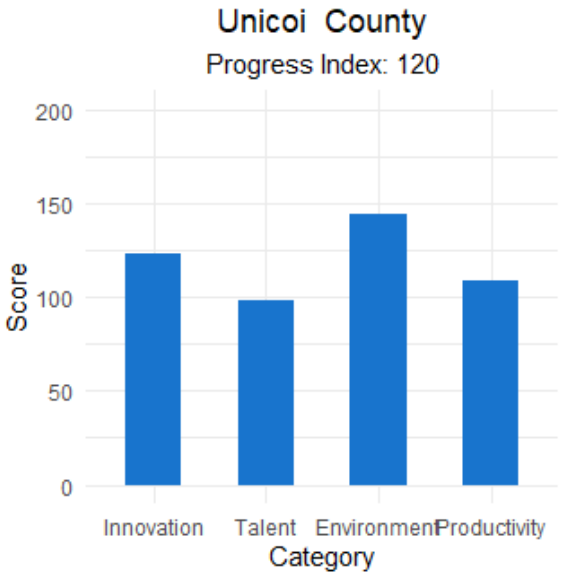
In 2020, the population of Unicoi County was 17,928 and its average annual manufacturing employment (NAICS 31-33) was 1,512.

Total private sector employment was 3,915 and manufacturing employment was 38.6 percent of the total. That is approximately 8.4 manufacturing employees per hundred residents and ranks number 13 among all counties. The average annual wage and salary for manufacturing workers is $70,967. This ranks number 9 among all counties. For additional demographic information on Unicoi County, see the Census Quick Fact link.







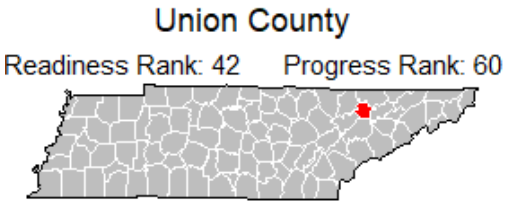


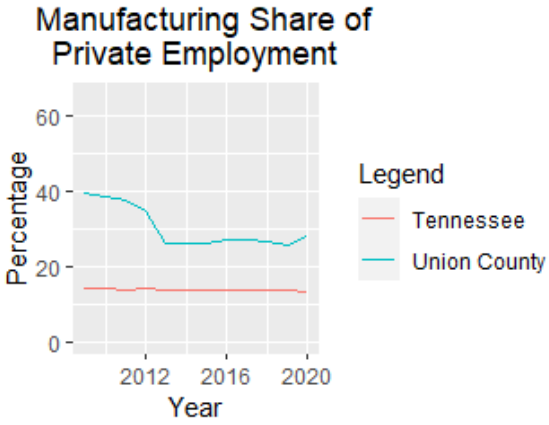
Unicoi County's readiness index was 125, ranking it 38th out of 95 counties. Talent had the strongest component ranking at 14th. The county's progress index value was 120, ranking it 69th out of 95 counties. For progress, environment was the strongest component with a ranking of 30th.

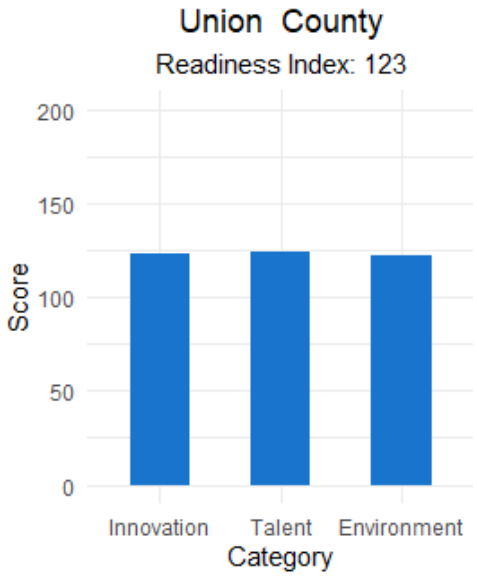
Union County

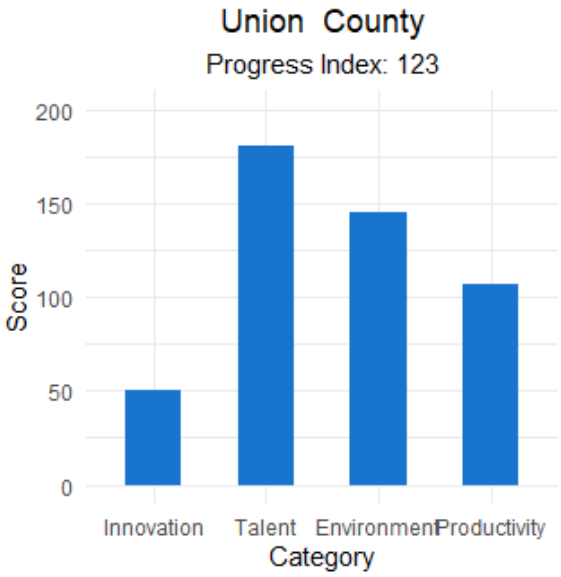
In 2020, the population of Union County was 19,802 and its average annual manufacturing employment (NAICS 31-33) was 465.

