



Planning Minnesota's
Transportation Future

ECONOMY AND EMPLOYMENT TREND ANALYSIS

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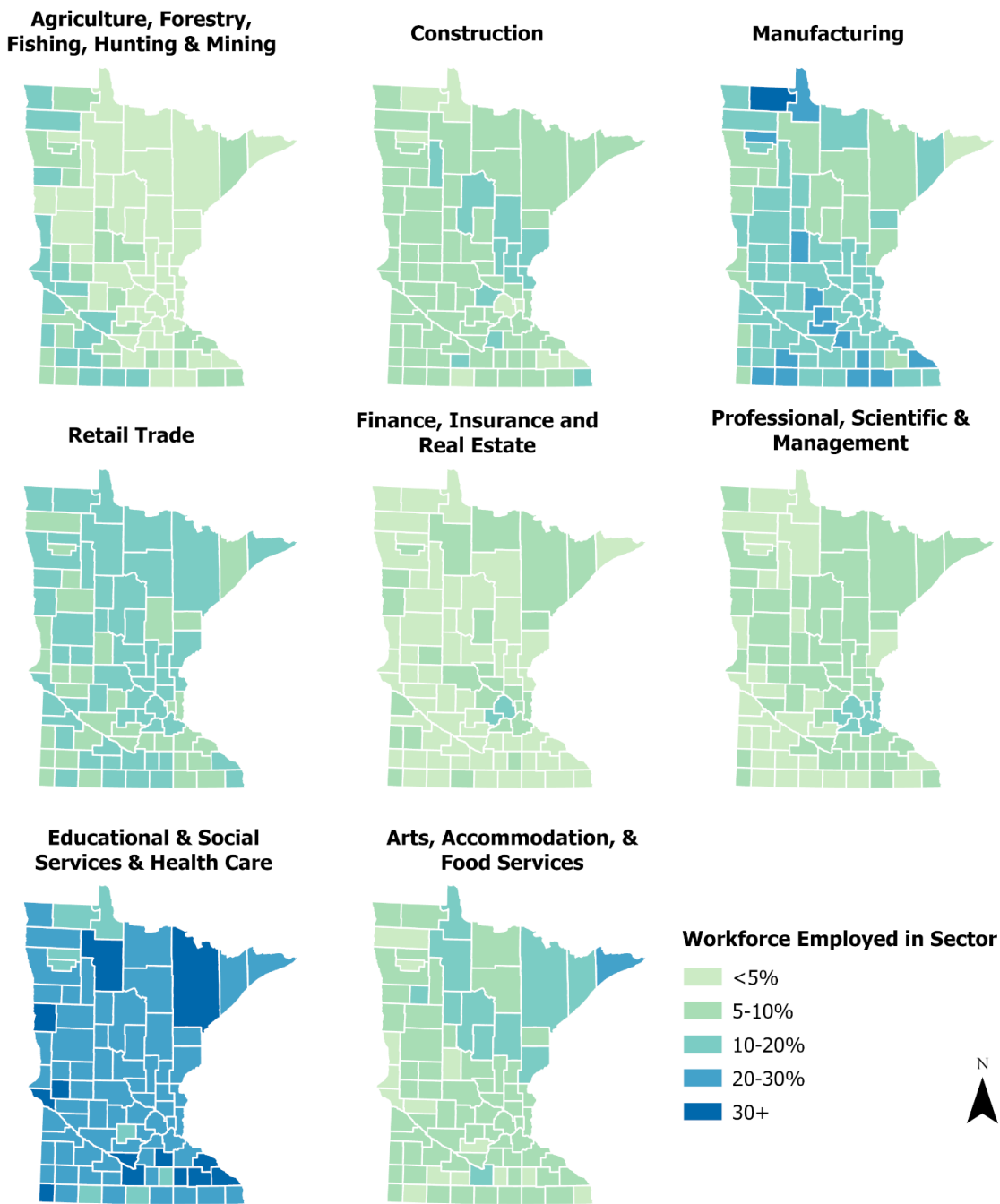
SUMMARY

Minnesota's economy has and continues to change. It has shifted from primarily agriculture and manufacturing to being more diverse and service focused. MnDOT and partners need to understand how the economy is changing to better align the transportation system with the demands of industry, the workforce and commerce. There are many trends in Minnesota that affect how the state's economy changes over time. For example, an aging population requires growing health and social services to provide care. The professional service industry continues to grow to support an economy ever-more rooted in technology. Analyzing these trends and others is an important step toward understanding how people and goods will need to move throughout the state. This paper highlights some of the key factors that are likely to drive economic change in Minnesota and their implications for the state's transportation system. This report also discusses the impacts of COVID-19 on multiple industries, workforce and how the economy has recovered. While unemployment increased significantly due to the pandemic, unemployment has since returned to pre-pandemic trends. However, due to factors such as the pandemic and an aging workforce, job growth has slowed down in recent years and is projected to continue. Job vacancy numbers have also increased, especially in Greater Minnesota.

