

# MICHIGAN'S LABOR MARKET NEWS

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## SPECIAL ISSUE

2018 ANNUAL  
ECONOMIC  
ANALYSIS





## About Our Cover

Michigan is home to over 3,000 miles of shoreline and over 150 lighthouses. The cover of this special issue of Michigan's Labor Market News features the Holland Harbor Light (also known as Big Red or the Big Red Lighthouse) in Holland, Michigan. Situated on the south shore of the channel which connects Lake Michigan with Lake Macatawa, the first wooden structure was built on this site in 1872, with the modern structure (pictured on cover) replacing it in 1907. The white-painted Kewaunee Pierhead Light located in Kewaunee, Wisconsin is a near twin structure to Big Red.

According to the Holland Area Visitors Bureau, in 1971 the iconic 32-foot tall structure was surplused by the U.S. Coast Guard, citing lack of justification for the continued cost of maintenance and repair of the building. As part of a broader effort by local citizens and the Holland Harbor Lighthouse Commission to save the lighthouse from eventual decay and deconstruction, it was given the name "Big Red." The effort was successful and the Coast Guard ultimately transferred ownership and commission in 1978, while continuing to inspect the facility and maintain the light semi-annually. Today it is one of Michigan's most photographed lighthouses and an icon of the Holland area.

## TABLE OF CONTENTS

4	Michigan's Labor Force, Employment, and Unemployment
10	Michigan Industry Job Trends
16	Michigan's 2018 Occupational Employment and Wage Trends
24	Occupational Licensing in Michigan
30	Select Demographic Trends in Michigan
32	Michigan Population Projections to 2045
38	Teen Labor Force Characteristics
40	An Analysis of Occupational Supply and Demand in the Michigan Labor Market
44	Michigan Short-Term Employment Projections
46	Employment Projections Through 2026 for Michigan Regions



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## IT'S BIGGER THAN DATA.

The Bureau of Labor Market Information and Strategic Initiatives is your one-stop shop for information and analysis on Michigan's population, labor market, and more.

- Our Federal-State Programs division runs the state's cooperative agreements with the U.S. Bureau of Labor Statistics and the U.S. Census Bureau, making us the official source for this information.
- Our Research and Evaluation division conducts workforce research and program evaluation, giving you the insight you need to make smarter decisions.



Michigan's jobless rate declined for the ninth consecutive year in 2018, falling to 4.1 percent, the lowest rate in Michigan since 2000. The state also added payroll employment in 2018, with jobs expanding by nearly 50,000 or 1.1 percent. Michigan's median wage for all occupations rose slightly in 2018 to \$18.08. As Michigan's population nears the ten million mark, the state's rank dropped two spots since 2010 and is now tenth among all states in total residents. Looking ahead, attracting residents will become increasingly important as the state's employers look to fill 321,000 new jobs through 2026, as the state's population enters a period of natural decline (deaths outnumbering births) starting around 2030. Balancing the supply and demand of all workers will be critical to filling jobs with those that have the right skills, education, license, or other credentials. These topics and other economic, demographic, and labor market trends are highlighted in this year's special issue of *Michigan's Labor Market News*.

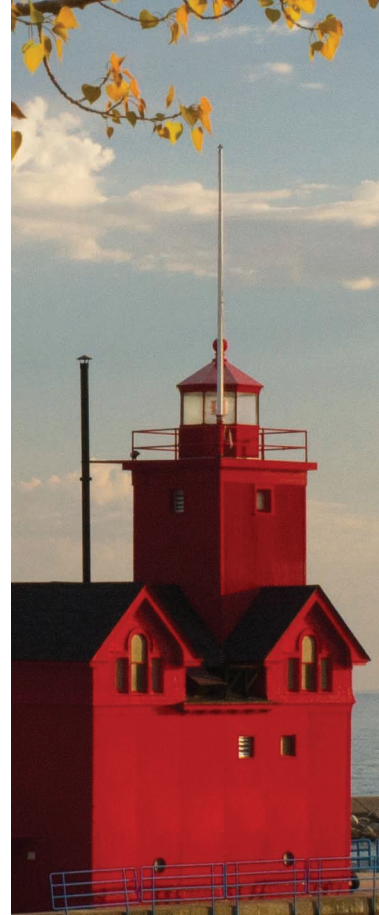
This issue also includes a refreshed analysis of Michigan's labor market and demographic trends along with a collection of recently published features on population projections, labor supply and demand, and licenses. We designed this special issue to support workforce development planning, particularly for the requirements of the Workforce Innovation and Opportunity Act (WIOA). However, this issue is also a useful general narrative on trends in the Michigan labor market in 2018.

We hope you enjoy this special issue of *Michigan's Labor Market News*. Please let us know if there is something you would like to know more about.



**JASON PALMER**  
*DIRECTOR*

Bureau of Labor Market Information  
and Strategic Initiatives







# MICHIGAN'S LABOR FORCE, EMPLOYMENT, AND UNEMPLOYMENT

Michigan's labor market indicators remained positive in 2018, with an over-the-year decline in the jobless rate, increased employment and workforce levels, and a reduction in the number of unemployed statewide.

- The state's labor force rose by 0.3 percent, below the 2017 growth rate of 0.8 percent. However, Michigan's 2018 total workforce reached its highest level since 2009.
- Total employment in Michigan advanced for the eighth consecutive year in 2018 and grew by 0.8 percent.
- The number of unemployed in the state fell by nearly 10 percent in 2018. Since the height of the recession in 2009, Michigan's

total number of unemployed has steadily decreased, reaching the lowest level since the year 2000.

## Unemployment Rate

The Local Area Unemployment Statistics program (LAUS) provides several economic indicators for the state of Michigan, including jobless rate estimates. In 2018, the annual statewide jobless rate declined by half a percentage point to 4.1 percent. This was the ninth straight year of annual jobless rate reductions in Michigan.

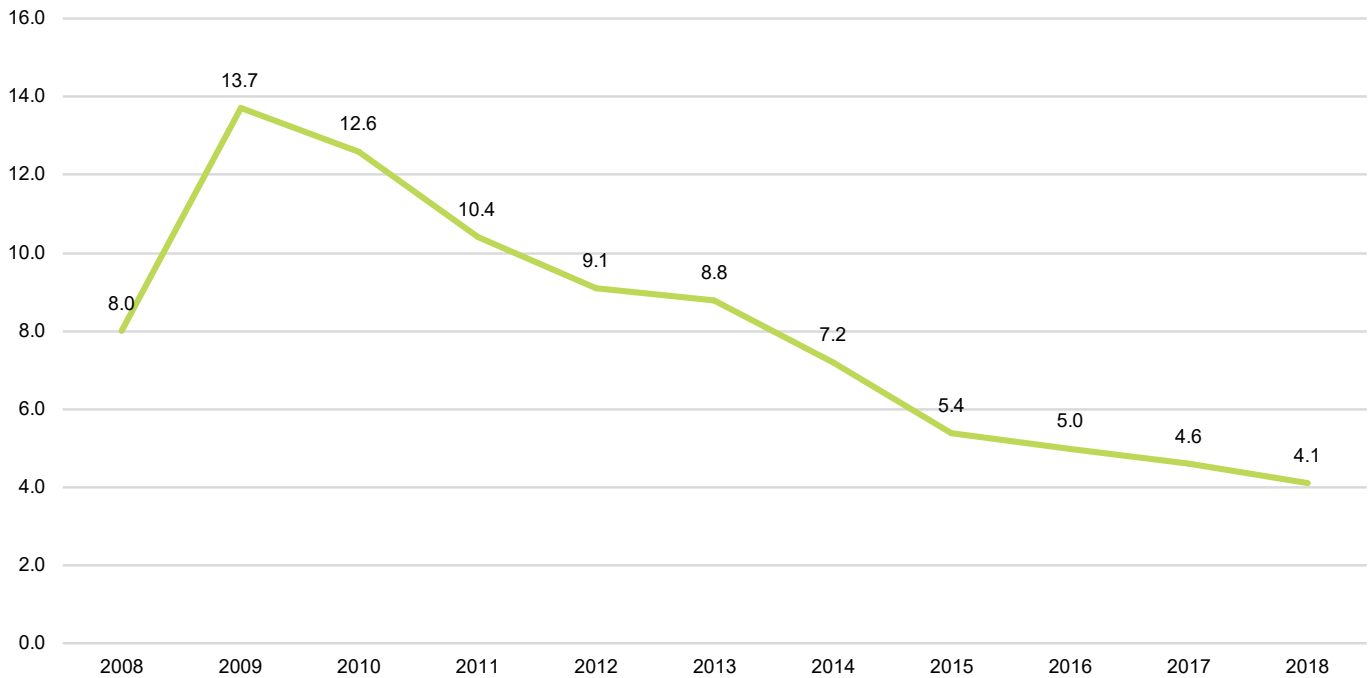
Michigan's unemployment rate displayed considerable improvement during the ten-year period from 2008 to 2018. Since the height

of the recession in 2009, the state's jobless rate fell by 9.6 percentage points. In fact, Michigan's 2018 annual jobless rate was the lowest rate in Michigan since the year 2000 (3.6 percent).

A comparison of Michigan and national annual jobless rates reveals that, apart from the period of 1994-2000, Michigan jobless rates were higher than those of the nation. From 2015 to 2018, Michigan's jobless rates were very similar to U.S. rates, with only differences of 0.1 to 0.2 percentage points. In 2018, Michigan's rate of 4.1 percent was two-tenths above the national rate of 3.9 percent.

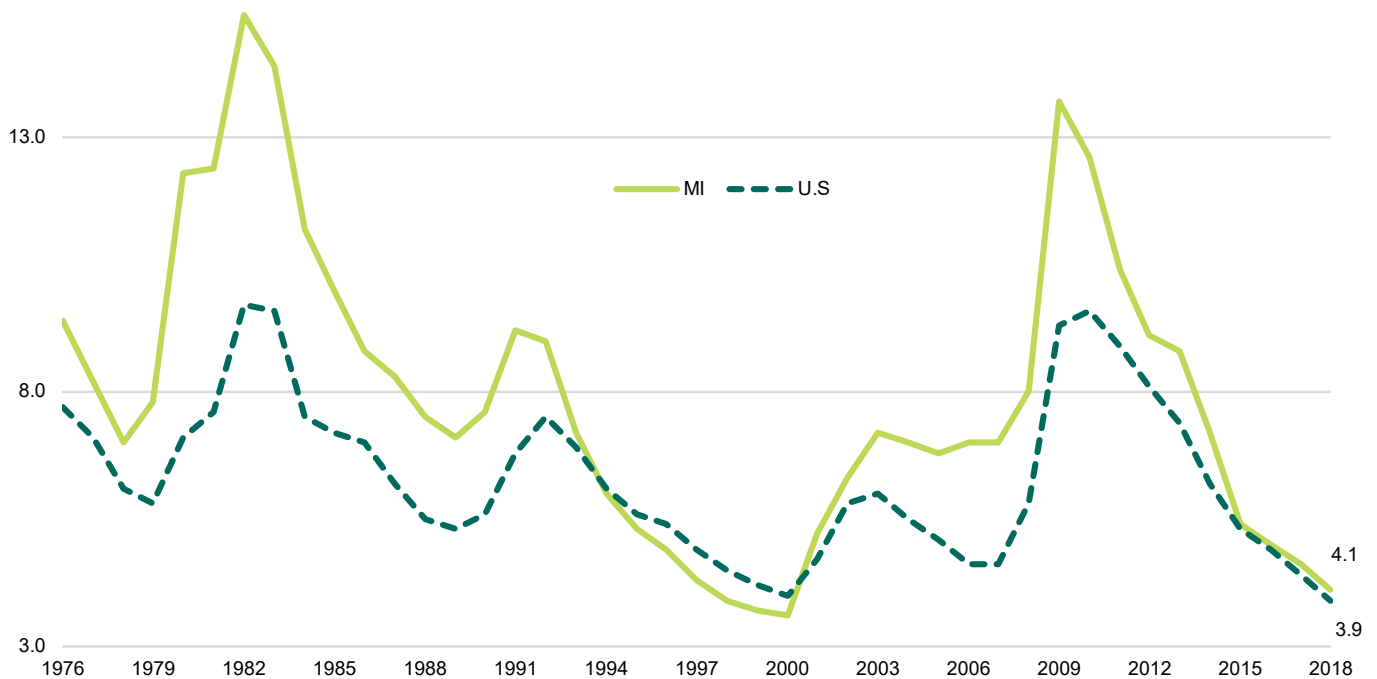


## MICHIGAN ANNUAL JOBLESS RATES, 2008–2018



Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics

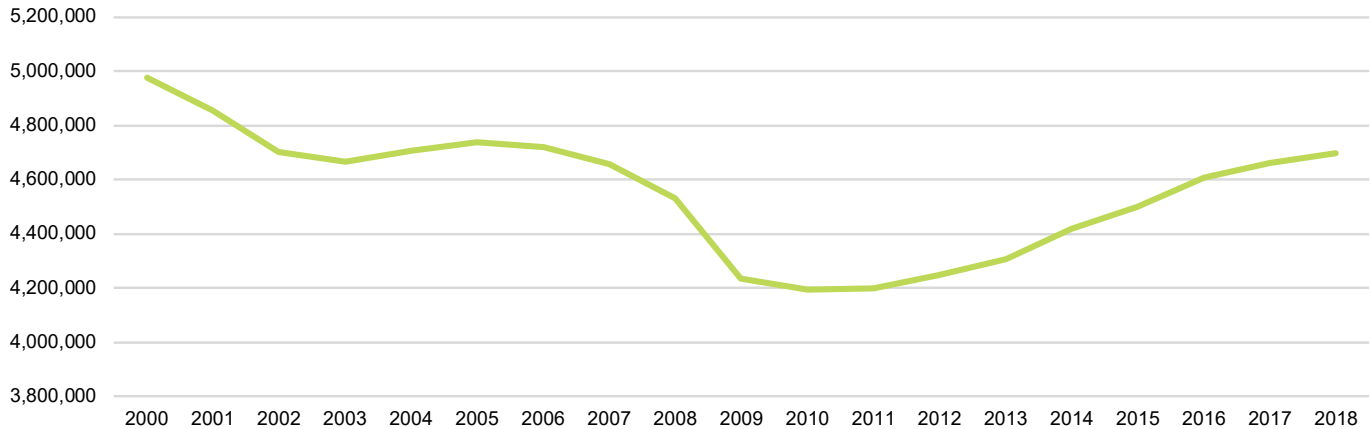
## MICHIGAN AND U.S. JOBLESS RATES, 1976–2018



Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics



## MICHIGAN TOTAL EMPLOYMENT, 2000–2018



Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics

### Employment

The total number of employed in Michigan is another indicator measured through the LAUS program. Total employment is defined as a combination of payroll employment, agricultural jobs, unpaid family workers, and the self-employed.