Total private sector employment was 1,658 and manufacturing employment was 28.0 percent of the total. That is approximately 2.3 manufacturing employees per hundred residents and ranks number 77 among all counties. The average annual wage and salary for manufacturing workers is $58,066. This ranks number 24 among all counties. For additional demographic information on Union County, see the Census Quick Fact link.







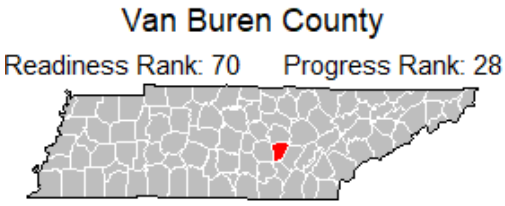


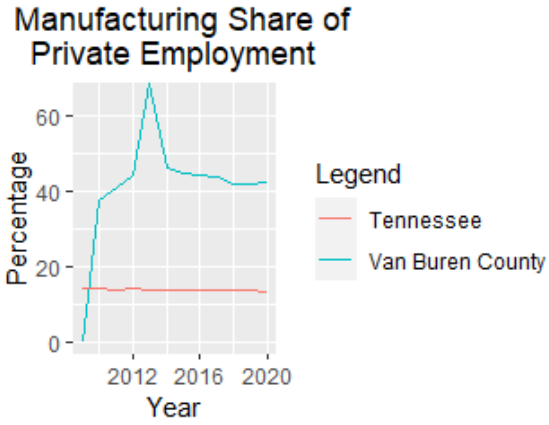
Union County's readiness index was 123, ranking it 42nd out of 95 counties. Talent had the strongest component ranking at 40th. The county's progress index value was 123, ranking it 60th out of 95 counties. For progress, talent was the strongest component with a ranking of 8th.

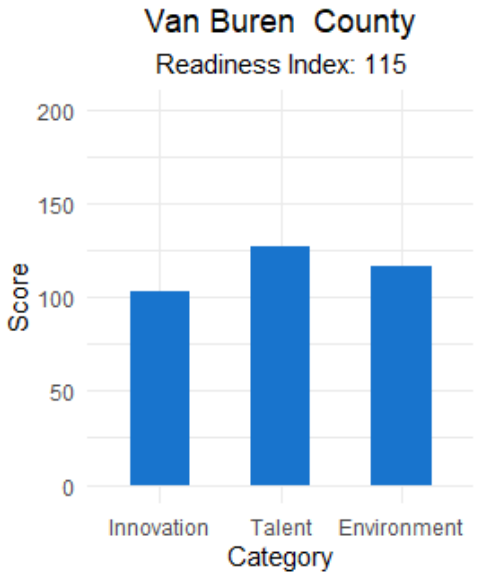
Van Buren County

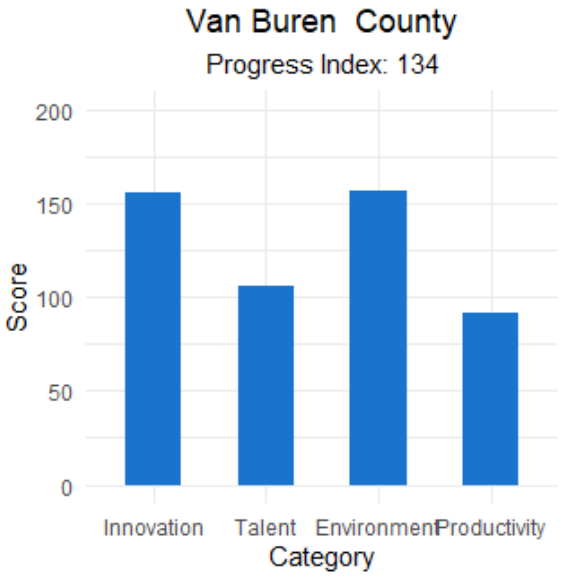
In 2020, the population of Van Buren County was 6,168 and its average annual manufacturing employment (NAICS 31-33) was 146.