MINNESOTA'S SHIFTING ECONOMY

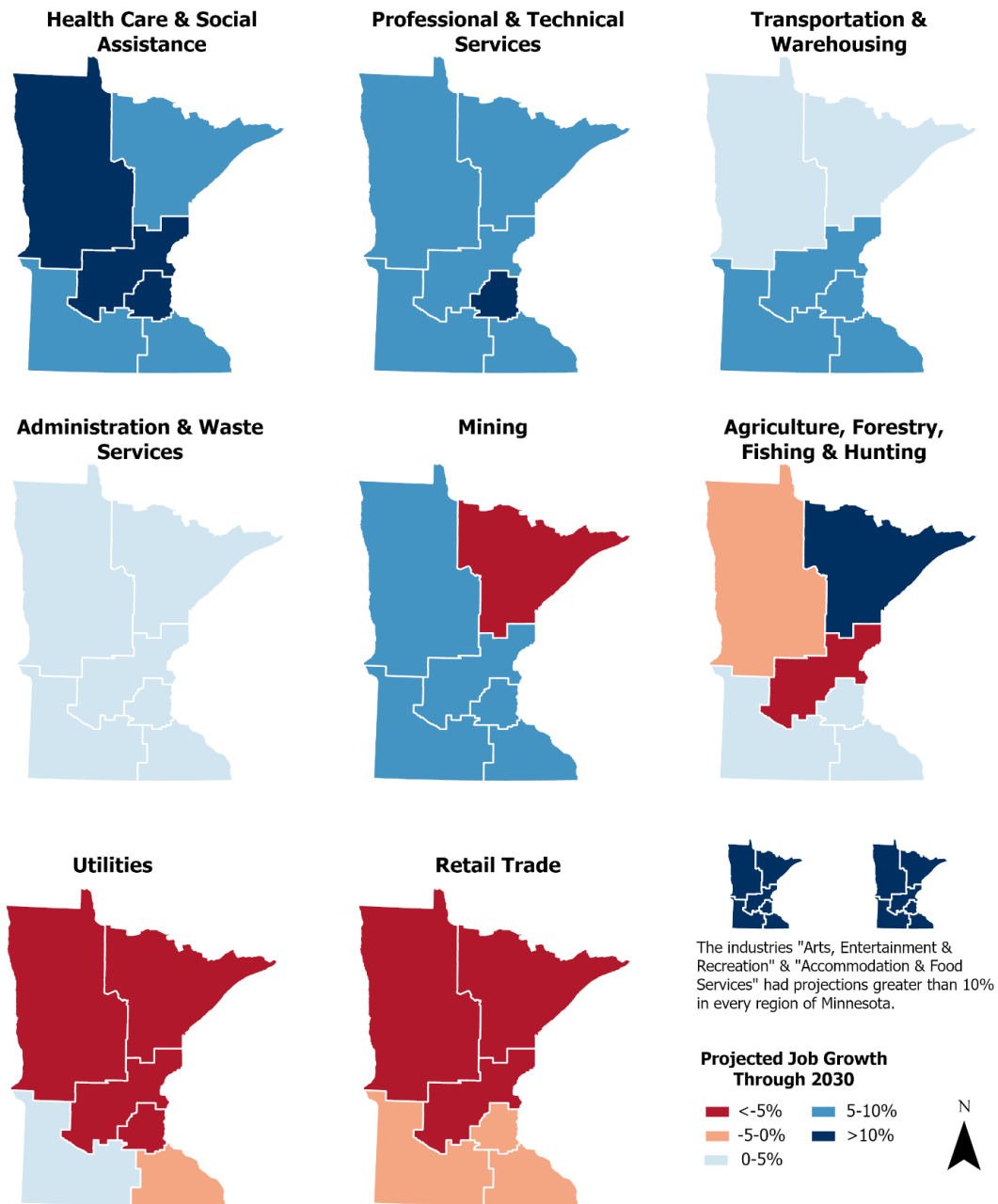
Over time, Minnesota's economy has steadily shifted from primarily agriculture and manufacturing to being a more diversified economy that also includes large education, finance, health services, professional and business services sectors (the latter of which is most found in the Twin Cities). Agriculture and manufacturing continue to be important sectors, which have also evolved over time adapting to new technologies and practices. Figures 1 and 2 on the following pages show the current employment by county and projected employment by region for each industry sector. More information on each of Minnesota's top economic sectors is included in the following sections.

Figure 1: Percentage of county workforce employed by industry sector¹



¹ United States Census Bureau, Accessed November 2022. Data.census.com.

Figure 2: Projected job growth through 2030 by industry sector²



² "Minnesota Employment Outlook", Minnesota Department of Employment and Economic Development. Accessed December 2022. [Employment Outlook \(Employment Projections\) / Minnesota Department of Employment and Economic Development \(mn.gov\)](#)

SERVICES

Table 1 shows the workforce percent breakdown of Minnesota’s employment sectors in 2000, 2010, 2019 and the second quarter of 2022. Education and health services made up 25.5% of employment in Minnesota and professional and business services made up 13.6%, with little variation between the years. Other services made up 3% of the employment in 2022 with little variation over the years. The three mentioned service-based industries together account for around 42% of Minnesota’s workforce. Education and health services and professional and business services contributed to \$44 and \$55 billion to Minnesota’s economy in respectively.

Table 1: Top sectors for employment in Minnesota³

Sector	2000 Employment (%)	2010 Employment (%)	2019 Employment (%)	Q2 2022 Employment (%)
Education and Health Services	19.1%	24.8%	25.2%	25.5%
Trade, Transportation and Utilities	21.5%	19.8%	18.8%	18.9%
Professional and Business Services	12.6%	12.4%	13.3%	13.6%
Manufacturing	15.2%	11.4%	11.2%	11.3%
Leisure and Hospitality	9.1%	9.9%	10.0%	9.1%
Financial Activities	6.3%	6.7%	6.4%	6.2%
Public Administration	4.4%	4.9%	4.7%	4.5%
Construction	4.9%	3.7%	4.6%	5.0%
Other Services	3.4%	3.2%	3.2%	3.0%
Information	2.8%	2.3%	1.7%	1.7%
Natural Resources, Agriculture and Mining	0.9%	0.9%	1.0%	1.0%