In 2018, Michigan annual total employment advanced for the eighth consecutive year, edging up by 38,000; an increase of 0.8 percent. This gain was about half of the U.S. employment advance of 1.6 percent during the same period.

Since 2010, statewide employment grew by more than half a million (505,000), or 12.0 percent. In fact, Michigan's 2018 employment level was the highest in the state since the year 2006.

Despite this significant employment gain since the Great Recession, employment levels in Michigan were well below the statewide peak attained in the year 2000, when employment topped out at 4,976,000.

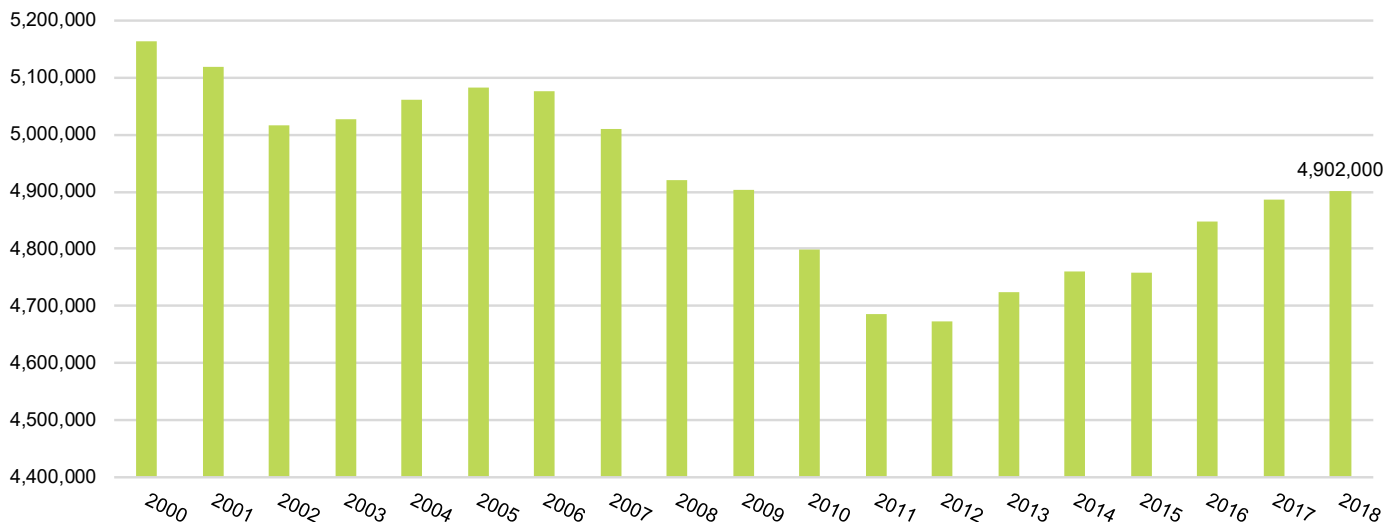
Michigan's 2018 employment gain of 0.8 percent was the lowest percent advance over the past five years.

### Workforce

In 2018, Michigan's total workforce edged up by 16,000, or 0.3 percent. This was below the 2017 growth rate of 0.8 percent. Despite this, the 2018 total labor force was the highest statewide level since the end of the national recession in 2009.

Since 2012, Michigan's annual workforce has recorded continuous gains. Michigan's workforce advanced by 229,000, or 4.9 percent, over the five-year period between 2013 and 2018. Since 2013, the state's average yearly workforce addition was 38,200.

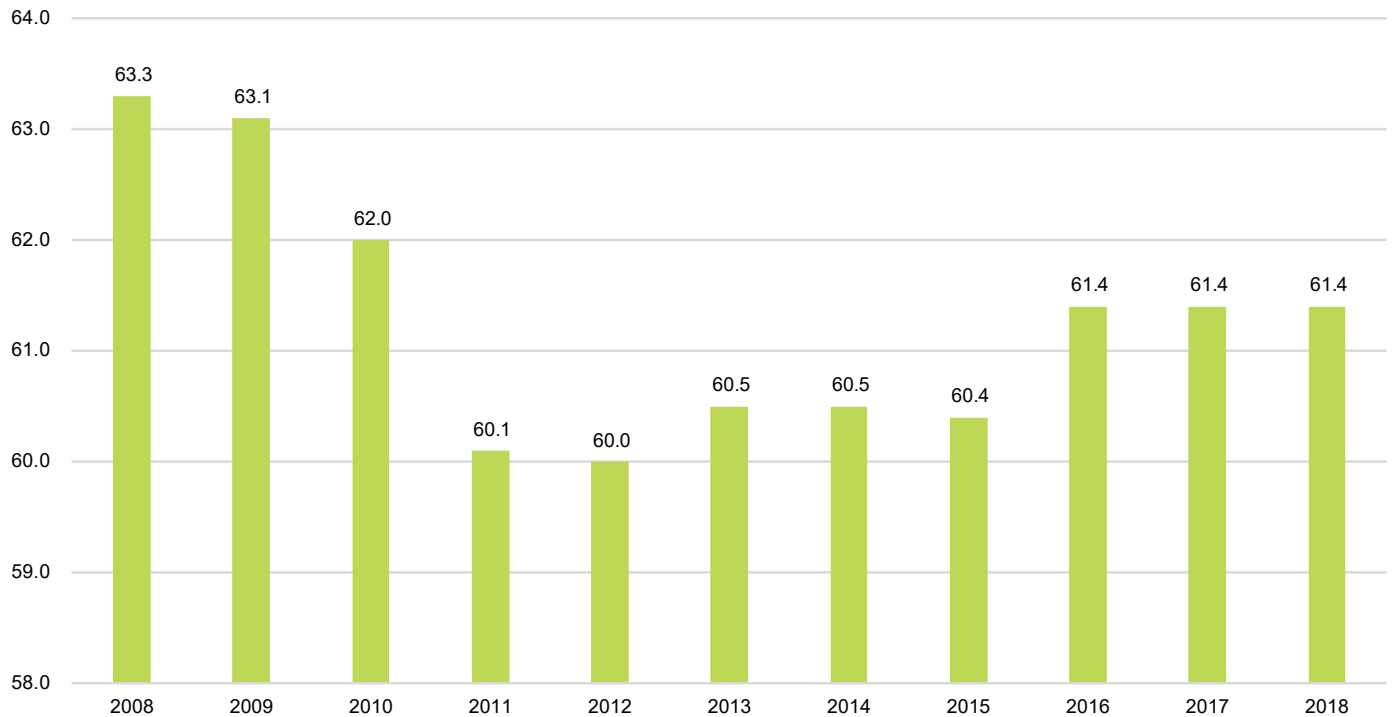
## MICHIGAN WORKFORCE LEVELS, 2000–2018



Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics



## MICHIGAN LABOR FORCE PARTICIPATION RATES, 2008–2018



Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics

Despite the positive workforce trends in Michigan over the past several years, the 2018 statewide labor force total continued to lag behind the peak level of 5,163,000 recorded in the year 2000.

### Labor Force Participation Rates

The labor force participation rate is the number of individuals in the labor force as a percentage of the 16 year and older non-institutionalized population. Participation rate trends are an important economic indicator that often correlate with the availability of jobs. Adequate labor force participation is a key factor in building a sufficient labor supply to meet the demands of employers.

Since 2016, Michigan's overall labor force participation rate remained steady at 61.4 percent. An examination of rates over the ten-year period between 2008 and 2018 reveals this is a marginal improvement from rates recorded from 2011 through 2015. However, 2016-2018 labor force participation rates in the state lagged well behind participation rates recorded between 2008 and 2010.

A comparison of labor force participation rates (LFPR) by gender in 2008 and 2018

### MICHIGAN LABOR FORCE PARTICIPATION RATES BY AGE, 2008 AND 2018

AGE	2008	2018
16 - 19	42.5%	39.4%
20 - 24	74.7%	75.8%
25 - 34	81.4%	82.6%
35 - 44	83.1%	81.4%
45 - 54	80.4%	81.7%
55 - 64	59.0%	60.2%
65+	13.9%	16.8%

shows that male participation exceeded that of females during both time periods.

Additionally, male and female participation was higher in 2008 than in 2018. Male labor force participation in Michigan fell by 2.3 percentage points from 2008 to 2018, and female participation declined by 1.6 percentage points.

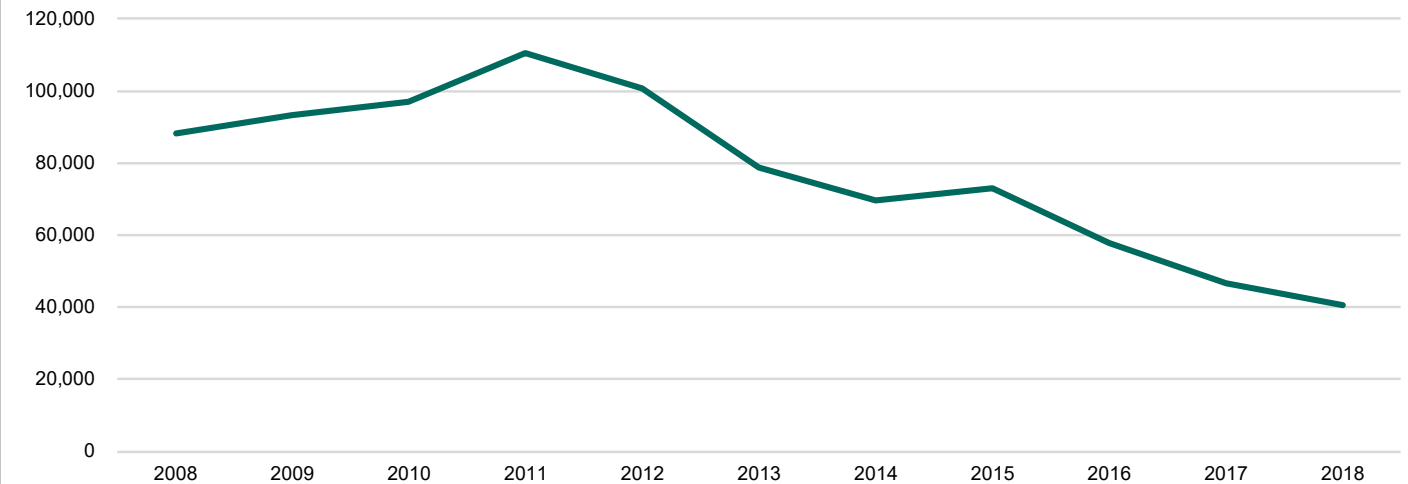
Participation rate trends by age group reveal more specific information about labor force dynamics of various segments of the statewide working age population. A comparison of Michigan labor force participation rates by broad

age group for 2008 and 2018 demonstrates that, for several age groups, labor force participation rates rose over this ten-year period.

The only exceptions were for the youngest age cohort (16-19), with the largest participation rate reduction of 3.1 percentage points, and the age 35-44 cohort, where participation declined by 1.7 percentage points. The 65 years of age and older cohort experienced the largest increase in participation over the ten-year period, rising by nearly 3.0 percentage points between 2008 and 2018.



## MARGINALLY ATTACHED TO MICHIGAN'S WORKFORCE, 2008–2018



Source: U.S. Bureau of Labor Statistics, Current Population Survey

### Unemployment

The number of unemployed includes Michigan residents who are not currently working but are actively seeking employment. Individuals who are not actively looking for work are not counted as unemployed, but instead are considered out of the labor force.

The annual average number of unemployed in Michigan in 2018 was 203,000. The number of jobless residents fell in 2018 by 22,000, or nearly 10 percent. Since the height of the recession in 2009, Michigan's total number of unemployed has steadily decreased, reaching in 2018 the lowest level since the year 2000.

### Marginally Attached to the Labor Force

Persons marginally attached to the labor force are defined as individuals who want a job, but are not currently working, and have not searched for work during the prior month, but have looked for a job during the prior year. This is a category of potential entrants into the Michigan labor force who want a job.

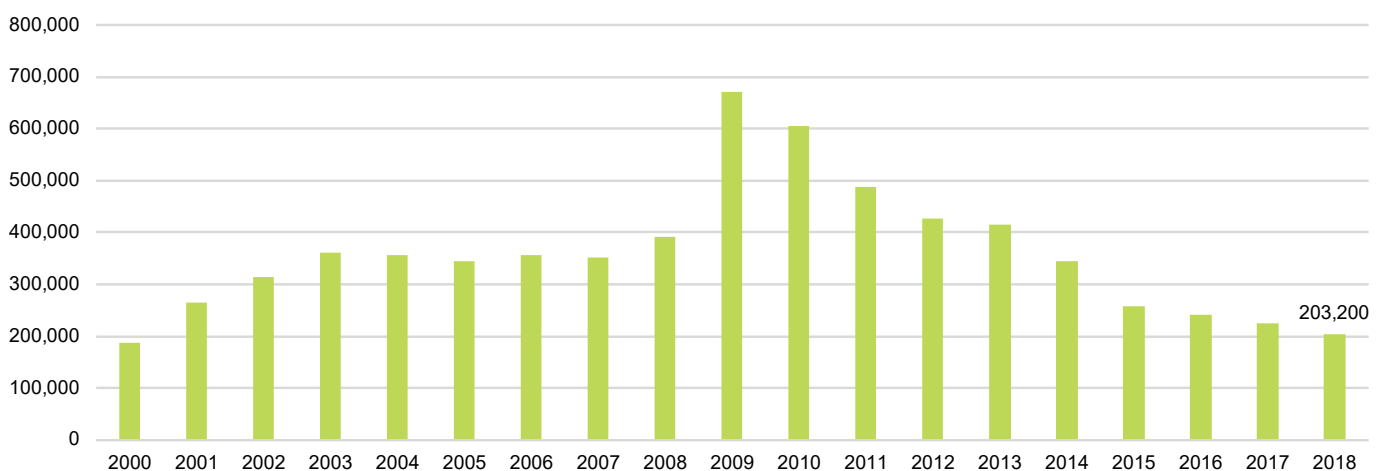
In 2018, the number of marginally attached persons in Michigan was roughly 41,000, which was approximately 6,000 below its total from 2017 and well below the peak level of nearly 111,000 reported in 2011.

The U-5 measure is an alternative measure of labor underutilization to the jobless rate. It consists of the total number of unemployed statewide, plus all persons marginally attached to the labor force, as a percent of the civilian labor force plus all persons marginally attached to the labor force.

In 2018, the average U-5 rate for Michigan was measured at 4.9 percent, eight-tenths of a percentage point above the jobless rate of 4.1 percent.