Total private sector employment was 346 and manufacturing employment was 42.2 percent of the total. That is approximately 2.4 manufacturing employees per hundred residents and ranks number 76 among all counties. The average annual wage and salary for manufacturing workers is $42,421. This ranks number 76 among all counties. For additional demographic information on Van Buren County, see the Census Quick Fact link.







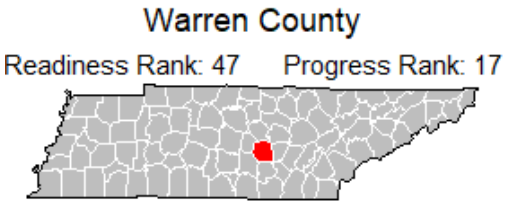


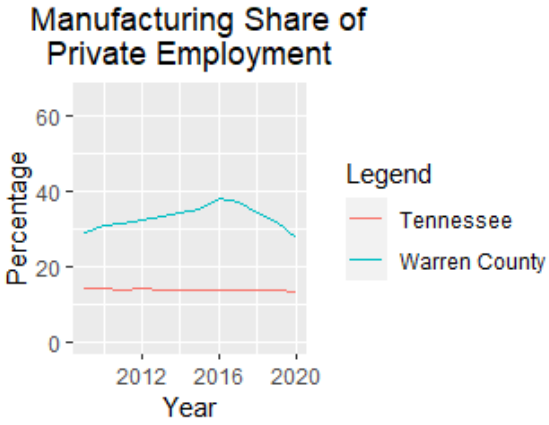
Van Buren County's readiness index was 115, ranking it 70th out of 95 counties. Talent had the strongest component ranking at 46th. The county's progress index value was 134, ranking it 28th out of 95 counties. For progress, innovation and environment were the strongest components with rankings of 14th and 10th respectively.

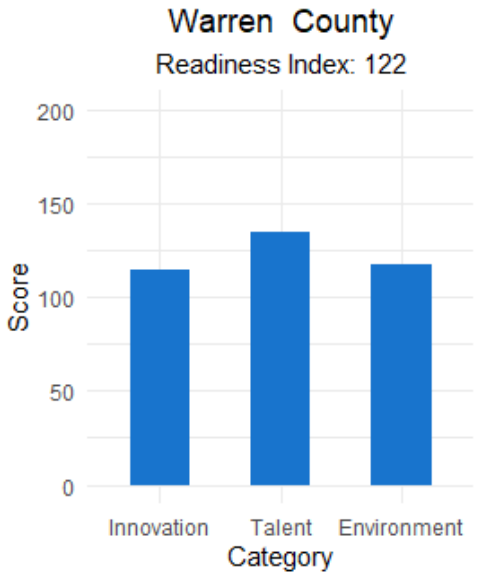
Warren County

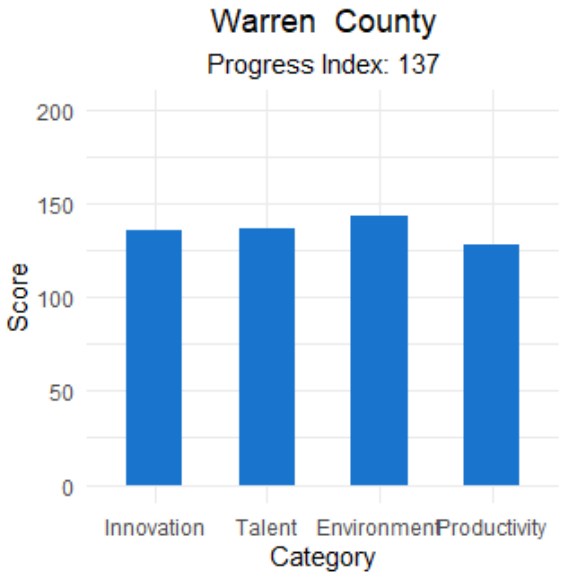
In 2020, the population of Warren County was 40,953 and its average annual manufacturing employment (NAICS 31-33) was 2,917.

Total private sector employment was 10,527 and manufacturing employment was 27.7 percent of the total. That is approximately 7.1 manufacturing employees per hundred residents and ranks number 24 among all counties. The average annual wage and salary for manufacturing workers is $51,710. This ranks number 47 among all counties. For additional demographic information on Warren County, see the Census Quick Fact link.