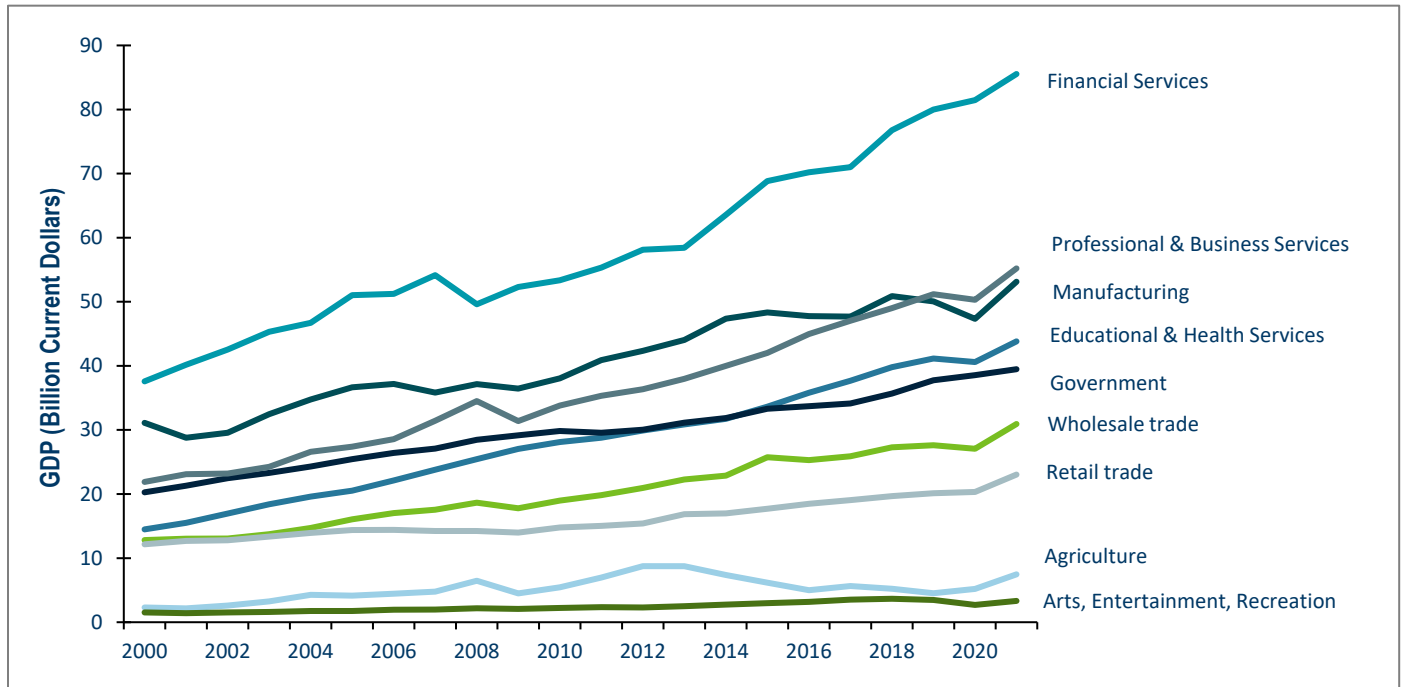
MANUFACTURING

Manufacturing is a diverse, technology-driven sector that contributed over \$55 billion a year to the state’s economy in 2021. The industry also accounts for a substantial share (15%) of the state’s Gross Domestic Product (GDP) of roughly \$345 billion as shown in Figure 3. While Figure 3 shows a dip in GDP in 2020 likely due to COVID-19, it has since begun to bounce back to pre-pandemic trends. Over 8,300 manufacturers in Minnesota making a wide range of products employ over 309,000 workers. Minnesota has strength in a broad range of industries within manufacturing. Among the most robust manufacturing clusters are food production, computer and electronics, fabricated metal, machinery and medical devices.⁴

³ “Quarterly Census of Employment and Wages (QCEW),” Minnesota Department of Employment and Economic Development, November 2022 <https://mn.gov/deed/data/current-econ-highlights/qcew-econ-highlights.isp>.

⁴ “Overview of Manufacturing,” Minnesota Employment and Economic Development, November 2022, <https://mn.gov/deed/ed/minnesota-industries/manufacturing/overview/>.

Figure 3: Minnesota Gross Domestic Product (GDP) by top economic sectors, 2000-2021⁵



The percentage of statewide employment within each of Minnesota’s employment sectors generally tracks to national employment percentages. However, for manufacturing, jobs are almost 30% more concentrated in Minnesota than they are on a national scale.⁶ This has been the case since about 2014. It is a sign that Minnesota continues to have a robust manufacturing sector.

AGRICULTURE

Minnesota is the seventh-largest agricultural producer in the nation.⁷ Agricultural land takes up 26 million acres in Minnesota, or 51% of the state’s land area.⁸ However, the share of the state’s GDP directly within the agricultural sector remains relatively low (Figure 3). Agriculture has made up between 1-3% of the state’s GDP since 1997 and was about 2.6% of the state’s GDP in 2021. While the share of the state’s GDP within the agricultural sector is low, there are supporting industries that are not captured in that number. Agriculture closely interacts with transportation, manufacturing and production industries. So, while only 1-3% of the state’s GDP is directly attributable to agriculture, much more is indirectly influenced by the sector. When the broader impacts are considered, the sector generates \$112 billion in direct, indirect and induced output from farm-level production and agricultural processing each year. The industry also supports 431,127 jobs annually.⁹

⁵ “Data Tools,” U.S. Bureau of Economic Analysis (BEA), accessed November 2022, <https://www.bea.gov/tools/>.

⁶ “May 2020 State Occupational Employment and Wage Estimates Minnesota,” U.S. Bureau of Labor Statistics, November 2022, https://www.bls.gov/oes/current/oes_mn.htm.

⁷ “FAQs,” US Department of Agriculture Economic Research Service, Nov. 16, 2022, <https://www.ers.usda.gov/faqs>.

⁸ “Agriculture in Minnesota,” MN Board of Water, Soil Resources, accessed June 10, 2021, <https://bwsr.state.mn.us/agricultural-lands>.

⁹ “Economic Analysis and Market Research,” Minnesota Department of Agriculture, accessed June 10, 2021, <https://www.mda.state.mn.us/business-dev-loans-grants/economic-analysis-market-research>.

The share of statewide employment directly within the agricultural sector remains relatively low. Currently, about 1% of the state's workforce is directly employed in the agricultural industry; about 5% when considering only the workforce outside of the seven-county metro area.¹⁰ Beyond direct employment, many employers in manufacturing, finance, wholesale trade, transportation and other sectors are connected to agriculture. Within Greater Minnesota, direct agricultural employment is concentrated south of the seven-county metro area along the Mississippi River and within counties north of the Minnesota River. The counties with the highest percentage of their workforce in agriculture are Traverse County (nearly 20%), Marshall County (15%) and Norman County (15%). Statewide, the concentration of employment directly within agriculture is below the national average.¹¹ Minnesota's employment is 90% below the national average within the agriculture, forestry, fishing and hunting sector and 33% below the national average within the crop production subsector. However, within the subsector of animal production and aquaculture (privately raising fish or other aquatic life), statewide employment is over twice the national average. These percentages speak to direct employment in agriculture and do not address employment in agriculture-related or agriculture-dependent industries.