The chart on the following page displays the Michigan unemployment rate versus the U-5 rates over the past ten years. The largest difference between the two measures occurred

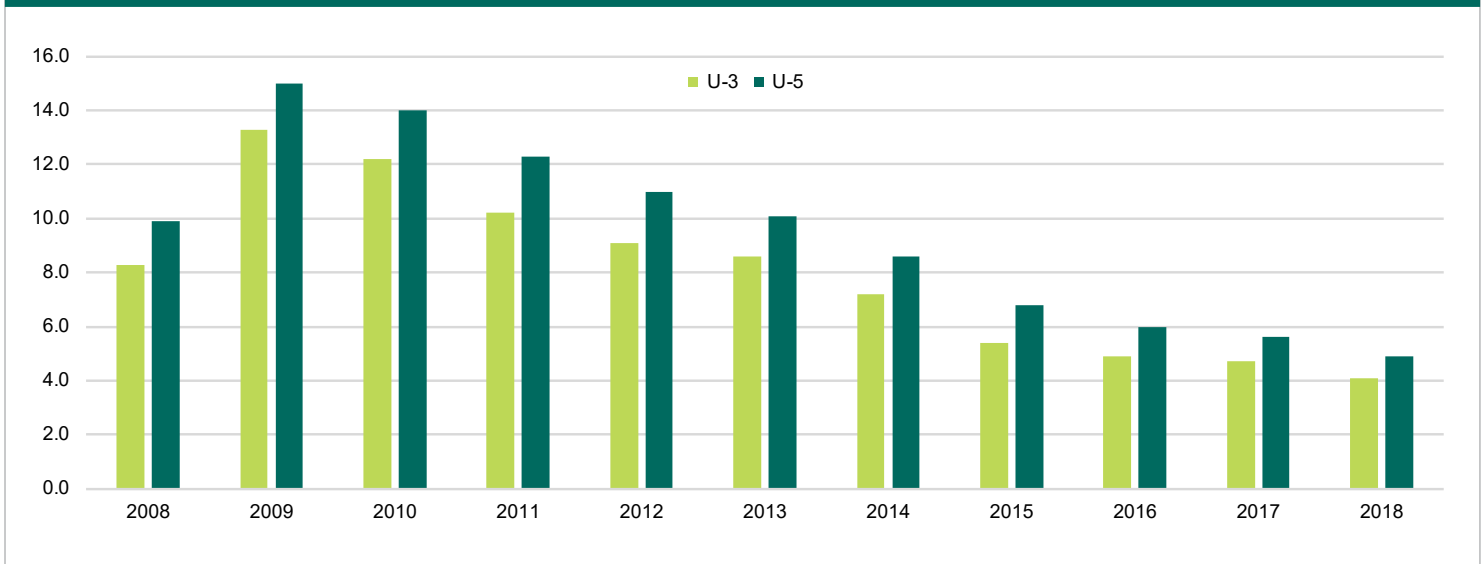
## NUMBER OF UNEMPLOYED IN MICHIGAN, 2000–2018



Source: U.S. Bureau of Labor Statistics, Current Population Survey



## MICHIGAN UNEMPLOYMENT RATE AND U-5 RATE, 2008–2018



Source: U.S. Bureau of Labor Statistics, Current Population Survey

in 2011, at 2.1 percentage points. In fact, since that period, the difference between the two measures steadily began shrinking, culminating in a ten-year low percentage point difference of 0.8 in 2018.

### Job Leavers

The percentage of unemployed defined as job leavers can provide additional information on the health of the statewide economy. When the unemployment rate is low, people often become more confident about job prospects and may be more likely to voluntarily leave their current job for new employment opportunities. The Current Population Survey defines job leavers as

unemployed individuals who voluntarily left their previous job and immediately began searching for new employment.

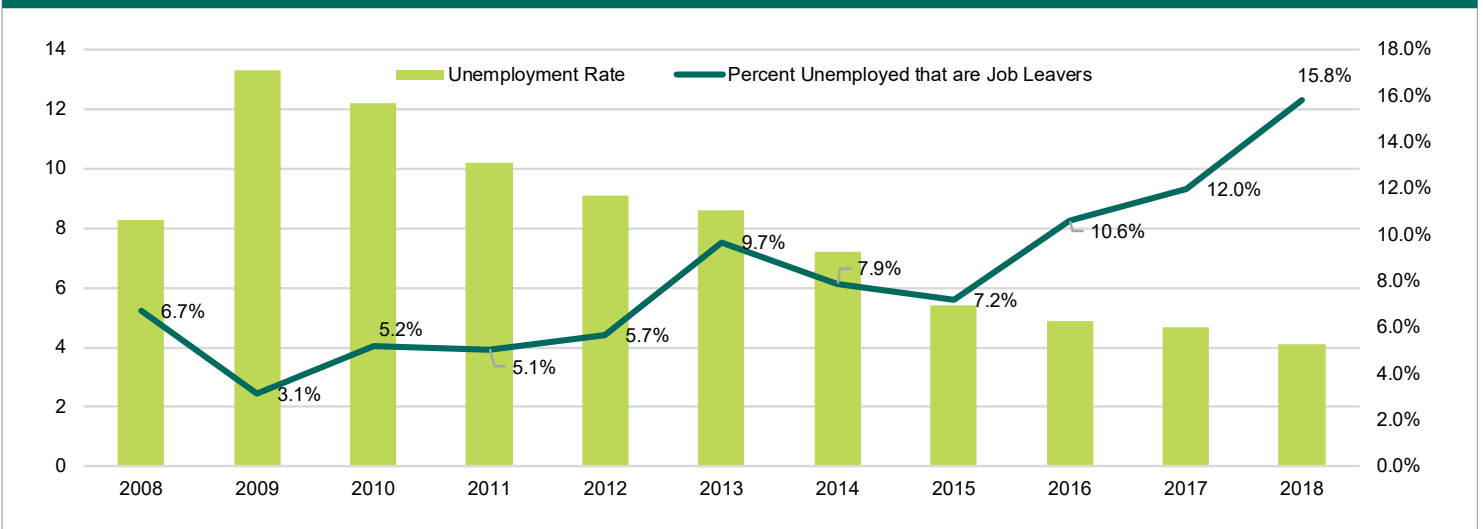
An examination of annual average Michigan Current Population Survey data over the ten-year period between 2008 to 2018 demonstrates an inverse relationship between the statewide unemployment rate and the percentage share of the unemployed who are job leavers. The highest jobless rate in Michigan during this ten-year period occurred during the height of the recession in 2009 (13.3 percent). The lowest percentage of unemployed defined as job leavers occurred

during the same year, with job leavers at just 3.1 percent of total unemployed.

In contrast, Michigan's lowest annual average jobless rate between 2008 and 2018 occurred in 2018 with a rate of 4.1 percent, and the unemployed defined as job leavers recorded its highest share over the past ten years of 15.8 percent.

**SHIBANI PUTATUNDA**  
Economic Analyst

## MICHIGAN UNEMPLOYMENT RATE vs. PERCENT OF JOB LEAVERS, 2008–2018



Source: U.S. Bureau of Labor Statistics, Current Population Survey





# MICHIGAN INDUSTRY JOB TRENDS

## Michigan 2018 Nonfarm Job Trends

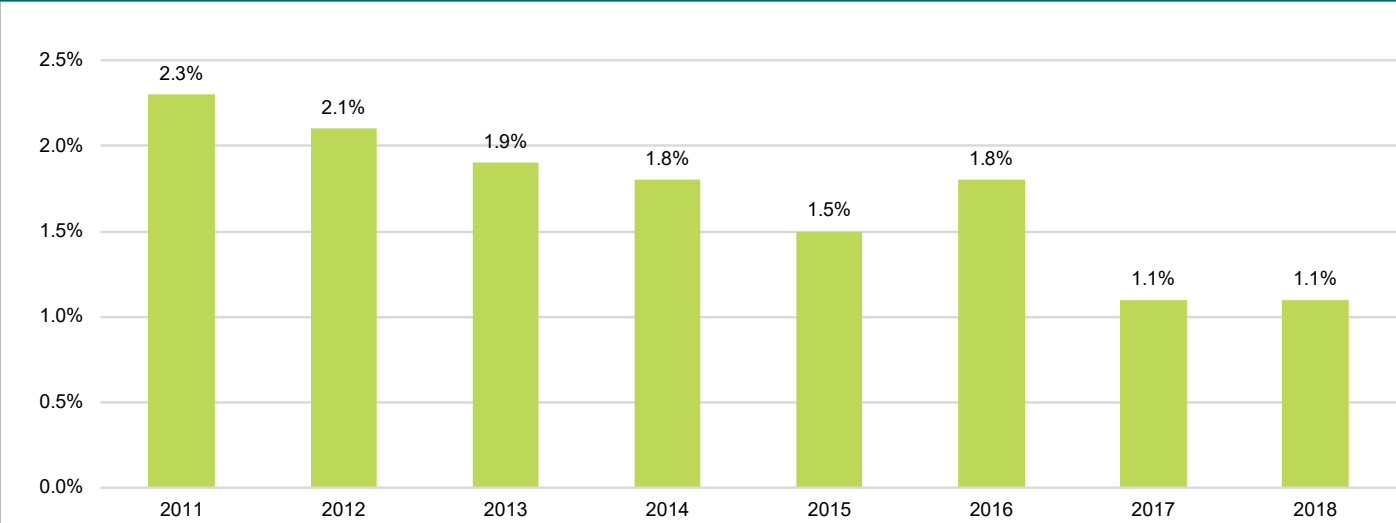
Total nonfarm jobs in Michigan grew by 49,600 in 2018 or by 1.1 percent. This gain marked the eighth consecutive year of employment expansion in Michigan, and matched the 2017 rate of advance. This 2018 increase was, however, below the 1.7 percent job addition nationally. In Michigan, the rate of annual payroll

job gains has decreased gradually throughout most of this decade.

Job additions were reported in 10 of the 11 major industry sectors during 2018. The exception was the broad sector *Information* which recorded a second year of payroll declines. Increased growth rates during 2018 occurred in *Manufacturing*, *Professional and business services*, *Other services* and *Mining and logging*.

The remaining major industry sectors saw slower rates of job growth during 2018 with the largest drop-offs in *Financial activities* and *Leisure and hospitality*. The rate of job expansion in the state's key *Transportation equipment manufacturing* industry rose somewhat in 2018 which contributed to the higher growth rate in *Manufacturing* jobs over the year.

MICHIGAN ANNUAL PERCENT JOB GROWTH, 2011–2018



Source: U.S. Bureau of Labor Statistics, Current Employment Statistics



On a seasonally adjusted basis, total Michigan nonfarm jobs moved up in nine of the 12 months in 2018. Nearly all of these additions (+44,300) occurred during the first six months of the year. Consistent monthly job gains of about 11,000 were recorded in the first quarter, and a significant job increase occurred in June.

The atypically large June addition was due to stronger than typical hiring in the broad sectors of *Construction, Trade, transportation, and utilities, Financial activities, Professional and business services, Leisure and hospitality, and Other services*. The subsectors within these major groups that were most responsible for these gains included *Specialty trade contractors, Administrative and support and waste management and remediation services, and Art, entertainment, and recreation*.

The much slower growth in the second half of the year was defined by the July decline in jobs due to the annual model changeover in the automotive industry, and by a significant seasonally adjusted drop in September. The September decline was mostly due to a combination of lower seasonal hiring in *Employment services* and larger than typical job reductions in *Construction, Retail trade, Health care and social assistance, and Accommodation and food services*.

## 2018 Industry Developments

### MINING AND LOGGING

Employment in this sector remained essentially unchanged in 2018, edging up by 100 or 0.6 percent. Nationally, job levels grew sharply by 8.3 percent.

### CONSTRUCTION

Payrolls in the *Construction* sector in Michigan rose by 7,100, or by 4.3 percent. In percentage terms, this was the largest job expansion in Michigan during 2018. These job gains occurred in all three of the subsectors of *Construction of buildings* (+2,900 jobs), *Heavy and civil engineering construction* (+900 jobs), and *Specialty trade contractors* (+3,200 jobs). The broad sector job advance in Michigan was just slightly below the 4.6 percent growth nationally during 2018.

### MANUFACTURING

*Manufacturing* employment levels increased by 13,700 in Michigan during 2018 or by 2.2 percent. This was slightly above the 2.0 percent growth rate nationally.

In Michigan, the majority of the 2018 job additions occurred in the *Durable goods* (+12,300 jobs) sector. The automotive and related industries of *Primary metal manufacturing* (+500 jobs), *Fabricated metal product manufacturing* (+1,700 jobs), *Machinery manufacturing* (+1,300 jobs), and *Transportation equipment manufacturing* (+5,300 jobs) accounted for over 70 percent of the *Durable goods* sector job increase.

The *Nondurable goods manufacturing* sector grew by 1,400 jobs over the year with the largest job additions recorded in *Food manufacturing* (+800 jobs) and *Plastics and rubber products manufacturing* (+600 jobs).

### TRADE, TRANSPORTATION, AND UTILITIES

Jobs in this sector advanced by 5,000 or 0.6 percent during 2018 as employers in *Transportation, warehousing, and utilities* (+6,400 jobs) and *Wholesale trade* (+1,500 jobs) added staff. These gains were offset somewhat by a 2,900 decline in *Retail trade* positions. The subsector of *Warehousing and storage* (+2,600 jobs) provided many employment additions related to e-commerce. All of the job gains in *Wholesale trade* were involved with the warehousing of *Durable goods* (+2,100 jobs). The decline in *Retail employment* mostly reflected ongoing store closures. Nationally, the broad sector grew by 0.9 percent in 2018.

### INFORMATION

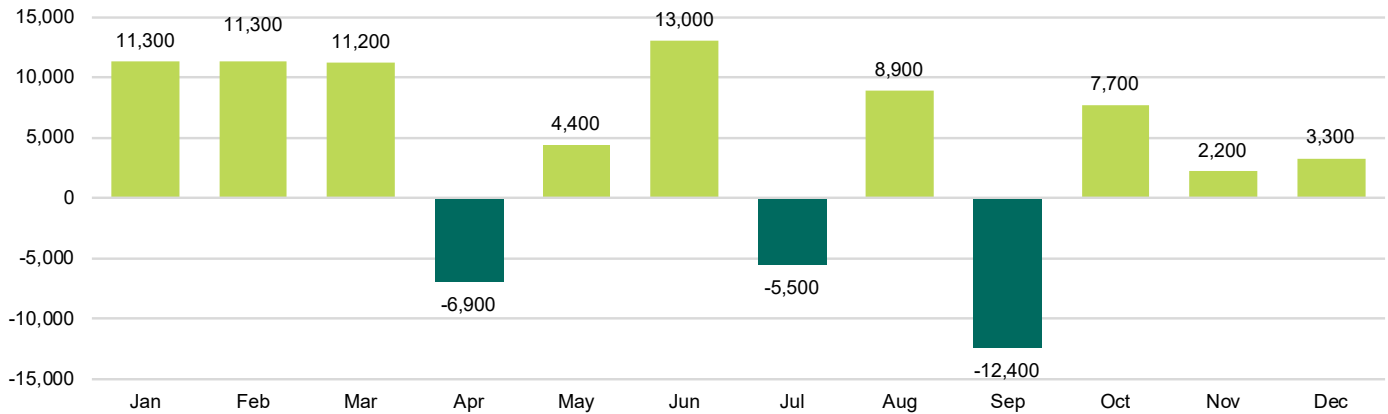
Jobs in the *Information* sector fell in Michigan in 2018 for the second consecutive year. Jobs edged down by 600 or by 1.1 percent during 2018. Nationally, payrolls in this sector were relatively unchanged, rising by 0.5 percent during 2018.