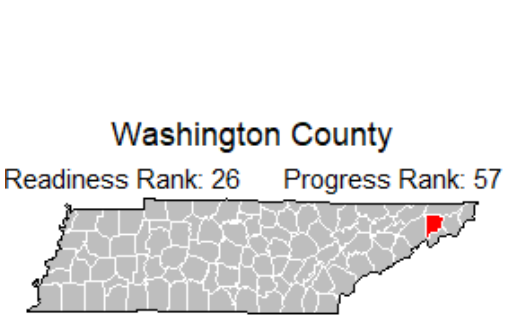


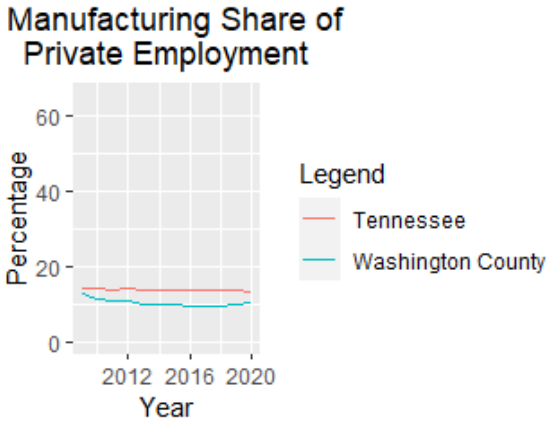
Warren County's readiness index was 122, ranking it 47th out of 95 counties. Talent had the strongest component ranking at 32nd. The county's progress index value was 137, ranking it 17th out of 95 counties. For progress, innovation was the strongest component with a ranking of 24th.

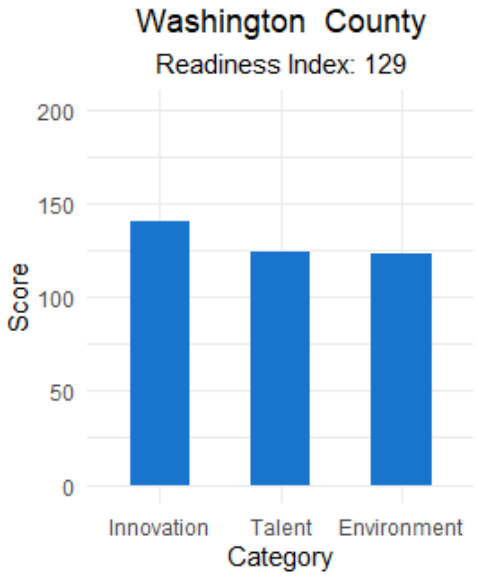
Washington County

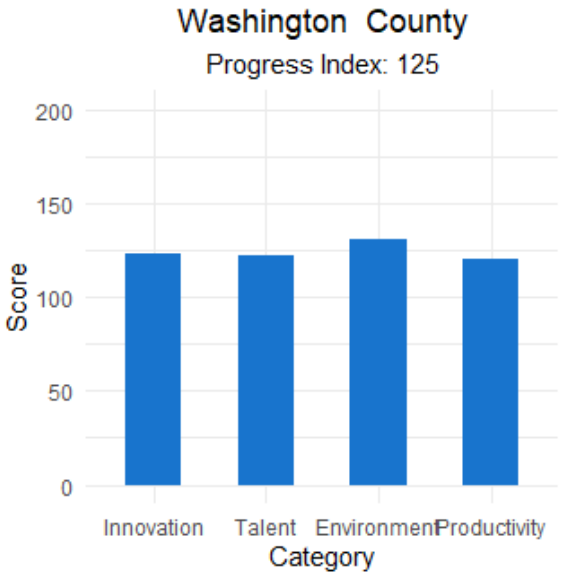
In 2020, the population of Washington County was 133,001 and its average annual manufacturing employment (NAICS 31-33) was 4,842.

Total private sector employment was 47,610 and manufacturing employment was 10.2 percent of the total. That is approximately 3.6 manufacturing employees per hundred residents and ranks number 59 among all counties. The average annual wage and salary for manufacturing workers is $55,359. This ranks number 36 among all counties. For additional demographic information on Washington County, see the Census Quick Fact link.







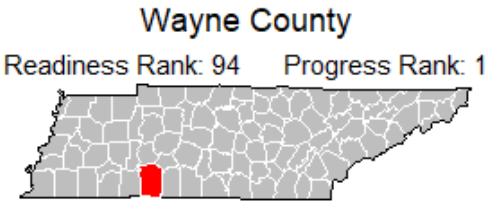


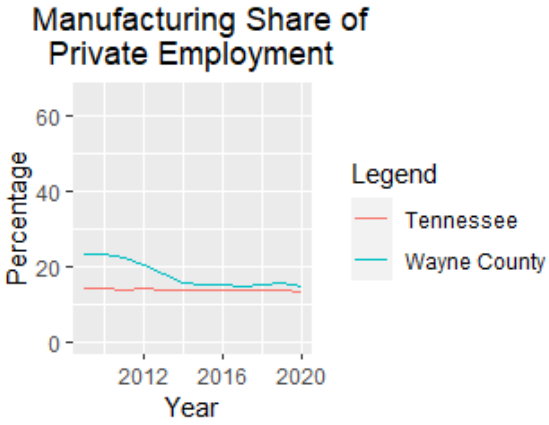
Washington County's readiness index was 129, ranking it 26th out of 95 counties. Innovation had the strongest component ranking at 15th. The county's progress index value was 125, ranking it 57th out of 95 counties. For progress, innovation was the strongest component with a ranking of 33rd.