The consolidation of farms is a long-term trend in agriculture. The total number of farms statewide has declined by 19% since the late 1980s and down 100 farms from 2020 to 2021. The latter statistic is likely because of the COVID-19 pandemic. Agricultural land decreased by 4% over the same period. The average farm size increased from 294 acres in 1982 to 371 acres in 2017.¹² While the number of family farms has been declining, specialty and organic farming are providing new opportunities. About half of the state's farmers are hobbyists, rural residents with some farm income or specialty crop farmers near urban areas.

There are environmental impacts related to farming. Of particular relevance to transportation is the impact of drainage that changes where and how water moves. Drainage of farm fields changes the natural distribution of water, often moving water into streams and rivers at higher volumes. In Minnesota, 37% of crop acres are drained by tile. Tile drainage is a type of farmland surface drainage where standing water is removed through a system of underground drainage tiles.¹³ This is the sixth-highest percentage of tile coverage in the nation.¹⁴ Drainage tile on farms can have negative effects including the contamination of runoff, depletion of groundwater stores and erosion. Water can be a destructive force for the transportation system. Targeted water management systems can help protect the environment and work to maintain normal operating conditions. Water management helps control the movement of water, reduces erosion and sedimentation, improves water quality and protects habitat. Jurisdictions build and maintain drainage systems to properly manage and treat water in their right-of-way. Also, the bridges, culverts and retention ponds that are a part of the transportation system are built to accommodate changing water flows that happen over time. Increases in precipitation and flooding may require upgrades to transportation infrastructure to ensure a resilient system in the face of extreme weather events beyond what our system is designed to manage. Read more about flooding in the [Climate Change Trend Analysis](#).

¹⁰ "Quarterly Census of Employment and Wages (QCEW)."

¹¹ "Minnesota - September 2021 OES State Occupational Employment and Wage Estimates."

¹² "United States Department of Agriculture: , " Census of Agriculture: Minnesota, 2017, https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Minnesota/.

¹³ Don Hofstrand, "Understanding the Economics of Tile Drainage," Ag Decision Maker (Iowa State University), accessed June 10, 2021, <https://www.extension.iastate.edu/agdm/wholefarm/html/c2-90.html>.

¹⁴ C. Zulauf and B. Brown, "Use of Tile, 2017 US Census of Agriculture," Farmdoc Daily, August 1, 2019, <https://farmdocdaily.illinois.edu/2019/08/use-of-tile-2017-us-census-of-agriculture.html>.

HEALTH AND HUMAN SERVICES

The health and human services sector has gone from being the fifth largest sector in terms of GDP share from 2000-2011, to being the fourth largest in recent years (Figure 3). It surpassed the government sector around 2015 and continues to grow. Health and human services jobs are projected to experience the highest growth of any industry over the next few years. Jobs are expected to grow by 13% in the healthcare and social work occupations and by 17.3% in the healthcare practitioners and technical occupations by 2030.¹⁵

MINING

Mining comprises a relatively small share of the state's overall economy, accounting for 0.2% of jobs and less than 3% of economic output.¹⁶ Like agriculture, mining's impacts extend beyond employment directly in mining. Growth in regional mineral extraction, including related transportation and processing, has strengthened the state's economy. Unfortunately, this growth can also raise public health and safety concerns. Its long-term viability is questionable given recent mine idling and closings in northern Minnesota. Examples of the type of mining operations in Minnesota are highlighted below.

- Oil production and related activities in North Dakota produce some small direct impacts on economic activity in Minnesota. Except for specialty sand used in hydraulic fracturing, companies in Minnesota's border cities are not suppliers of goods or services used in production of crude oil. However, there are some in-state businesses that use crude oil or refined products as inputs and the state benefits from oil production in North Dakota and Canada because of the lower costs of delivered crude relative to other locations in the Midwest. Overall, rail shipments of crude from Canada and North Dakota have increased enormously since 2010 and are likely to continue to remain at current levels.
- Minnesota is the largest producer of iron ore and taconite in the nation. The mining and processing of taconite, a low-grade iron ore, increased in recent years. Trucks holding up to 240 tons of mined taconite transport it from mines in northern Minnesota either directly to a processing plant if nearby, or to other ports and steel mills around the Great Lakes.¹⁷

FINANCE, INSURANCE AND REAL ESTATE

Financial and insurance industries employed 154,700 people in Minnesota in September 2022, a 16% increase since January 2010. These industries are 1.8 times higher than the national average.¹⁸ Minnesota's Small Business Administration (SBA) office ranks ninth in its volume of SBA-backed loans (2,585).¹⁹ The office had \$1.3 billion in approved loans in 2021, significantly higher than 2021's \$768.1 million. There are 5,260 banks and financial services establishments and over 4,350 insurance establishments in Minnesota.²⁰ Among the largest banks headquartered

¹⁵ "Employment Outlook (Employment Projections)," Minnesota Department of Employment and Economic Development, accessed November 2022, <https://mn.gov/deed/data/data-tools/employment-outlook/>.

¹⁶ "Current Employment Statistics (CES)," Minnesota Department of Employment and Economic Development, accessed November 2022 <https://mn.gov/deed/data/data-tools/current-employment-statistics/>.

¹⁷ "Taconite," Minnesota Department of Natural Resources, accessed April 17, 2020, <https://www.dnr.state.mn.us/education/geology/digging/taconite.html>.

¹⁸ "Banks," Minnesota Commerce Department, Accessed November 2022, <https://mn.gov/commerce/industries/financial-institutions/banks/>

¹⁹ Ibid.

²⁰ Ibid.