### FINANCIAL ACTIVITIES

*Financial activities* jobs moved up by 1,500 or by 0.7 percent in 2018. This was the eighth consecutive year of payroll expansion, but the rate of gain was down significantly from the previous year. Job additions were largest in the *Real estate and rental and leasing* (+1,000 jobs) subsector. Nationally, employment levels expanded by 1.4 percent.



## MICHIGAN MONTHLY JOB CHANGE, 2018 (SEASONALLY ADJUSTED)



Source: U.S. Bureau of Labor Statistics, Current Employment Statistics

### PROFESSIONAL AND BUSINESS SERVICES

This broad sector has been one of leaders in job creation during this decade. This included the year 2010 when many of the state's other industry sectors were still shedding workers due to the recession. Since reaching a recessionary annual low of 510,300 jobs in 2009, jobs in this broad sector advanced by 150,300 or by 29.5 percent. This was more than double the 14.1 percent growth in jobs statewide during this period.

During 2018, employers in the broad sector added 10,700 workers to their payrolls; an increase of 1.6 percent. All three component sectors contributed to this gain with the largest job additions recorded in *Professional, scientific, and technical services* (+4,900 jobs), followed by *Administrative and support and waste management and remediation services* (+3,500 jobs) and *Management of companies*

*and enterprises* (+2,300 jobs). Nationally, broad sector payrolls grew by 2.4 percent in 2018.

### EDUCATION AND HEALTH SERVICES

Payrolls in this major group moved up by 7,200 jobs in 2018 or by 1.1 percent. Job gains occurred in both *Education services* (+1,900 jobs) and *Health care and social assistance* (+5,300 jobs). Nationally, total nonfarm payrolls in this broad sector advanced by 2.1 percent in 2018.

This broad sector has been a continuous source of employment growth, even during recessionary periods. During the Great Recession, job levels rose by 10,700 in 2008, by 1,800 in 2009, and by 2,600 in 2010. The growth during this period occurred almost entirely in *Health care and social assistance*. During 2018, the industries of *Elementary and secondary schools* (+2,000 jobs), *Ambulatory health care services* (+2,000 jobs), and

*Hospitals* (+2,600 jobs) were the primary sources of employment expansion.

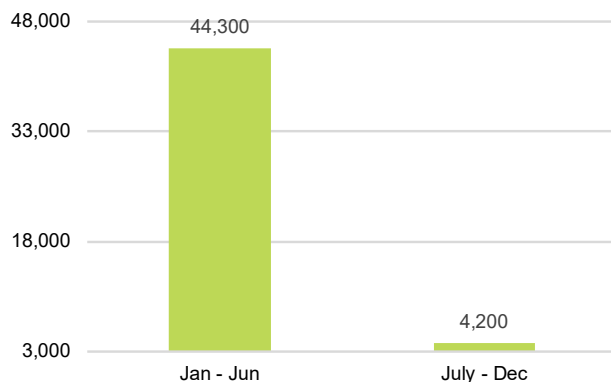
### LEISURE AND HOSPITALITY

Job levels were essentially unchanged in 2018, notching higher by 1,400 or 0.3 percent. This gain was exclusively located in *Accommodation and food services* (+1,900 jobs) as payrolls in *Arts, entertainment, and recreation* declined by 500. Nationally, payrolls grew by 1.9 percent in 2018.

### OTHER SERVICES

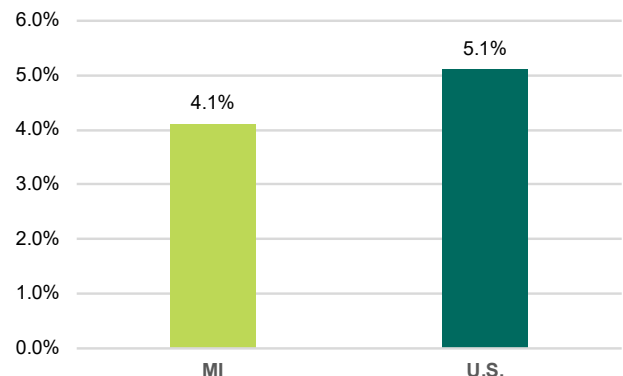
This industry added 900 jobs in Michigan (+0.5 percent) in 2018. Most of this growth was reported in *Repair and maintenance* (+800 jobs) with a small addition recorded in *Religious, grantmaking, civic, and similar organizations* (+200 jobs). Job levels dropped by 100 in *Personal and laundry services*. Nationally, payrolls grew by 1.3 percent in 2018.

## MICHIGAN 2018 JOB GROWTH SEASONALLY ADJUSTED



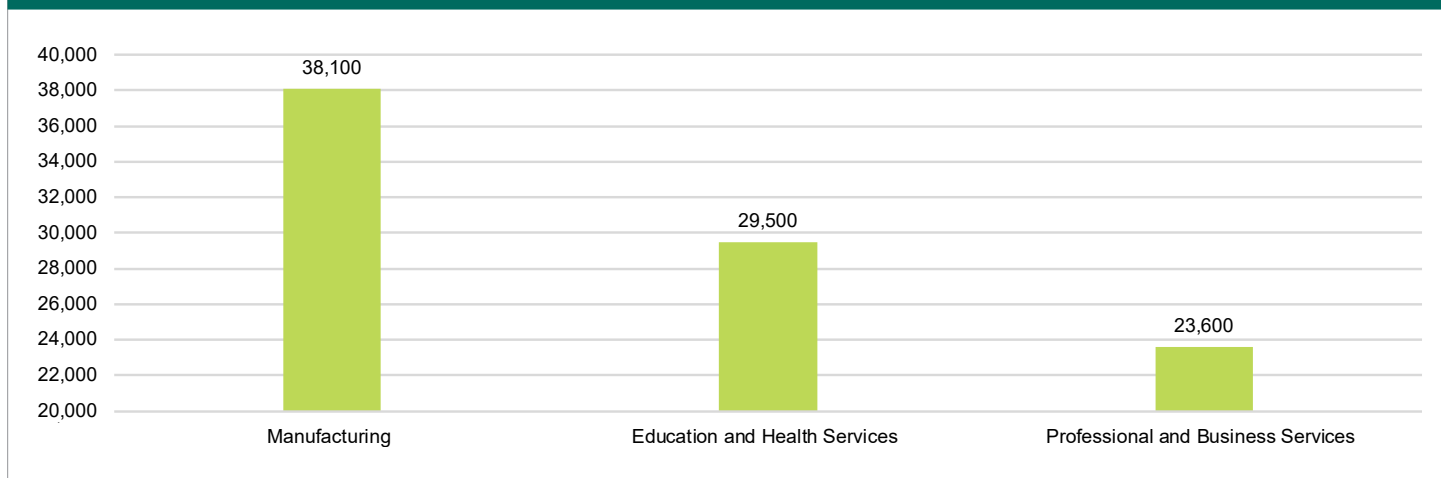
Source: U.S. Bureau of Labor Statistics, Current Employment Statistics

## MICHIGAN AND U.S. 3-YEAR JOB GROWTH, 2015–2018



Source: U.S. Bureau of Labor Statistics, Current Employment Statistics

## TOP 3 MICHIGAN INDUSTRIES WITH LARGEST 3-YEAR NET JOB ADDITIONS, 2015–2018



Source: U.S. Bureau of Labor Statistics, Current Employment Statistics

### GOVERNMENT

Michigan public sector positions rose by 2,700 or 0.5 percent in 2018. The largest portion of this increase occurred in *Local government educational services* (+1,100). Nationally, employment levels moved higher by 0.4 percent in 2018.

### Michigan Job Growth 2015-2018

Total nonfarm jobs rose by 175,500 (+4.1 percent) in Michigan between 2015 and 2018. This was a full percentage point below the 5.1 percent growth rate nationally during this period. In Michigan, 52 percent of the increase in payroll employment over this period was recorded in three major industry sectors; *Manufacturing* (+38,100 jobs), *Education and health services* (+29,500 jobs), and *Professional and business services* (+23,600 jobs).

Michigan's *Manufacturing* sector has continued to rank high nationally in job creation. Numerically, Michigan ranked first in the total number of *Manufacturing* jobs added in 2016 and 2017 and ranked third in 2018. On a percentage basis, the Michigan *Manufacturing* sector ranked 20th nationally in 2018 in job expansion. Michigan has maintained its leadership status in both the number of *Manufacturing* jobs added over the past three years and in the rate of job growth in the Great Lakes Region, which consists of Illinois, Indiana, Michigan, Ohio, and Wisconsin.

Many of the detailed industries in Michigan's *Manufacturing* sector are related to the automotive sector. Examples of these industries include *Transportation equipment manufacturing*, *Machinery manufacturing*, *Primary metals manufacturing*, *Fabricated metal product manufacturing*, *Plastic and rubber products manufacturing* and *Computer and electronic product manufacturing*. In 2018, these industries

accounted for nearly 70 percent of total *Manufacturing* jobs in the state. Over the past three years *Manufacturing* has added 38,100 jobs with the automotive and related industries accounting for 63.0 percent of this growth.

Payroll expansion in the *Education and health services* sector has primarily occurred in the *Health care and social assistance* (+27,300 jobs) subsector over the past three years. Job levels grew at a modest pace since 2015 in *Education services* (+2,200 jobs).

Since 2015, job growth in *Professional and business services* has occurred in *Professional, scientific, and technical services* (+21,300 jobs) and Management of companies and enterprises (+7,800 jobs). Jobs in *Administrative and support and waste management and remediation services* fell by 5,400 during this period due to a contraction in Employment services (-13,600 jobs).

### MICHIGAN MANUFACTURING JOB GROWTH RANKING

YEAR	NATIONAL RANKING		GREAT LAKES RANKING	
	NUMERIC GROWTH	PERCENT GROWTH	NUMERIC GROWTH	PERCENT GROWTH
2016	1	7	1	1
2017	1	11	1	1
2018	3	20	1	1*

Source: U.S. Bureau of Labor Statistics, Current Employment Statistics

\*Percent rank shared with Illinois

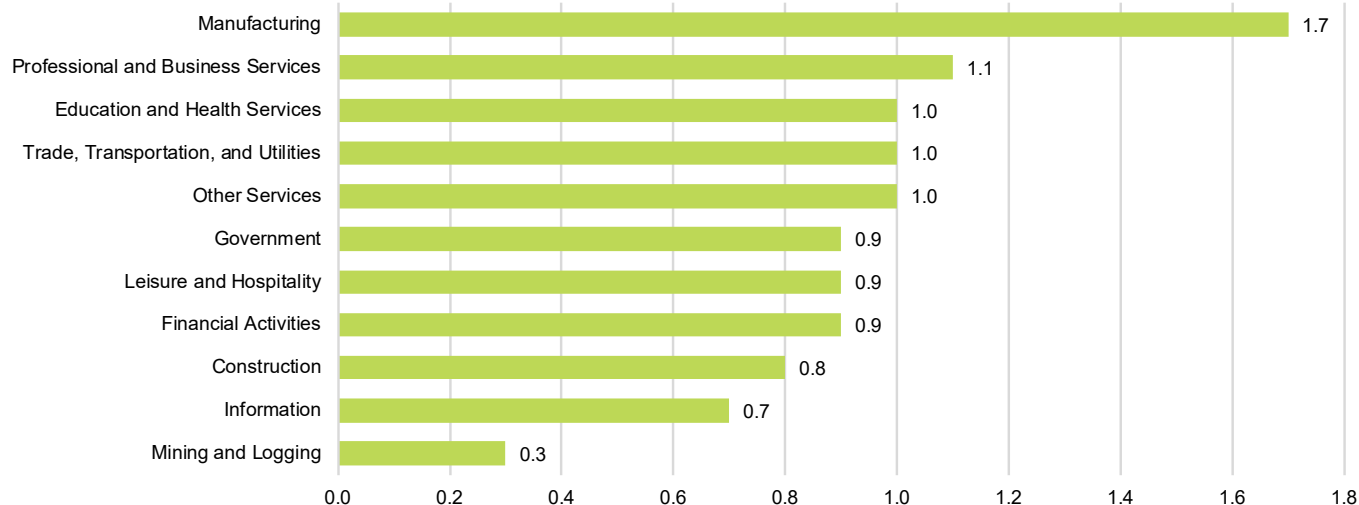
### AUTOMOTIVE AND RELATED MANUFACTURING INDUSTRIES JOB CHANGE, 2015–2018

INDUSTRY	JOB CHANGE
<b>Manufacturing</b>	<b>38,100</b>
Transportation Equipment Manufacturing	16,100
Machinery Manufacturing	2,800
Plastic & Rubber Products Manufacturing	2,700
Computer and Electronic Product Manufacturing	1,700
Primary Metal Manufacturing	500
Fabricated Metal Product Manufacturing	200

Source: U.S. Bureau of Labor Statistics, Current Employment Statistics



## MAJOR INDUSTRY SECTOR JOBS LOCATION QUOTIENTS, 2018 (MICHIGAN COMPARED TO U.S.)



Source: U.S. Bureau of Labor Statistics, Current Employment Statistics

### Industry Job Concentration

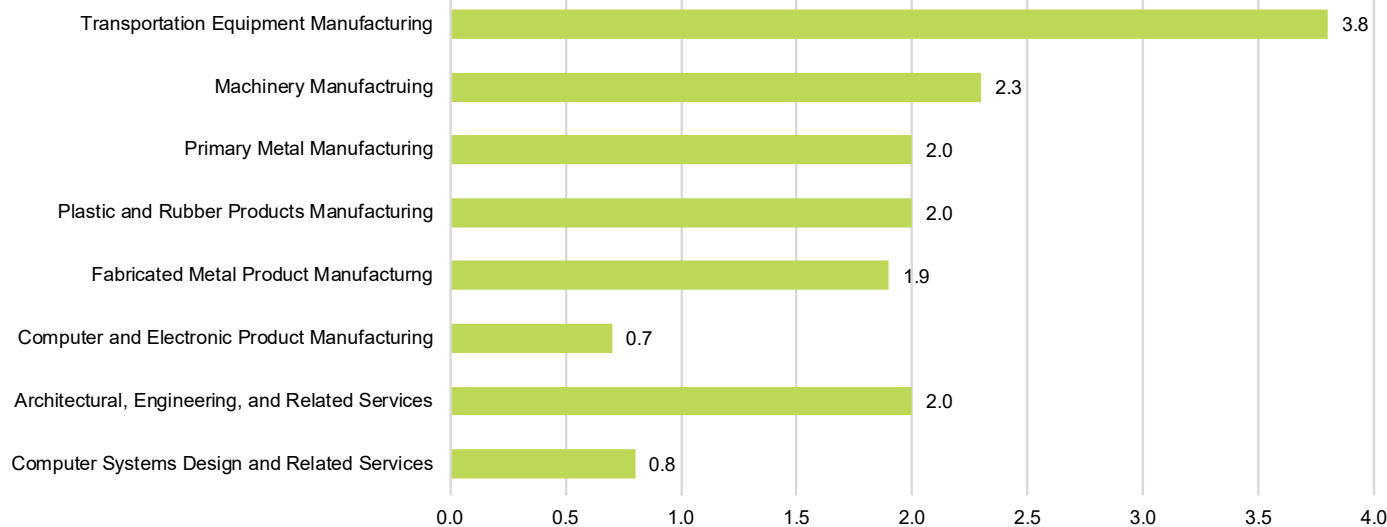
It can be helpful to examine industry employment concentration by identifying sectors in Michigan with an above average or lower concentration of jobs than the nation. This involves calculating a ratio of the proportion of jobs located in each industry sector in Michigan to the proportion of jobs located in comparable industry sectors nationally. These ratios are referred to as Location Quotients (LQ). Location Quotients greater than 1.0 indicate a higher concentration of industry jobs in Michigan compared to the U.S., and Location

Quotients less than 1.0 indicate a smaller concentration of jobs in a given industry.