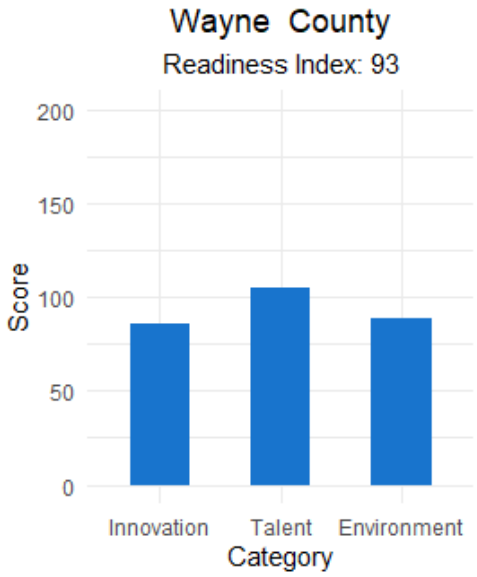
Wayne County

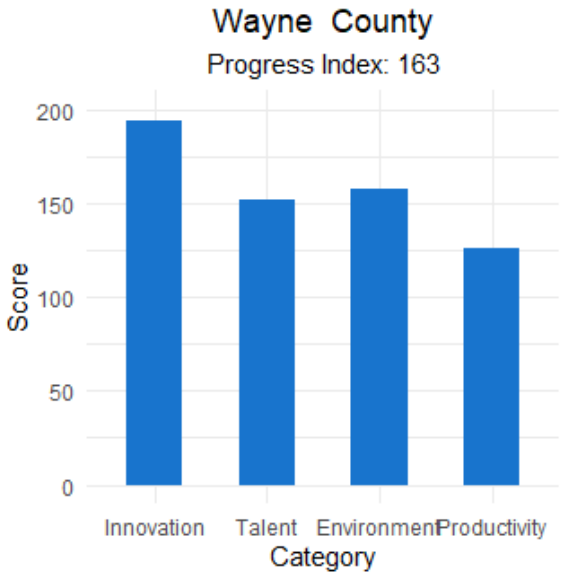
In 2020, the population of Wayne County was 16,232 and its average annual manufacturing employment (NAICS 31-33) was 406.

Total private sector employment was 2,732 and manufacturing employment was 14.9 percent of the total. That is approximately 2.5 manufacturing employees per hundred residents and ranks number 75 among all counties. The average annual wage and salary for manufacturing workers is $38,926. This ranks number 81 among all counties. For additional demographic information on Wayne County, see the Census Quick Fact link.







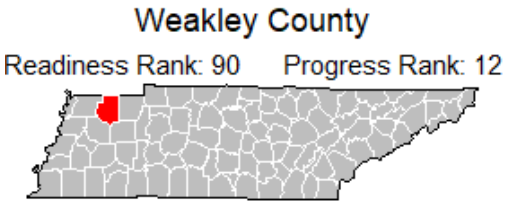


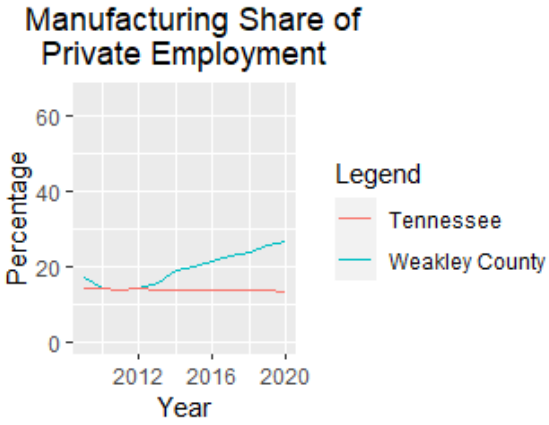
Wayne County's readiness index was 93, ranking it 94th out of 95 counties. Innovation and talent each component rankings of 90th. The county's excellent progress index value was 163, ranking it 1st out of 95 counties. For progress, innovation was the strongest component with a ranking of 5th.