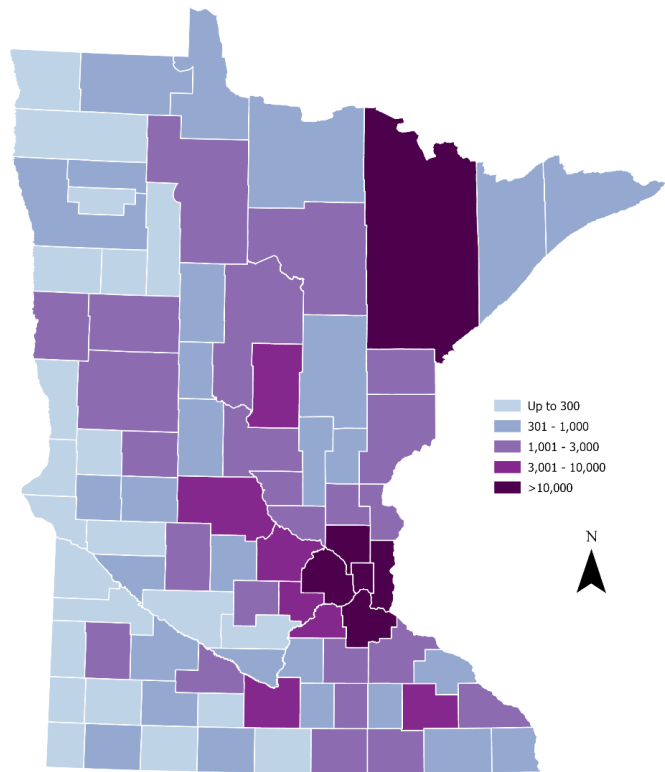
or operating in Minnesota are: Wells Fargo Bank Minnesota, U.S. Bancorp, Huntington Financial, Bremer Financial Corp and Frandsen Bank and Trust.²¹

The finance, insurance and real estate sector is responsible for the largest proportion of the state’s GDP. As shown in Figure 3, this sector experienced dramatic growth over the past 20 years. Many sectors saw a dip in GDP during the 2008 recession. However, all sectors except agriculture have since experienced growth and have surpassed 2008 GDP levels, even with the recession associated with the COVID-19 Pandemic.

TOURISM

Tourism is an important part of Minnesota’s economy throughout the state. There are approximately 204,519 full- and part-time jobs in Minnesota related to travel and tourism.²² The geographical distribution of these jobs is focused primarily in the seven-county metro area, Saint Cloud area, Mankato area, Brainerd Lakes area, Rochester area and Saint Louis County, as shown in Figure 4.²³ Travel- and leisure-related spending in Minnesota is more concentrated in the warmer seasons: 24% in winter (December-March), 14% in spring (April-May), 37% in summer (June-August), and 25% in fall (September-November).²⁴

Figure 4: Leisure & Hospitality Jobs by County, September 2021²⁵



²¹ Ibid.

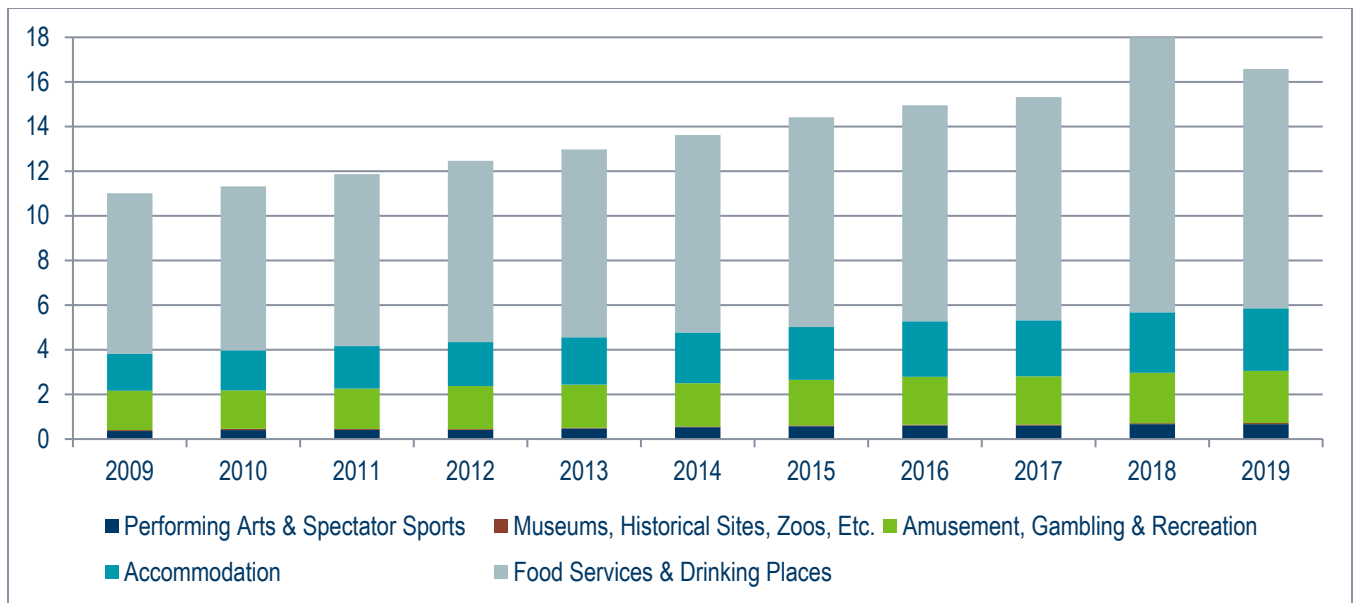
²² [“Tourism & Minnesota’s Economy,”](#) (Explore Minnesota, 2022.).

²³ Ibid.

²⁴ Ibid.

²⁵ Ibid.