Two major industry groups in Michigan had a greater concentration of jobs compared to the U.S. in 2018. These sectors were *Manufacturing* (LQ 1.7) and *Professional and business services* (LQ 1.1). As stated previously, the automotive and related industries are the largest component of Michigan's *Manufacturing* sector. There is also a sizable number of jobs connected to the automotive industry in the *Professional and business services* group.

The automotive and related Location Quotients show Michigan has a significantly larger concentration of jobs compared to the national average in the industries of *Transportation equipment manufacturing* (LQ 3.8), *Machinery manufacturing* (LQ 2.3), *Primary metal manufacturing* (LQ 2.0), *Plastic and rubber products manufacturing* (LQ 2.0), *Architectural, engineering, and related services* (LQ 2.0), and *Fabricated metal product manufacturing* (LQ 1.9).

## AUTOMOTIVE AND RELATED JOBS LOCATION QUOTIENTS, 2018 (MICHIGAN COMPARED TO U.S.)



Source: U.S. Bureau of Labor Statistics, Current Employment Statistics

While the auto industry is the largest component of Michigan's *Manufacturing* sector there are many other smaller, yet important, industries that help define overall *Manufacturing* in the state. Examples of these industries include *Chemical manufacturing* (LQ 1.2) and *Food manufacturing* (LQ 0.8).

The automotive-related industries within *Professional and business services* are *Architectural, engineering, and related services* (LQ 2.0) and *Computer systems design and related services* (LQ 0.8). The automotive-related engineering and design jobs among Michigan firms in the *Architectural, engineering, and related services* industry are why Michigan has double the national share of jobs in this broad sector.

Additionally, the proportion of jobs in *Administrative support and waste management services* (LQ 1.1) is slightly above the national average in Michigan. This is primarily due to a larger concentration of jobs in *Employment services* (LQ 1.3). Employers in this subsector typically supply temporary workers to school districts, the automotive industry, and many other segments of the Michigan labor market.

The three major industry sectors where Michigan had the lowest proportion of jobs relative to the nation in 2018 were *Mining and logging* (LQ 0.3), *Information* (LQ 0.7), and *Construction* (LQ 0.8).

The *Mining and logging* (LQ 0.3) sector in Michigan had the smallest proportion of jobs compared to the national average during 2018. This smaller share was mostly due to the smaller footprint of the oil and gas industry in Michigan versus other regions of the nation.

The lower proportion of jobs in Michigan's *Information* sector compared to the national average was mostly reflected in the *Printing subsector* (LQ 0.6). In general, the *Information* sector is not a large source of jobs in Michigan (1.3 percent of total jobs) or the U.S. (1.9 percent of total jobs). The largest component sector in terms of jobs in Michigan and nationally during 2018 was *Telecommunications*, with 17,500 jobs in Michigan.

Within the *Construction* sector, the lowest proportion of jobs in 2018 relative to the national average existed in *Heavy and civil engineering construction* (LQ 0.6). This industry includes firms involved in the construction of large-scale projects such as roads, highways, and infrastructure. Despite comprising a lower than average share of total jobs in Michigan, employment in the state in this industry has increased by about 2,000 from 2015 to 2018.

INDUSTRY SECTORS WITH ABOVE AVERAGE WEEKLY WAGES (AWW)			
INDUSTRY	AVERAGE WEEKLY WAGE (2018)	2015 - 2018 EMPLOYMENT CHANGE	
		LEVEL	PERCENT
<b>Above Average Wage Industries</b>	<b>N/A</b>	<b>106,200</b>	<b>4.8%</b>
Information	\$1,415	-700	-1.3%
Financial Activities	\$1,375	11,900	5.8%
Professional & Business Services	\$1,333	23,600	3.7%
Manufacturing	\$1,299	38,100	6.4%
Construction	\$1,199	21,000	14.1%
Government	\$1,055	12,300	2.1%

INDUSTRY SECTORS WITH BELOW AVERAGE WEEKLY WAGES (AWW)			
INDUSTRY	AVERAGE WEEKLY WAGE (2018)	2015 - 2018 EMPLOYMENT CHANGE	
		LEVEL	PERCENT
<b>Below Average Wage Industries</b>	<b>N/A</b>	<b>69,300</b>	<b>3.5%</b>
Education and Health Services	\$956	29,500	4.5%
Trade, Transportation, Utilities	\$908	21,200	2.8%
Natural Resources and Mining	\$784	-500	-6.3%
Other Services	\$640	-800	-0.5%
Leisure and Hospitality	\$396	19,900	4.8%

Source: U.S. Bureau of Labor Statistics, Current Employment Statistics, Quarterly Census of Employment and Wages

The *Specialty trade contractors* subsector location quotient was 0.8 in 2018, indicating a lower proportion of jobs in Michigan relative to the national average. The primary activities of companies in this industry segment involve work such as pouring concrete, site preparation, plumbing, painting, carpentry, and electrical work. Michigan has added over 11,000 jobs in this industry since 2015.

## Job Growth in High Wage vs. Low Wage Industry Sectors

Another way of examining job trends in Michigan is to compare employment growth rates among relatively high and low-wage broad industry sectors.

The industry sectors with the highest average weekly wages during 2018 were *Information* (\$1,415) *Financial activities* (\$1,375), and *Manufacturing* (\$1,299). The major industry groups with the lowest average weekly wages included *Natural resources and mining* (\$784), *Other services* (\$640.00), and *Leisure and hospitality* (\$396).

Since 2015, the rate of job expansion in Michigan among above average wage sectors was 4.8 percent, somewhat above the 3.5 percent job gain among below average wage sectors.

There was a relatively wide range of job growth rates among specific industries in each of these wage-rate groups. Among industries with above average wages, *Manufacturing* (+38,100 jobs) added the largest number of jobs over this period and *Construction* registered the highest rate of job gain (+14.1 percent).

*Education and health services* (+29,500 jobs) had the highest job addition in the lower wage group, and *Leisure and hospitality* led the way in the rate of growth (+4.8 percent).

The *Manufacturing* sector's importance to the state's labor market is further highlighted when its influence is removed from the job growth figures. Over the past three years, the number of jobs added without the *Manufacturing* sector in the higher wage group (+68,100 jobs) was similar to the total number of jobs added in the lower wage industry category.

**JEFFREY AULA**  
Economic Analyst





# MICHIGAN'S 2018 OCCUPATIONAL EMPLOYMENT AND WAGE TRENDS

## Introduction

Each year, the Bureau of Labor Market Information and Strategic Initiatives conducts the Occupational Employment Statistics (OES) survey, which is a federal-state cooperative program with the U.S. Bureau of Labor Statistics (BLS). This program annually surveys approximately 400,000 nonfarm establishments nationwide, including 11,000 in Michigan to collect employment and wage information for over 800 Standard Occupational Classification (SOC) job titles. This is the only official survey that provides employment levels and annual and hourly wages for individual occupations for the nation, states, and metro and nonmetropolitan areas.

## Michigan and the U.S.

According to the 2018 OES data, Michigan's occupational employment was 4,318,000, roughly a one percent increase over last year. This estimate will likely be lower than other employment measures, as OES data does not reflect agricultural employment or the self-employed. The overall statewide median hourly wage was \$18.08, slightly lower than the national median wage of \$18.58. Michigan's median wage ranked 24th among all other

states and territories, unchanged from the previous year.

Occupational wages in Michigan ranged from \$9.71 at the 10<sup>th</sup> percentile up to \$43.91 at the 90<sup>th</sup> percentile. This means that 80 percent of all jobs in Michigan earned a wage between these values. The major occupational group, *Management occupations* had the highest wage range, from \$24.09 to \$94.88. Conversely, *Food preparation and serving occupations* had the lowest range, from \$9.32 to \$16.27.

Because of these wide variances in wages, sometimes the median does not provide a complete wage picture for an occupation or group. For example, *Sales and related occupations* had one of the lowest medians in the state at \$12.94, but due to the high variance in these occupations, hourly wages ranged from \$9.46 to \$38.19. While there are many low wage occupations in the group, such as *Retail salespersons* and *Cashiers*, there are also higher wage occupations that rely on commission, such as *Insurance sales agents* and *Sales representatives, wholesale and manufacturing, technical and scientific products*.

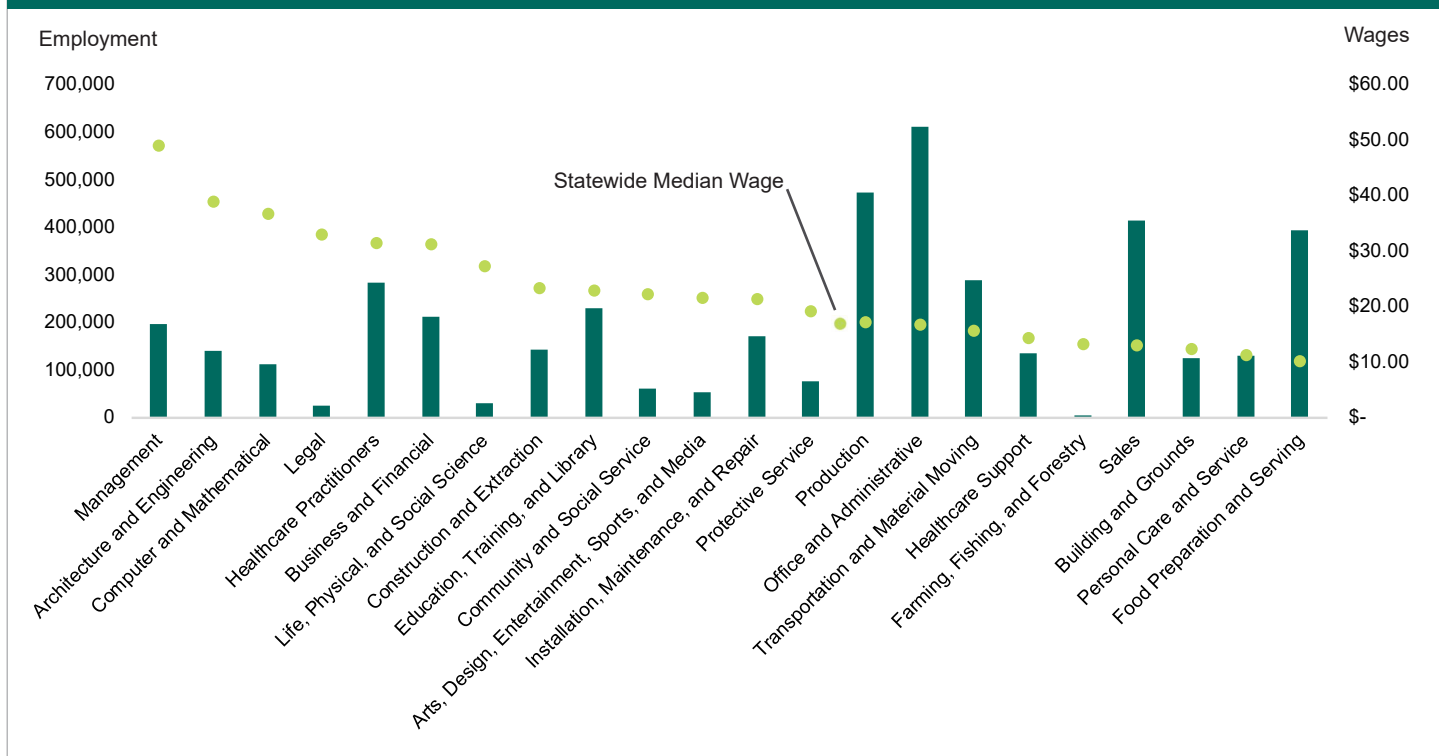
Figure 1 shows the employment and median wages for all 22 major Michigan occupational groups. Most of the occupational groups had wage rates above the statewide median. The occupational groups with below average wages consist of job titles that typically require little or no training or education beyond high school. However, many of these groups were among the largest by employment level, and the top five occupational groups by job count all had wages below the statewide average.

As expected, the highest wage major group was *Management occupations*, which had a median hourly wage over \$10 higher than the next group. The highest non-management groups both included many Science, Technology, Engineering, and Math (STEM) occupations: *Architecture and engineering occupations*, and *Computer and mathematical occupations*. Both groups had a median wage that was more than double the statewide median.

*Office and administrative support occupations* had the highest job count in the state, comprising about 14 percent of all occupational employment in Michigan. This was the case everywhere in the U.S., except for Washington D.C. The next largest group in Michigan was

\*This article previously appeared in the April 2019 edition of Michigan's Labor Market News.