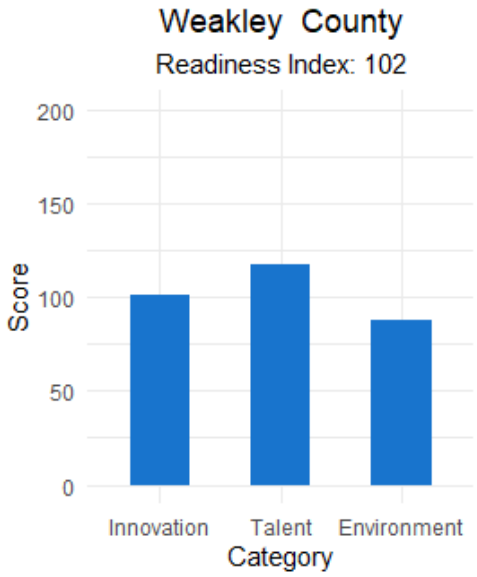
Weakley County

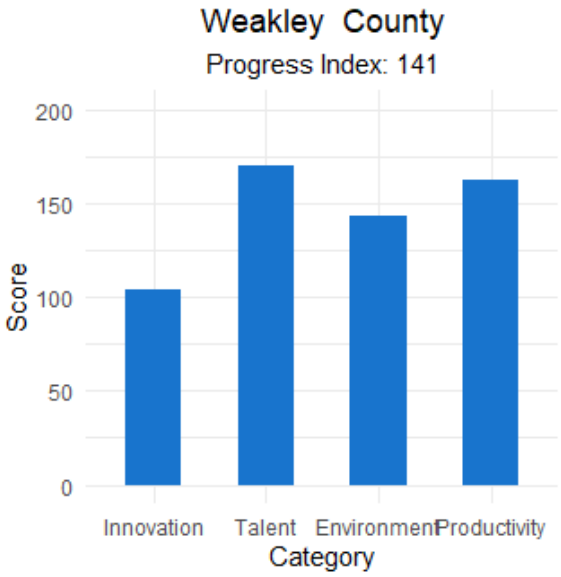
In 2020, the population of Weakley County was 32,902 and its average annual manufacturing employment (NAICS 31-33) was 1,954.

Total private sector employment was 7,414 and manufacturing employment was 26.4 percent of the total. That is approximately 5.9 manufacturing employees per hundred residents and ranks number 38 among all counties. The average annual wage and salary for manufacturing workers is $41,349. This ranks number 79 among all counties. For additional demographic information on Weakley County, see the Census Quick Fact link.







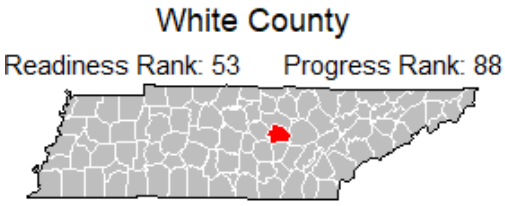


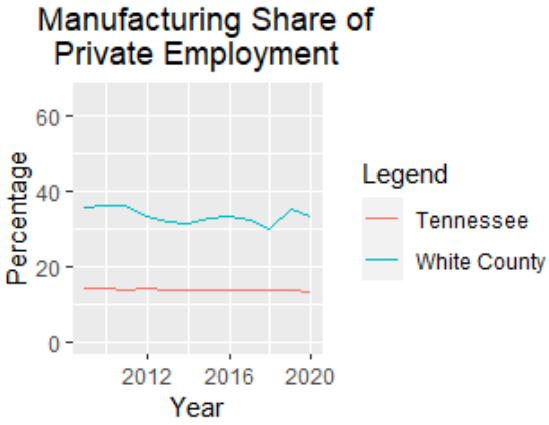
Weakley County's readiness index was 102, ranking it 90th out of 95 counties. Talent had the strongest component ranking at 68th. The county's progress index value was 141, ranking it 12th out of 95 counties. For progress, talent was the strongest component with a ranking of 2nd.