Figure 5: Gross sales generated (in billions of dollars) by tourism-related industries in Minnesota²⁶

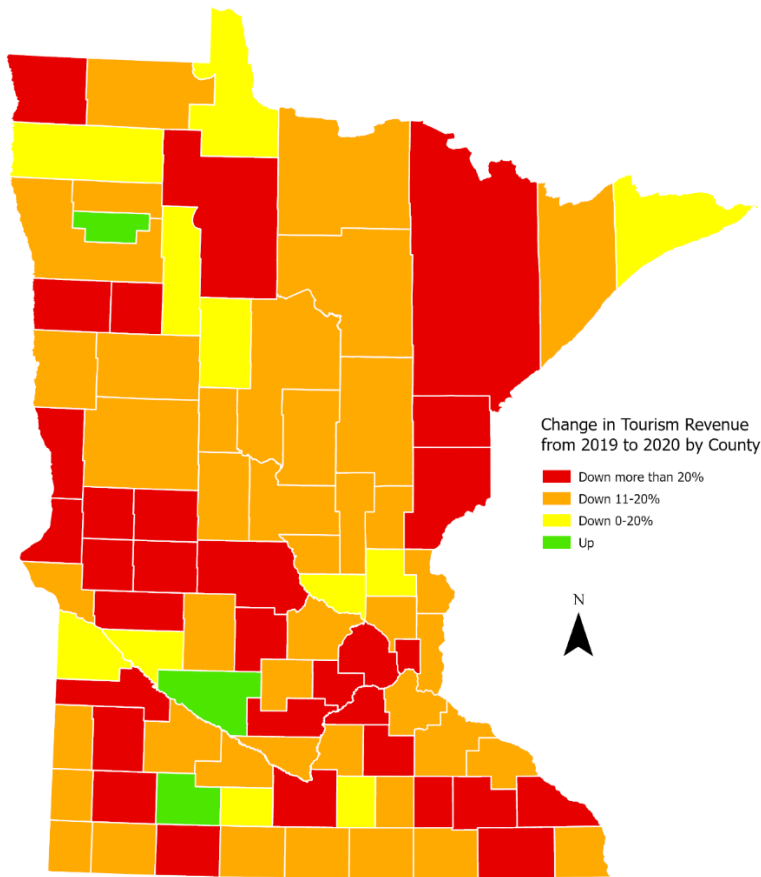


COVID-19 had a significant impact on tourism revenue, with almost every county experiencing a loss in tourism revenue from 2019 to 2020 (Figure 6). Minnesota’s tourism economy has suffered \$11.7 Billion in losses as of 2022 and only 39% of tourism firms report being at or above pre-pandemic business levels.²⁷

²⁶ Ibid.

²⁷ “Impact of Pandemic on Tourism” (Explore Minnesota, 2022). <https://mn.gov/tourism-industry/research/tourism-and-the-economy.jsp>

Figure 6: Change in tourism in Minnesota revenue from 2019-2020 by county²⁸



EMPLOYMENT

Unemployment and underemployment have declined steadily since peaking in the 2008 recession, as seen in Figure 7. The pandemic, however, did cause a large increase in unemployment in 2020. In 2019, unemployment and underemployment in Minnesota was significantly lower than the national average; Minnesota unemployment was 3.2% in 2019 compared to the U.S. average of 3.7%.²⁹ In 2020, Minnesota’s unemployment rate was a seasonally adjusted 6.3%.³⁰ Unemployment increased both nationally and at a state-level in 2020 because of the COVID-19 pandemic. However, Figure 7 shows that unemployment had steadily decreased back to pre-pandemic numbers from the end of 2020 to 2022. Figure 8 shows a snapshot of unemployment statewide in 2021. Higher unemployment rates are seen in northern and central cities and counties. Looking at the bar charts on Figure 8, unemployment has increased in nearly every Minnesota Metropolitan Statistical Area (MSA) from 2019 to 2021.

With such low rates of unemployment and underemployment, finding qualified workers is becoming a bigger issue for Minnesota employers. Since 2016, the number of job vacancies has exceeded the number of job seekers,

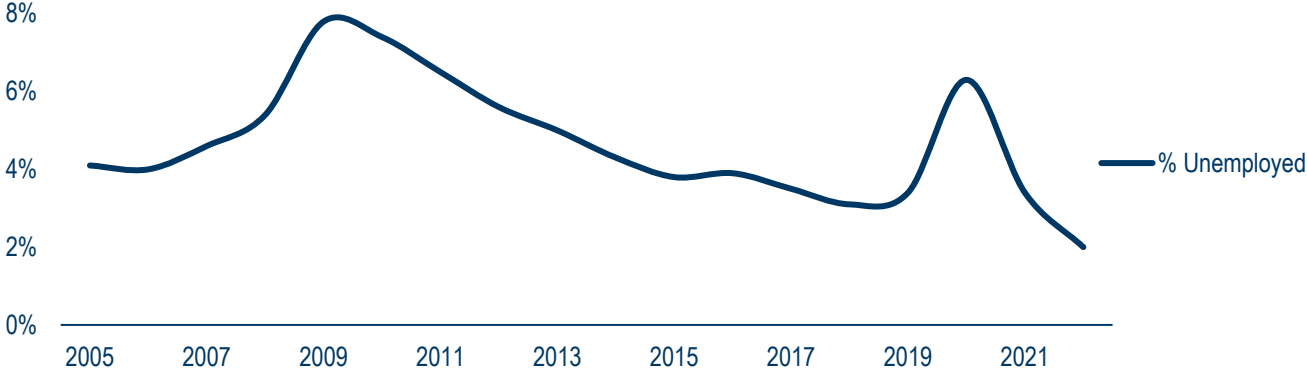
²⁸ Ibid.

²⁹ “Alternative Measures of Labor Underutilization in Minnesota — 2020,” Midwest Information Office (U.S. Bureau of Labor Statistics, March 25, 2021), https://www.bls.gov/regions/midwest/news-release/laborunderutilization_minnesota.htm.

³⁰ “Monthly Highlights,” Minnesota Department of Employment and Economic Development, November 2022) <https://mn.gov/deed/data/current-econ-highlights/>.

while Minnesota has seen sustained job growth.³¹ The Pandemic has brought further issues for recruiting and retaining workers, especially in service industry jobs. There is uncertainty surrounding almost every aspect of the COVID-19 crisis: on the economic side, uncertainties include the near-term economic impact of the pandemic and policy responses, the speed of recovery as the pandemic recedes³² and the extent to which pandemic-induced shifts in consumer spending patterns, business travel and working from home will persist³³.