**FIGURE 1: WAGES AND EMPLOYMENT OF MAJOR GROUPS BY MEDIAN WAGE**



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics

*Production* occupations, accounting for about 11 percent of jobs. This exceeded the share of jobs in most of the rest of the nation due to the prominence of the manufacturing sector in Michigan. The percentage of *Production* occupations in Michigan was the fourth highest

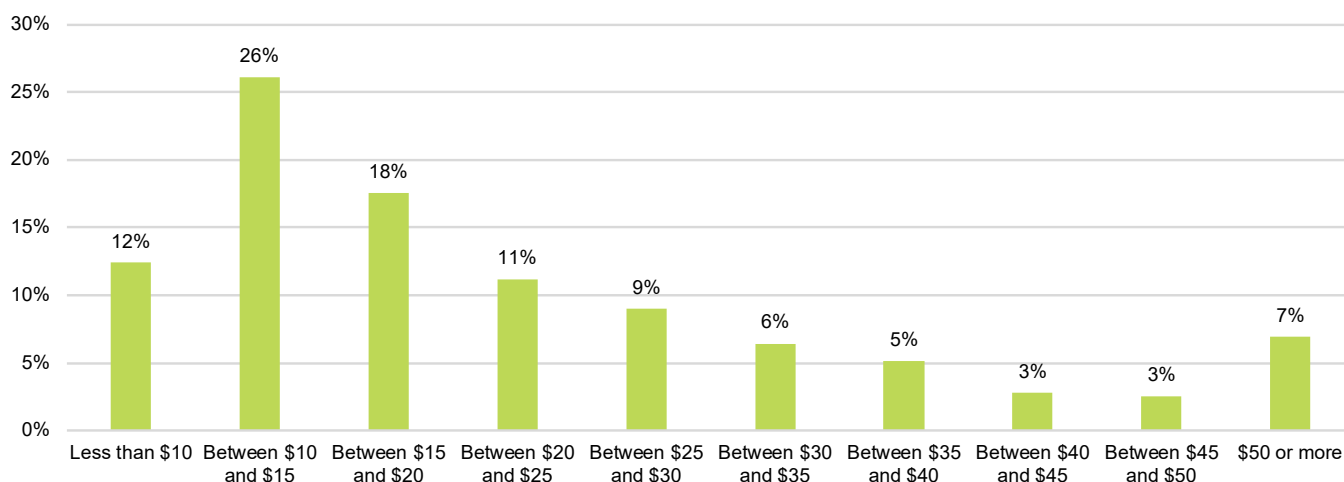
among states in the U.S., trailing only Indiana, Wisconsin, and Alabama.

Figure 2 shows the distribution of jobs by hourly wage in Michigan. One of the largest over-the-year changes was seen in the under

\$10 category. In 2017, about 16 percent of all occupations paid that amount or less, but in 2018, that share had dropped to only about 12 percent. This was likely due to the increase in the minimum wage in Michigan. In 2018 the minimum wage was \$9.25 and had advanced

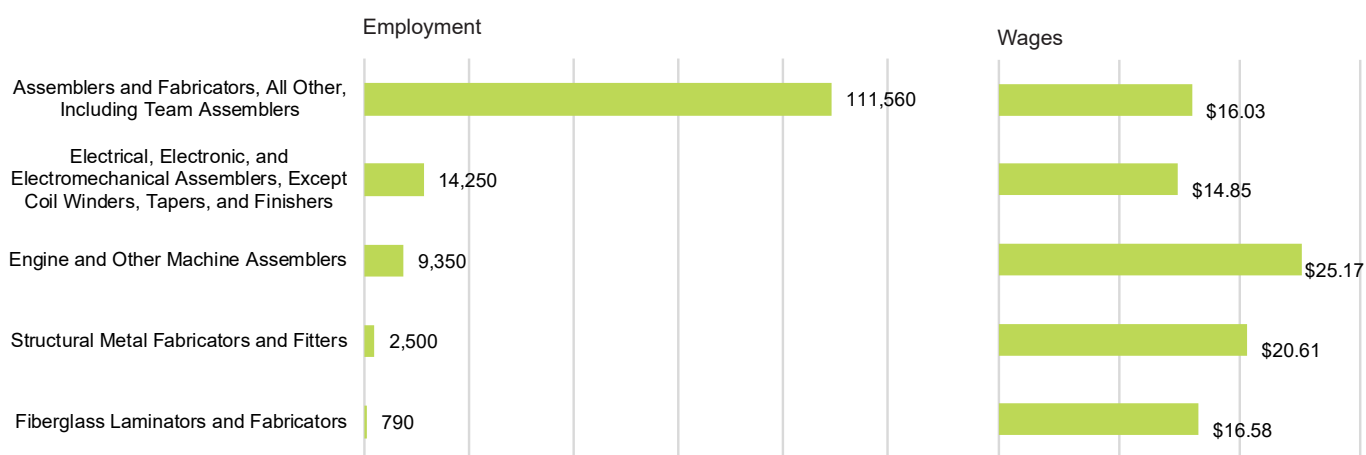


**FIGURE 2: MICHIGAN DISTRIBUTION OF JOBS BY HOURLY WAGE**



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics

**FIGURE 3: TOP ASSEMBLER AND FABRICATOR OCCUPATIONS BY EMPLOYMENT**



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics

each of the past several years, creating more opportunity to earn over this threshold. The job shares in the rest of the wage categories were little changed in 2018. The high percentage of jobs earning under \$20 per hour (56 percent) is due to several low-wage occupations with high job counts, such as *Combined food preparation and service workers* (fast food workers), *Cashiers*, *Retail salespersons*, and *Office clerks, general*.

### Occupational Minor Groups:

Beyond the broader groups previously mentioned, the SOC classification system also combines occupations into 94 minor groups. These are small groups that are comprised of related individual occupational titles. Highlighting a few of these minor groups can give a broader view than looking at specific occupations. The

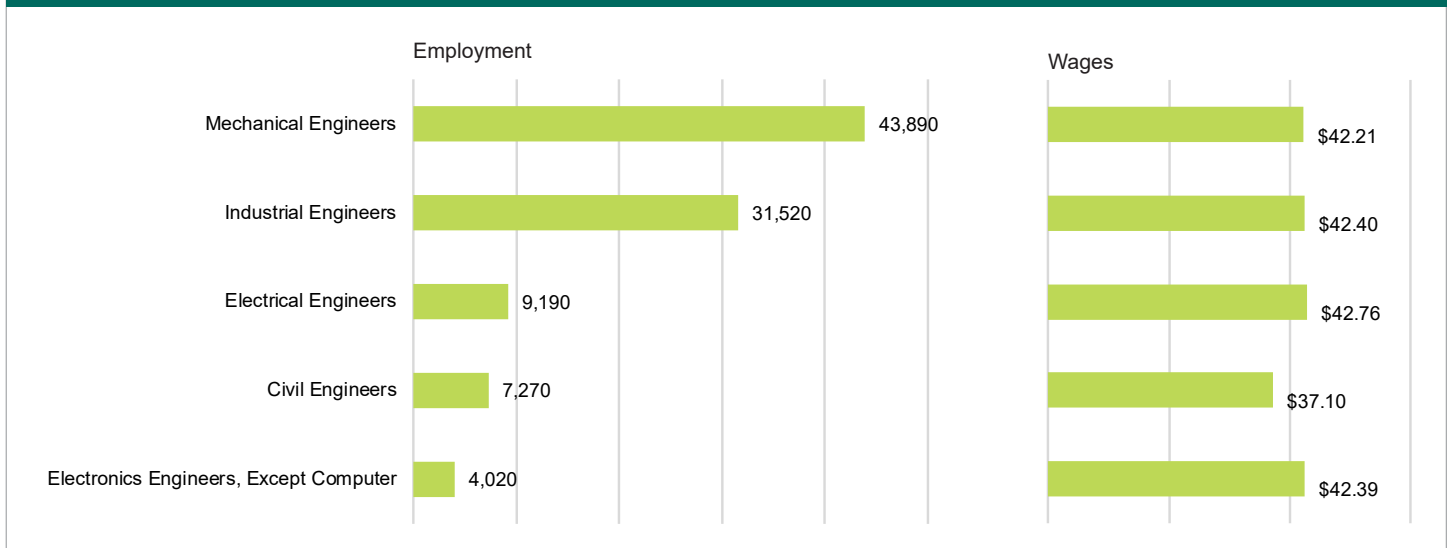
following minor groups are an important part of Michigan's economy, and were selected either for their high employment, high concentration, or high wages.

#### ASSEMBLERS AND FABRICATORS

*Assemblers and fabricators* were the second largest minor group of the *Production* occupations category with 138,770 jobs in Michigan. This was almost 30 percent of production employment, and 3.2 percent of all jobs in Michigan. This greatly exceeded national percentages, as this group only made up 1.3 percent of all employment nationally. The median wage for this group was \$16.45, above the nationwide median of \$15.78 for this group, but below the overall statewide median wage for all occupations.

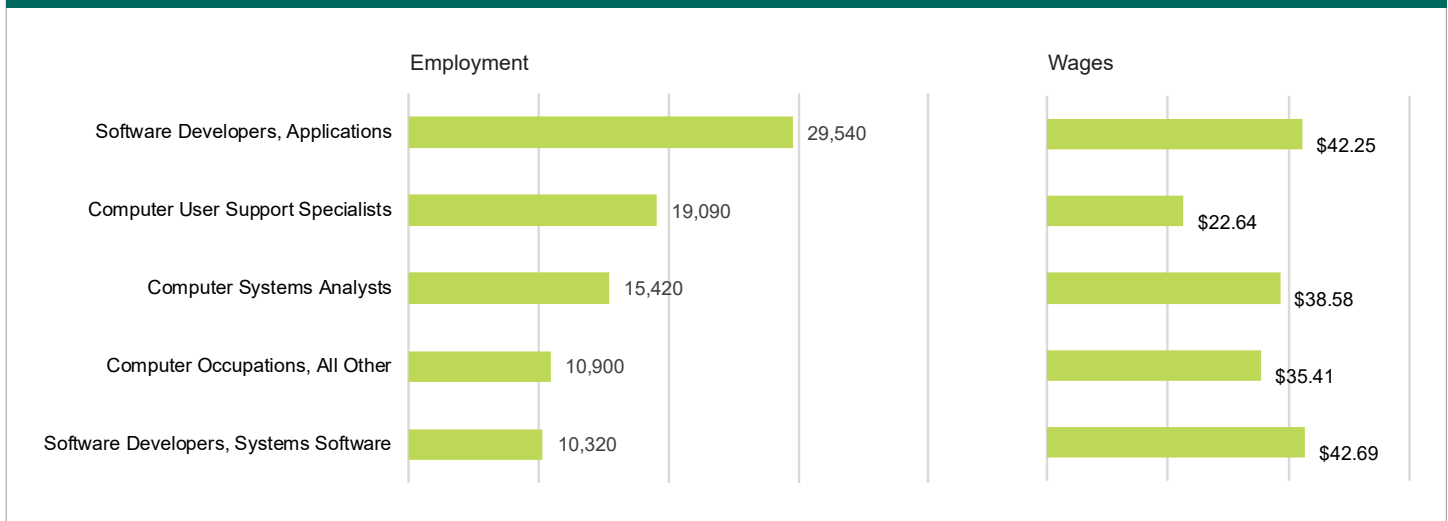
This group consists mostly of one occupation, *Assemblers and fabricators, all other, including team assemblers*. This was the largest *Production* occupation, and the third largest occupation in Michigan, with 111,560 positions. While it was the largest occupation in the group, it did have one of the lower median wages at \$16.03, which was about \$2 below the state median. The occupation with the highest wage in the group was *Engine and other machine assemblers* with a median wage of \$25.17. And while not having nearly the employment level of the larger occupation, there were still 9,350 jobs in this occupation in Michigan. This was the highest of any state and made up 19.4 percent of all jobs in this occupation nationally.

FIGURE 4: TOP ENGINEERING OCCUPATIONS BY EMPLOYMENT



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics

FIGURE 5: TOP COMPUTER OCCUPATIONS BY EMPLOYMENT



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics

## ENGINEERS

*Engineers* were the largest minor group primarily composed of STEM occupations, and the 13th largest minor group in Michigan. The group had 113,430 jobs, which was 2.6 percent of all employment in Michigan. This was more than double the percentage nationally. The median hourly wage for *Engineers*, \$41.91, was lower than the national median of \$44.75 for this group, but was more than double the statewide median wage.

This group was dominated by two occupations, *Mechanical engineers* and *Industrial engineers*. The concentrations of jobs in these two occupations were the highest in the nation, primarily due to Michigan's large manufacturing sector and the many corporate headquarters and research and development divisions located in

Michigan. The median Michigan hourly wages for these two occupations were \$42.21 for *Mechanical engineers* and \$42.40 for *Industrial engineers*, which were very similar to the national averages. While these two engineering occupations were near the national wages, some other engineering job titles had wages that were well below national levels. There were three engineering occupations that had a median hourly wage over \$55 nationally: *Petroleum*, *Aerospace*, and *Computer hardware*. Michigan did not have any *Engineers* with a median above \$50/hour, explaining why Michigan's median wage for this occupational group was below the national level.

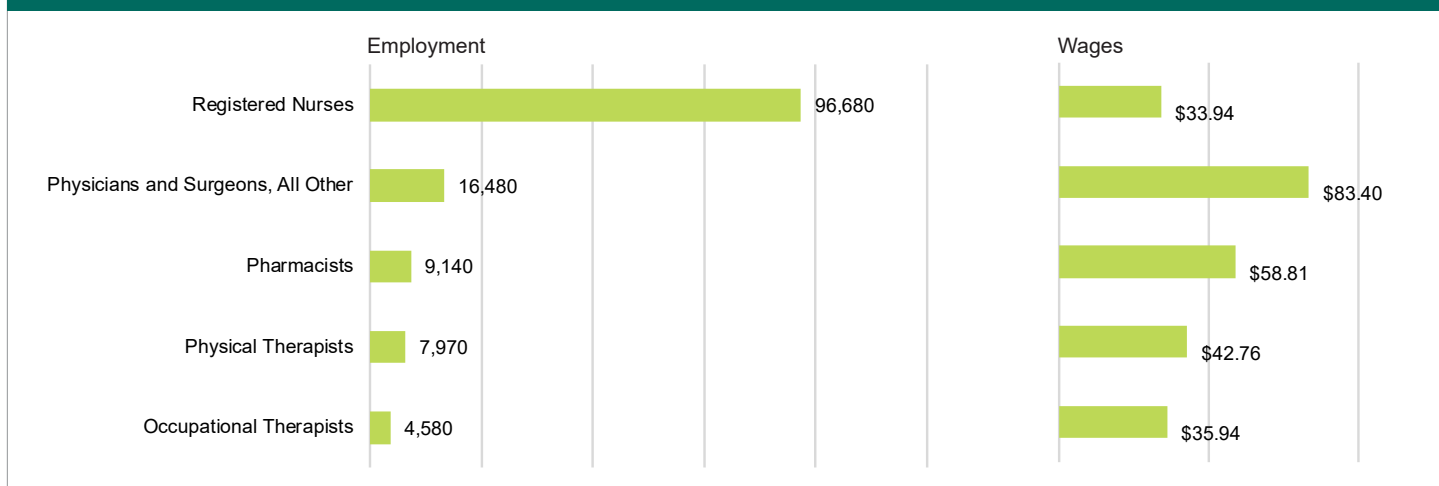
## COMPUTER OCCUPATIONS

*Computer occupations* was the second largest minor group primarily composed of STEM occupations, just slightly behind *Engineers*.