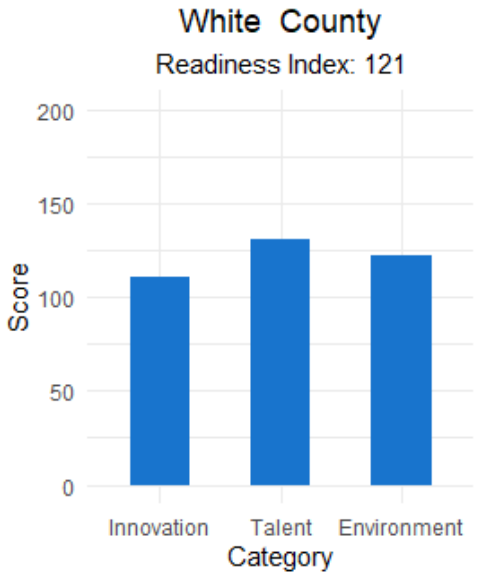
White County

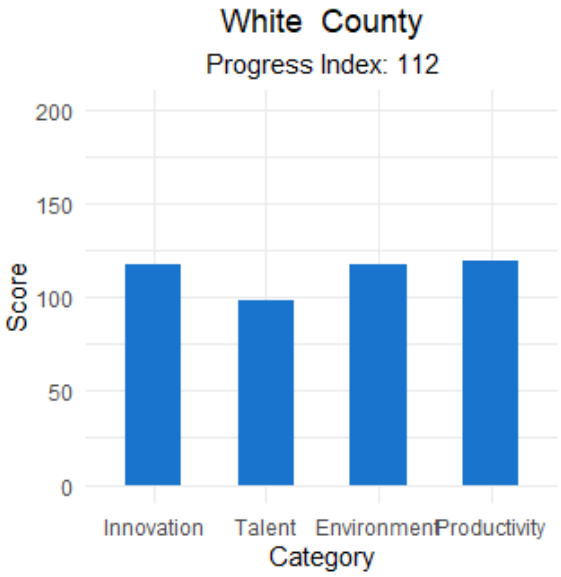
In 2020, the population of White County was 27,351 and its average annual manufacturing employment (NAICS 31-33) was 1,869.

Total private sector employment was 5,661 and manufacturing employment was 33.0 percent of the total. That is approximately 6.8 manufacturing employees per hundred residents and ranks number 29 among all counties. The average annual wage and salary for manufacturing workers is $45,948. This ranks number 67 among all counties. For additional demographic information on White County, see the Census Quick Fact link.







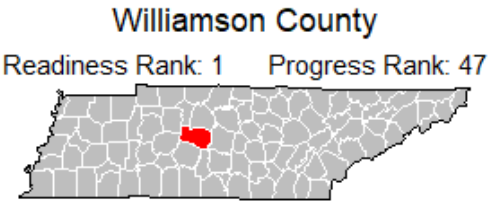


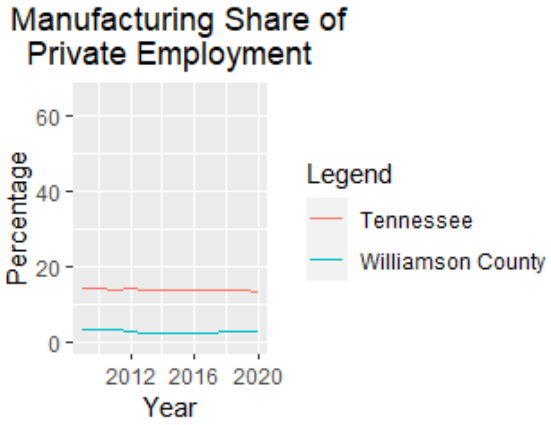
White County's readiness index was 121, ranking it 53rd out of 95 counties. Talent had the strongest component ranking at 41st. The county's progress index value was 112, ranking it 88th out of 95 counties. For progress, innovation was the strongest component with a ranking of 43rd.

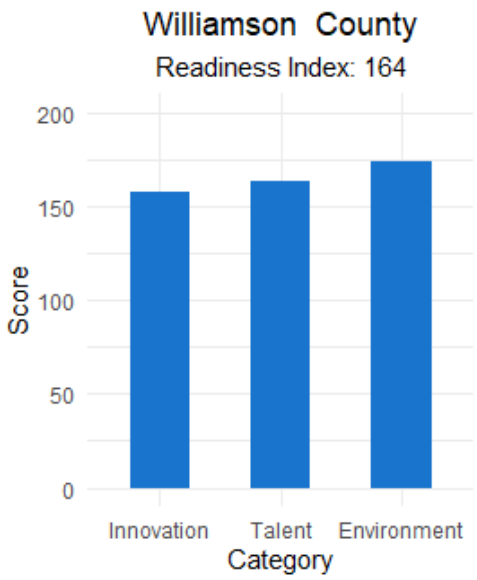
Williamson County

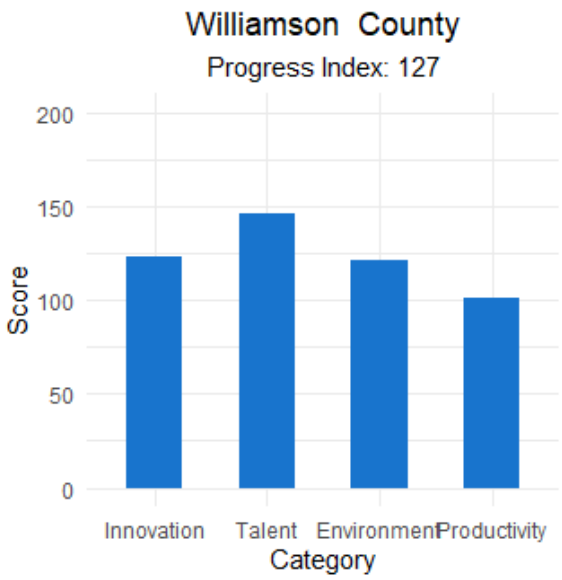
In 2020, the population of Williamson County was 247,726 and its average annual manufacturing employment (NAICS 31-33) was 3,610.