Figure 7: Minnesota Unemployment 2005-September 2022³⁴



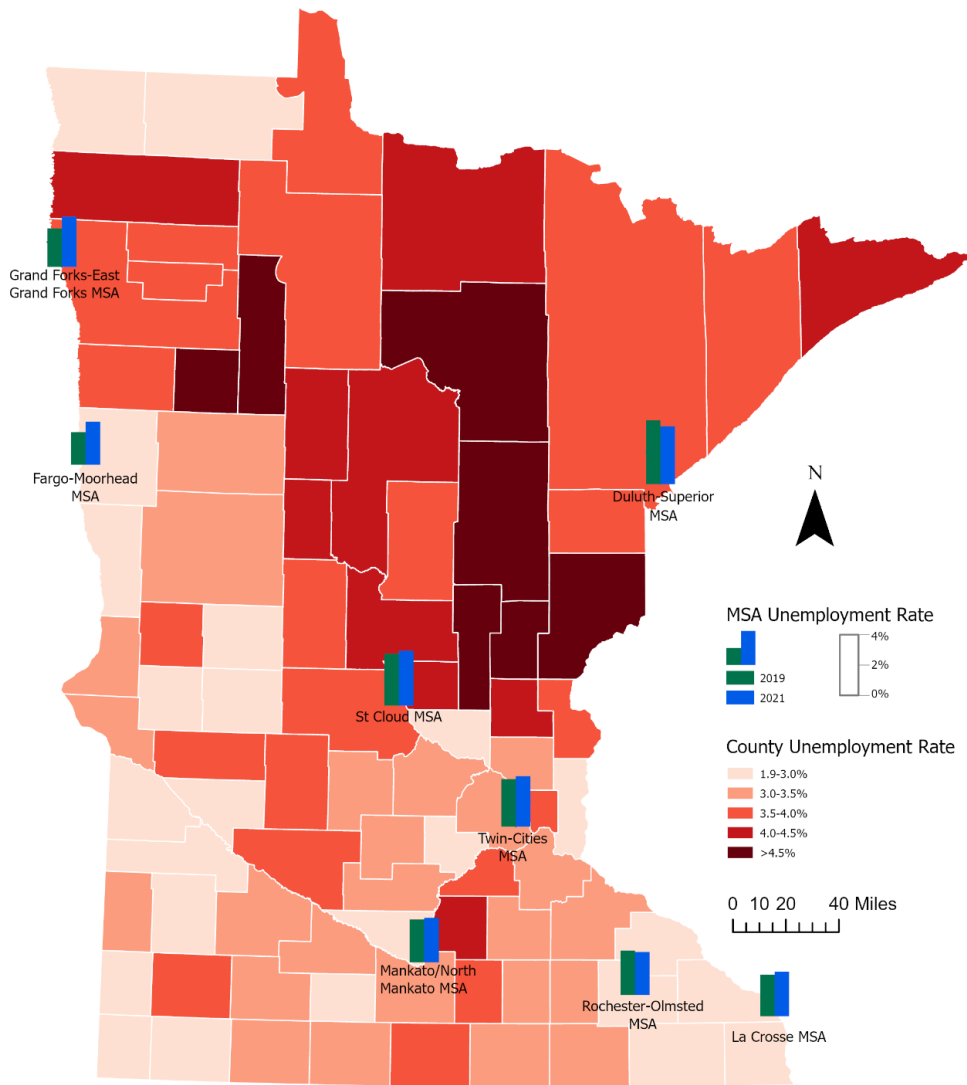
³¹ Justin Hollis, "Minnesota's Workforce Shortage," Minnesota Compass, May 13, 2019, <https://www.mncompass.org/trends/insights/2019-05-13-minnesotas-workforce-shortage>.

³² "An Update to the Economic Outlook: 2020 to 2030," (Congressional Budget Office 2020).

³³ Jose Maria Barrero, Nicholas Bloom, and Steven Davis, "COVID-19 and Labour Reallocation: Evidence from the US," VOX, CEPR Policy Portal, July 14, 2020, <https://voxeu.org/article/covid-19-and-labour-reallocation-evidence-us>.

³⁴ "Current Employment Statistics (CES)."

Figure 8: County Unemployment, 2021 with Metropolitan Statistical Area (MSA) Unemployment in 2019 and 2021³⁵