Their job count of 109,650 was 2.5 percent of total occupational employment in Michigan. Unlike *Engineers*, which significantly outpaced the national job share, *Computer* occupations trailed the nation at 2.9 percent. The median hourly wage for this group, \$36.44, was about double the statewide median, but it did lag behind the national wage, and was below the Michigan median wage for *Engineers* by about 10 percent.

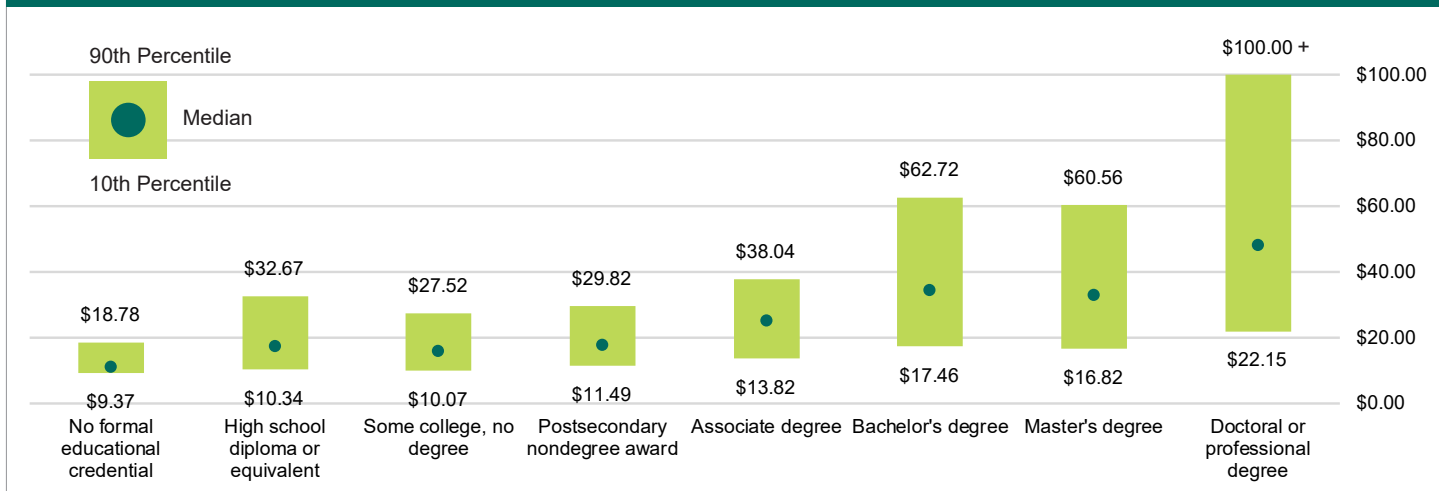
The largest occupation in this group was *Software developers, applications*. Unlike the other groups, the distribution of *Computer* occupations in Michigan looked very similar to the national composition. *Computer* occupations also differed from *Engineers* in that not all the occupations in the group require at least a bachelor's degree, which is one reason why

**FIGURE 6: TOP HEALTHCARE DIAGNOSING AND TREATING PRACTITIONER OCCUPATIONS BY EMPLOYMENT**



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics

**FIGURE 7: WAGE RANGES FOR JOBS BY EDUCATIONAL REQUIREMENT**



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics

the median wage for this group was lower than that for *Engineers*. For example, *Computer user support specialists* (\$22.64) and *Computer network support specialists* (\$27.47) are lower level occupations that do not require a bachelor's degree. These two occupations made up about 20 percent of jobs in the group, and had the two lowest average wages.

## HEALTHCARE DIAGNOSING AND TREATING PRACTITIONERS

*Health diagnosing and treating practitioners* was the third largest occupational minor group in the state, showing how prominent healthcare is in our economy. This category had fewer jobs than only *Retail sales workers* and *Food and beverage serving workers*. The group made up 4.2 percent of employment in the state, which

was higher than the national percentage of 3.7 percent. This group's median hourly wage of \$36.74 was slightly below the national median of \$38.94.

This group contained the 4th largest occupation in the state, *Registered nurses* with 96,680 employees. This is the only Michigan occupation in the top 10 by employment to require education beyond high school. Because of this, *Registered nurses'* statewide median hourly wage of \$33.94 was more than double that of any other occupation in the top 10. But this group is not defined by one large occupation, because it has many occupations with diverse educational requirements. There are several occupations that only require an associate degree, such as *Radiation therapists* and *Respiratory therapists*,

and there are numerous physician positions that require a doctoral or professional degree. Because of this, there was a very large variance in wages in this group ranging from the lowest, *Exercise physiologists* at \$22.96, to the highest, *Anesthesiologists* with a mean\* of \$125.63.

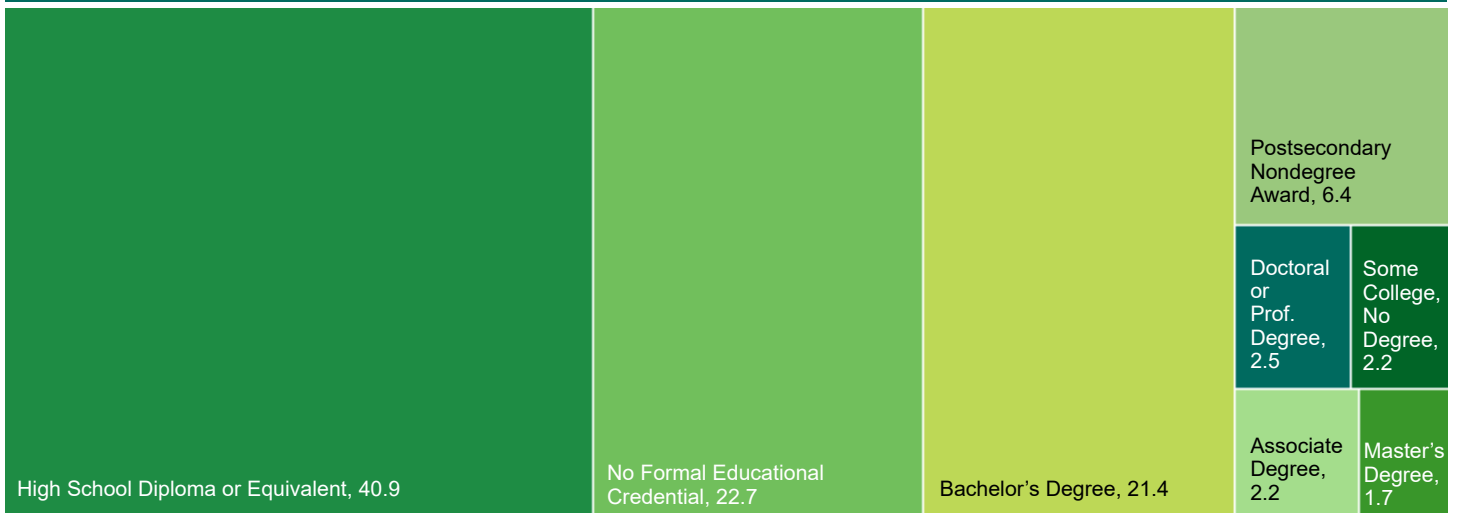
## Educational Attainment

The Bureau of Labor Statistics provides information on the typical educational requirements for each of the detailed occupations in the SOC system. An analysis of wages by education clearly demonstrates that occupations requiring higher educational attainment typically receive higher average wages. Occupations that require a bachelor's degree or above have higher median wages, higher entry level wages, and much higher

\* There is no median for many of the highest wage occupations because the OES survey uses wage ranges instead of point data, and most of the employees in these occupations fall in the highest wage range, making it impossible to produce a reliable median.



**FIGURE 8: CONCENTRATION BY EDUCATIONAL ATTAINMENT, 2018**



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics

experienced wages, which demonstrates their increased earning potential.

Figure 7 shows that while median wages typically advance as the education required for an occupation increases, the wage benefit was most evident at the higher levels of the pay scale for more experienced workers or for higher wage occupations. There was a big wage gap between the jobs that required at least a bachelor's degree and the jobs that did not. At the 90th percentile, jobs that require a bachelor's degree had wages that were nearly double those for jobs needing lower levels of educational attainment other than an associate degree.

Figure 7 also shows a sizable gain in wages for jobs requiring at least a high school diploma or equivalent, compared with jobs requiring no formal credential. A wage advance is less evident for jobs requiring some college or a postsecondary nondegree award, although a wage increase exists for jobs requiring an associate degree.

Figure 8 shows the distribution of jobs by educational requirement in Michigan. While Michigan ranked slightly above average for the share of jobs requiring a bachelor's degree, and ranked very well for STEM positions, many jobs have modest educational requirements. Occupations requiring only a high school diploma or less or no formal credential made up almost two-thirds of jobs in Michigan, while about one-quarter required a bachelor's degree or higher. These shares were very similar to the nation at almost every educational level. Michigan ranked 7th overall among states and territories with the lowest percentage of jobs requiring no formal education.

Michigan had almost one million jobs that required a bachelor's degree, which was 21.4 percent of all jobs in the state. These are often the "knowledge jobs" critical to the state economy. Michigan's proportion was very similar to the nation overall and ranked 21st among all U.S. states and territories, matching the ranking of one year ago.

Michigan had several metro areas that ranked very highly for bachelor's degree job concentration. Ann Arbor was the area that had the highest share of jobs requiring a bachelor's degree at 29.4 percent, ranking 9th out of 529 U.S. metro and nonmetropolitan areas. Related to this, Ann Arbor was also the metro region with the highest median wage in Michigan at \$19.90. The next highest metro areas in the share of jobs requiring a bachelor's degree were Midland (26.0 percent), ranking 22nd, Lansing (24.4 percent), which ranked 39th, and Detroit (24 percent), ranking 45th. Michigan's area with the lowest concentration of jobs requiring a bachelor's degree was the Northeast Lower Peninsula (13.6 percent), ranking 505th nationally. This area also had the lowest median wage in the state at \$14.56.

## STEM

STEM is a subgroup of occupations that require postsecondary education. Most of these technical occupations require at least a bachelor's degree. These occupations tend to be well paid, with a median hourly wage for STEM occupations in Michigan at \$38.23, more than double the median wage of all occupations.

Michigan ranked very strongly in terms of the percentage of STEM jobs (7.3 percent of all occupations), which was the 8th highest in the

U.S. This was largely due to the strength of *Engineering* jobs in Michigan, discussed in a previous section.

There were three Michigan metro areas that ranked highly for STEM concentration in Michigan: Ann Arbor, Detroit, and Midland. All three areas had a STEM job share of at least 9 percent, with Ann Arbor leading the way at 11 percent. Of 529 metro and nonmetropolitan areas in the U.S., Ann Arbor ranked 14th, Detroit 25th, and Midland 31st in the STEM share of jobs. However, in terms of total STEM employment, the Detroit region led the way, with about 60 percent of all STEM jobs in Michigan. At \$41.17, the Detroit region also had the highest median wage for STEM jobs in the state.

## Public Sector Jobs

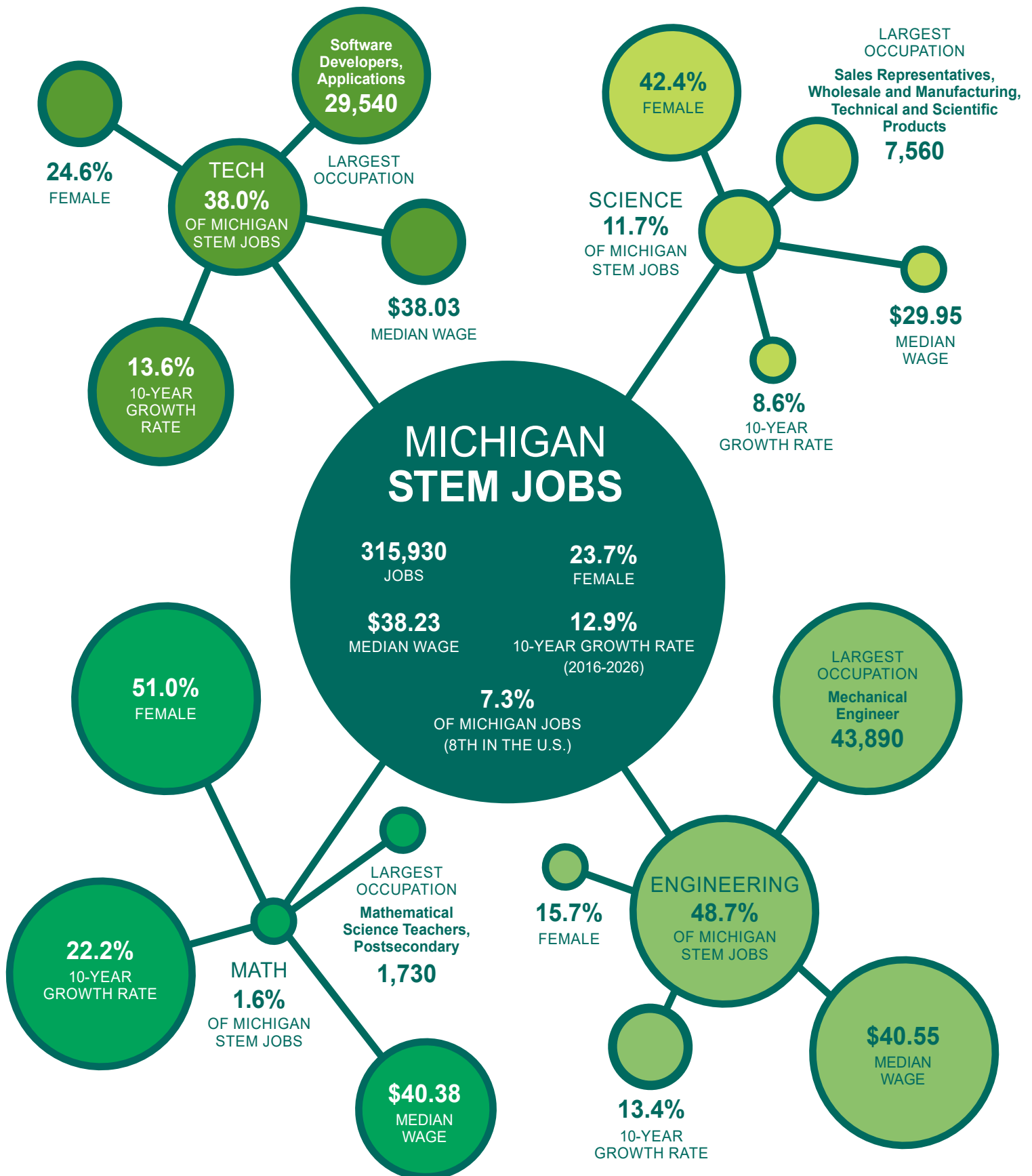
Michigan had 573,950 public sector jobs, making up 13.3 percent of all occupational employment in Michigan, but below the national share of 15.0 percent. The median hourly wage for public sector jobs in Michigan was \$23.86, which while above the overall statewide median was below the national public sector wage of \$24.49. The primary reason for the higher average wages in the public sector was the composition of occupations in this group. Of the 10 largest occupations in the state, only one requires a bachelor's degree and five require no formal education. For the top 10 largest occupations in the public sector, five require a bachelor's degree and all of them require at least a high school diploma.