Total private sector employment was 123,310 and manufacturing employment was 2.9 percent of the total. That is approximately 1.5 manufacturing employees per hundred residents and ranks number 87 among all counties. The average annual wage and salary for manufacturing workers is $66,737. This ranks number 11 among all counties. For additional demographic information on Williamson County, see the Census Quick Fact link.







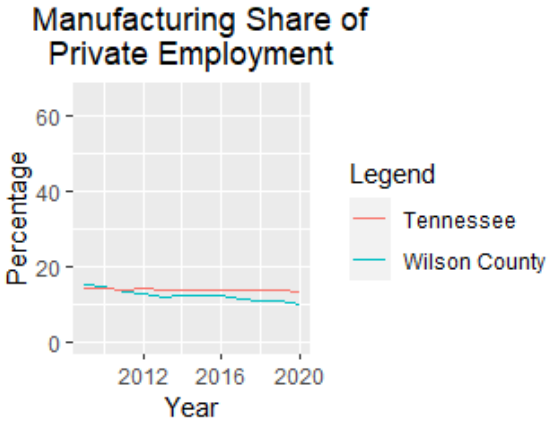


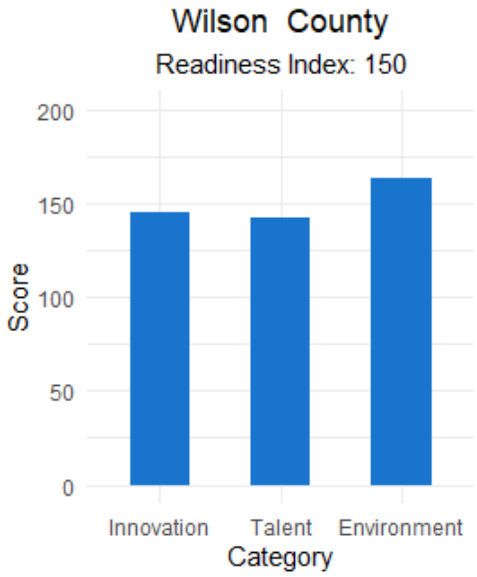
Williamson County's readiness index was 164, ranking it 1st among all 95 counties. All readiness components were strong with top 6 ranks. The progress index was 127 and ranked 47th overall. Talent was the strongest progress component ranking 28th.

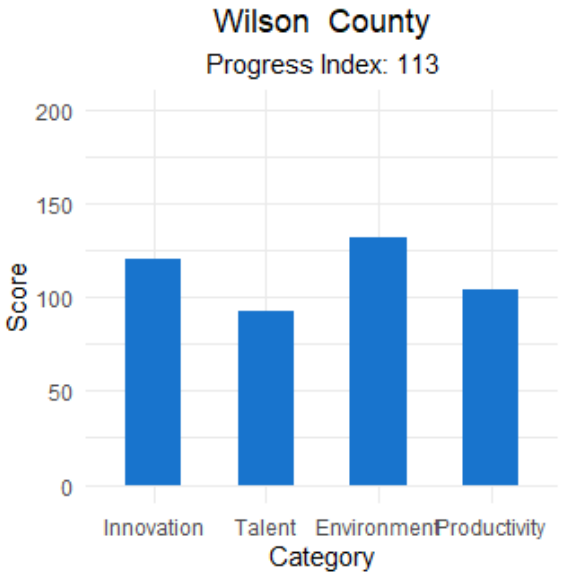
Wilson County

In 2020, the population of Wilson County was 147,737 and its average annual manufacturing employment (NAICS 31-33) was 4,458.

Total private sector employment was 44,994 and manufacturing employment was 9.9 percent of the total. That is approximately 3.0 manufacturing employees per hundred residents and ranks number 68 among all counties. The average annual wage and salary for manufacturing workers is $55,884. This ranks number 33 among all counties. For additional demographic information on Wilson County, see the Census Quick Fact link.







Wilson County's readiness index was 150, ranking it 5th out of 95 counties. Environment was the highest-ranking readiness component with a rank of 5th. The county's progress index value was 113, ranking it 86th out of 95 counties. For progress, innovation was the strongest component with a ranking of 41st.