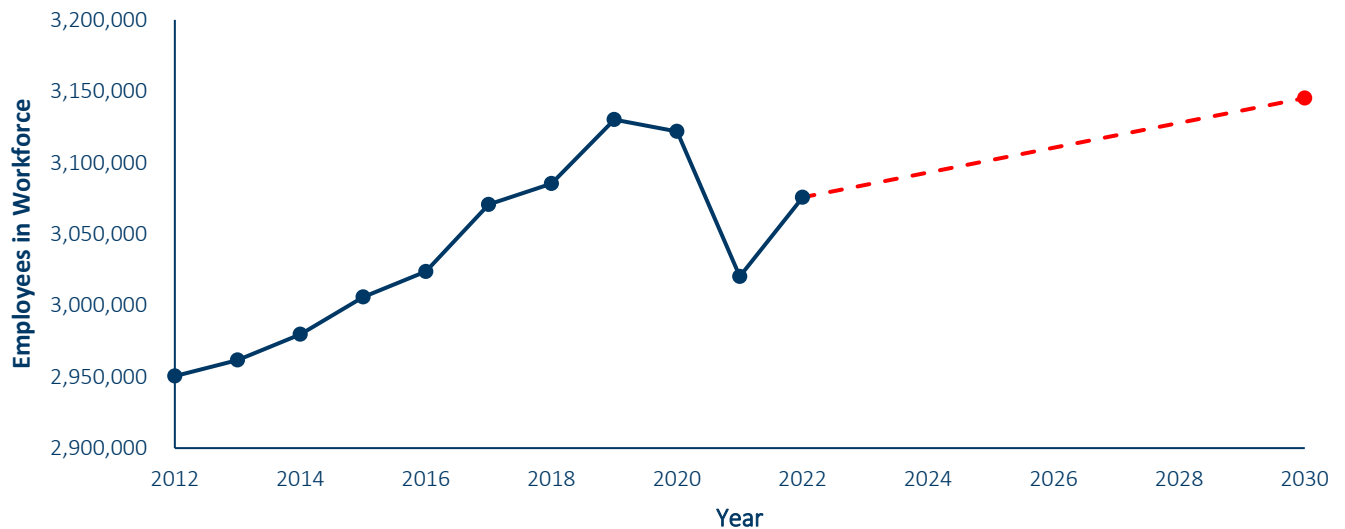
WORKFORCE GROWTH AND PROJECTIONS

Minnesota’s workforce has increased significantly from the years 2012-2019 (Figure 9). In this time period, the workforce grew by nearly 6%, with the largest spike from 2018 to 2019. However, COVID-19 impacted the number of employees in the workforce significantly, with a drop of over 3% from 2019 to 2021. While the state has since seen an increase from 2021-2022, demographers project that the labor force growth rate will not rebound as quickly. From 2022 to 2030, the workforce is projected to grow by only 2%, one third of the growth rate seen from 2012-2019.³⁶

³⁵ “County Unemployment Rates,” Minnesota Department of Employment and Economic Development, November, 2022 <https://mn.gov/deed/data/current-econ-highlights/county-unemployment.isp>.

³⁶ “Employment Outlook”, Minnesota Department of Employment and Economic Development. Accessed December 2022. <https://mn.gov/deed/data/data-tools/employment-outlook/>

Figure 9: Workforce growth in Minnesota from 2012-2022 (solid blue line)³⁷ with projections for 2030 workforce growth (dotted red line)³⁸



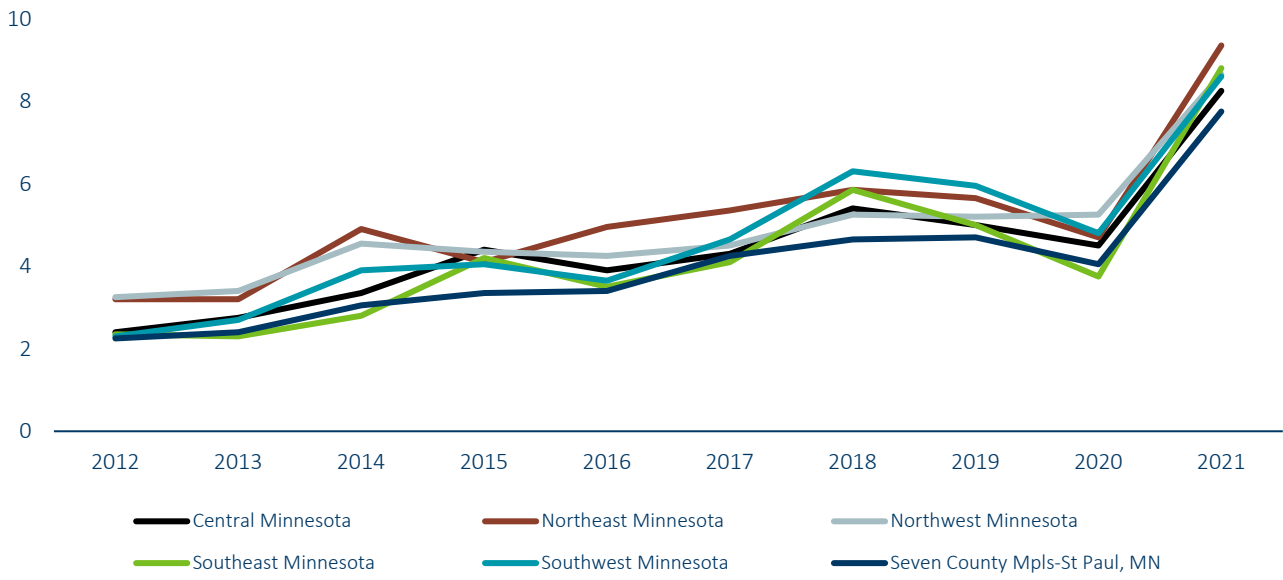
The lack of job growth is a rather new trend; however, worker shortages were already an issue in greater Minnesota since the Great Recession. While the workforce was unquestionably affected by the pandemic, the reasons according to the Minnesota Department of Employment and Economic Development are much more systemic. Strong economic growth in the state, an aging workforce that is reaching retirement age, and fewer young people (especially in Greater Minnesota) are all factors impacting the workforce growth rate and making finding workers more challenging for employers.³⁹ Greater Minnesota faces a larger job vacancy rate than the Twin Cities MSA over time, especially the Northeast and Southwest regions of the state (Figure 10).

³⁷ “Minnesota Occupational Employment and Wage Statistics”, United States Bureau of Labor Statistics. Accessed December 2022. https://www.bls.gov/oes/current/oes_mn.htm

³⁸ “Employment Outlook Data Tool”, Minnesota Department of Employment and Economic Development. Accessed December 2022.

³⁹ Kelly Asche and Cameron Macht, “Greater Workforce Shortages in Greater Minnesota”, Minnesota Department of Employment and Economic Development. Published September 2021. <https://mn.gov/deed/newscenter/publications/trends/september-2021/workforce-shortages.jsp>

Figure 10: Job vacancy rate in Minnesota Planning Regions from 2012-2021⁴⁰



⁴⁰ "Job Vacancy Survey Data Tool", Minnesota Department of Employment and Economic Development. Accessed December 2022. <https://apps.deed.state.mn.us/lmi/jvs/Results.aspx>

RELATED TRENDS

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Minnesota's vision for transportation is known as Minnesota GO. The aim is that the multimodal transportation system maximizes the health of people, the environment and our economy. A transportation vision for generations, Minnesota GO guides a comprehensive planning effort for all people using the transportation system and for all modes of travel. Learn more at MinnesotaGO.org.

REVISION HISTORY

Date	Summary of revisions
January 2016	Original paper.
June 2019	Updated to reflect new data, change in trends and spatial distribution.
June 2021	Updated to reflect new data
November 2022	Updated to reflect new data, change in trends and workforce growth trends.