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# MICHIGAN SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM) JOBS







# OCCUPATIONAL LICENSING IN MICHIGAN

Over the past several decades, state-level occupational licensing has emerged as a key feature of the U.S. job market and labor force. According to Morris Kleiner and Evgeny Vortnikov's 2016 publication "Analyzing Occupational Licensing Among the States" in the early 1950s, less than five percent of the U.S. workforce had an active occupational license. By 2018, the Bureau of Labor Statistics (BLS) Current Population Survey (CPS) reported that this figure had risen to 21.4 percent. Based on Council for Community and Economic Research (C2ER) and Labor Market Institute (LMI) estimates of CPS data, Michigan itself has mirrored this national trend of increased prevalence in licensing, with an average of 21.8 percent of the workforce having this credential from 2015 through 2017, compared to 21.6 percent nationally over the same time period. This article highlights several key facts and trends regarding occupational licensing in Michigan, including a look at their definition and purpose, the process of receiving a license, and a focus on recent reform initiatives to improve licensing in Michigan.

## Definition and Purpose

As defined by the BLS, occupational licenses are credentials awarded by designated government licensing agencies based on predetermined criteria. These criteria may include some combination of degree attainment, certifications, completion of assessments, apprenticeships, or work experience. Though often confused with certifications, certificates, apprenticeships, and business licenses, occupational licenses exhibit some key differences. Licenses are distinguishable by the fact that they convey a legal authority to work in a licensed occupation. Unlike other credentials, obtaining a license is legally required prior to beginning employment in the licensed occupation.

There are many potential purposes of occupational licenses. One is to certify that individuals employed in certain jobs have the skills, knowledge, and experience necessary to perform their duties. A related purpose is to ensure the health and safety of the employed license holder, other workers, consumers, and the public. For occupations

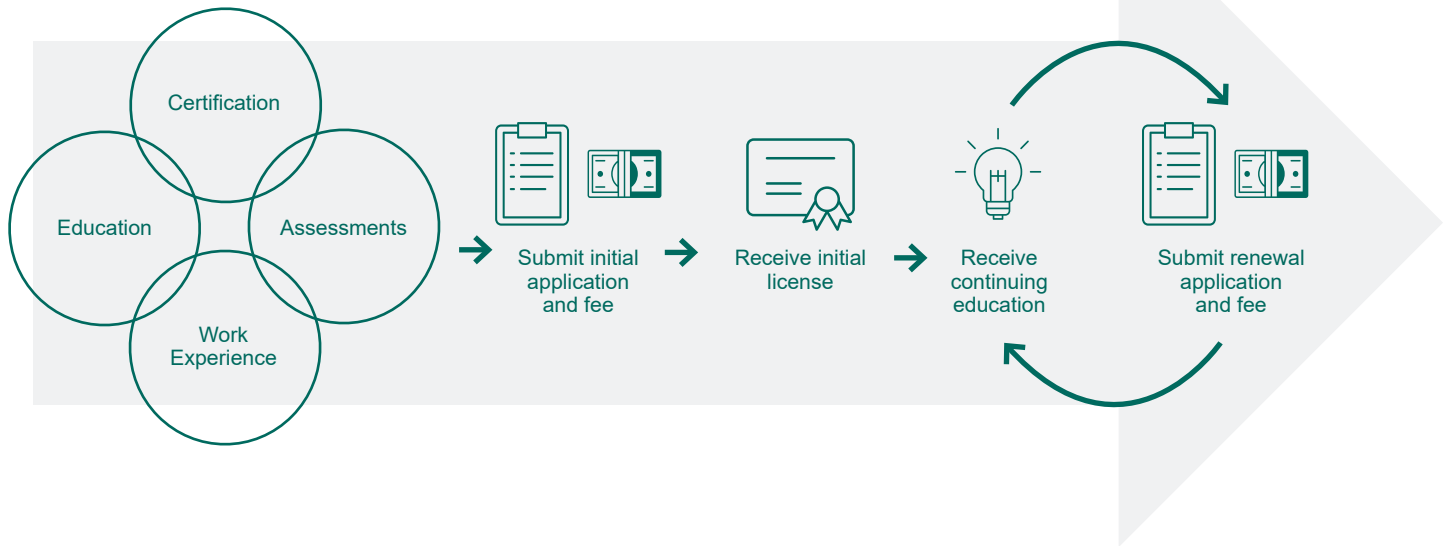
where the risk of workplace injury, illness, or death is relatively high, licensing authorities can design prerequisites to try to minimize those risks. Lastly, licenses may establish a general framework of standards for the licensed occupation and serve as a signal to consumers about the skill levels and qualifications of available providers (The State of Occupational Licensing - Research, State Policies and Trends 2017)

## Licensing Process

The process for acquiring an occupational license varies by state, licensing agency, government, and occupation, but there are commonalities across the spectrum. In Michigan, an individual interested in pursuing a licensed occupation (such as an *Electrician, Barber, Accountant*, etc.) must first meet the qualifications and prerequisites established by the relevant state licensing agency and/or licensing board. Licensing agencies are authorities in state government that are responsible for reviewing license applications, issuing licenses, processing renewals, maintaining archives, and keeping qualifications up to date. The agency that issues

\*This article previously appeared in the February 2019 edition of Michigan's Labor Market News.

FIGURE 1: MICHIGAN LICENSING PROCESS



the most licenses in Michigan is the Department of Licensing and Regulatory Affairs' (LARA) Bureau of Professional Licensing (BPL), which handles licenses in healthcare and general occupational professions. Other authorities regulate licenses that usually fall under their area of emphasis. For example, the Michigan Department of Education issues teaching licenses, while the Michigan Department of Agriculture and Rural Development issues Livestock Dealer licenses. Overall, there are more than 20 agencies responsible for licensing in Michigan.

Once the correct licensing authority has been identified, an individual can determine the

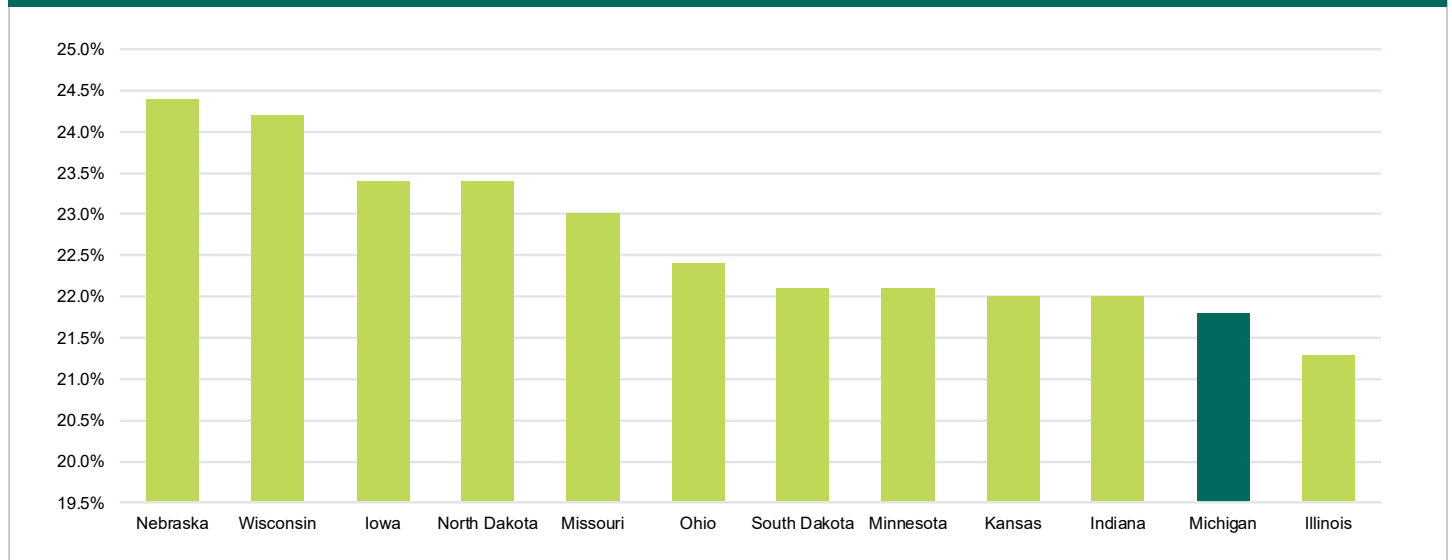
requirements for licensure, either by looking on the agency's website or by contacting them.

Licensing requirements may contain a mixture of qualifications, such as degree attainment or work experience, that are unique to each license. For example, on their website, LARA has established that individuals seeking a Barber's license must

- be 17 years old or older;
- be of good moral character;
- complete at least 10th grade or equivalent level of education;
- complete 1,800 hours at a licensed Barber College; and
- pass a theory/practical exam.

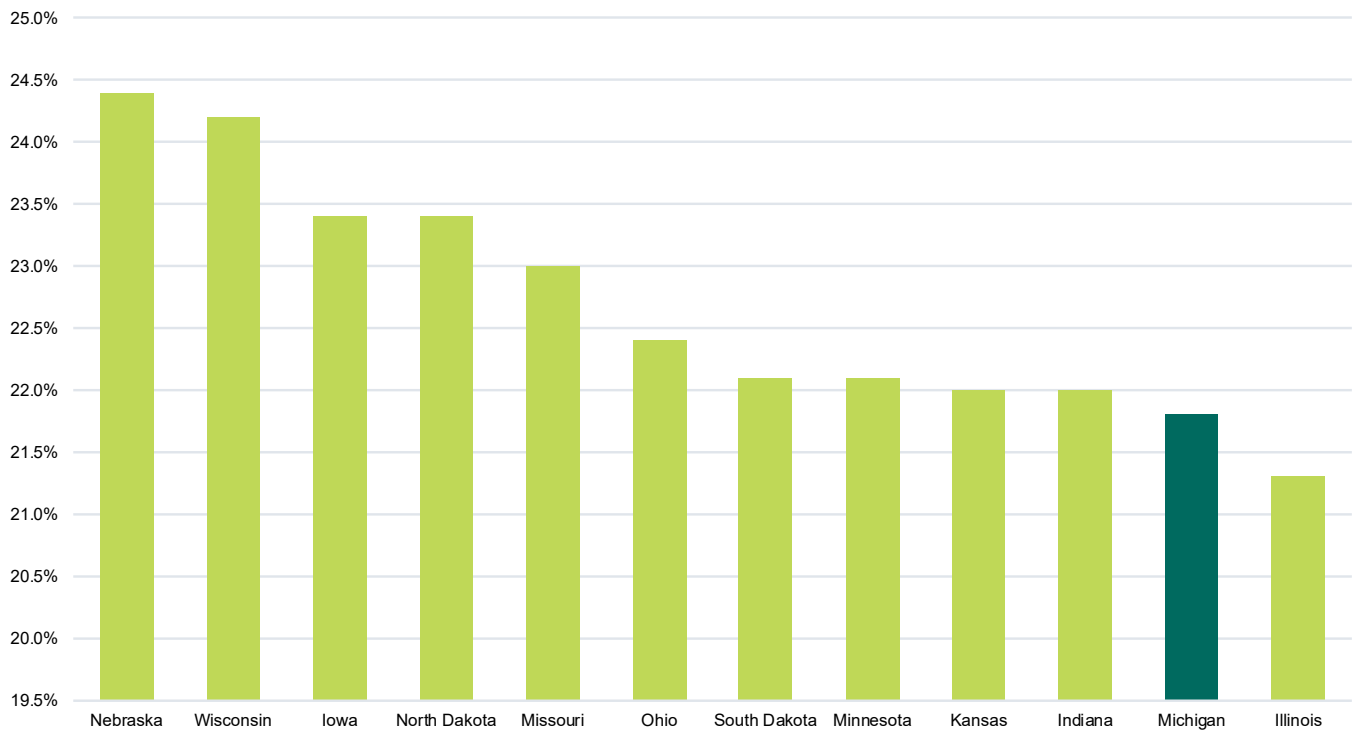
After meeting all licensing requirements, the individual must submit an application, supporting documents, and licensing fee to the appropriate agency. These applications can be found on the licensing agency's website and may either be mailed physically or submitted directly online along with the fee payment, depending on the license and the agency. For some licenses, qualifying criteria such as completing a background check or an exam may occur after the application and fee has already been submitted. For instance, to receive a Master Electrician license as a Michigan resident, an individual must first submit the application and license fee to the licensing agency (LARA's Bureau of

FIGURE 2: PERCENT OF WORKFORCE LICENSED, MIDWEST REGION, 2015–2017 THREE YEAR AVERAGE



Source: "State Certifications and Licenses, 2015-2017", C2ER and LMI, 2018

**FIGURE 3: AVERAGE EDUCATION/EXPERIENCE REQUIRED (DAYS), SELECT OCCUPATIONS, MIDWEST REGION**



Source: "License to Work: A National Study of Burdens from Occupational Licensing" by Carpenter, et al. 2017

Construction Codes), then complete the exam through a third-party testing firm.

Even when an initial license is received, however, the process is ongoing. All licenses must be renewed, and a renewal fee be paid on a periodic basis in order to keep the license active. Additionally, for some licenses, an individual must undergo continuing education as part of the process of license renewal. As an illustration of this, a *Registered nurse* must complete at least 25 hours of board-approved continuing education hours within the two years before applying for renewal. Of the licensees tracked by the National Occupational Licensing Database, the required time of license renewal in Michigan usually ranges between one and three years from initial receipt, though the specific details depend on the license.

## Michigan Licensing: Data and Trends

According to an analysis of CPS data published by C2ER and LMI in 2018, an average of 21.8 percent of Michigan's workforce was licensed from 2015 through 2017, ranking 11th out

of 12 states in the Census Bureau-defined Midwest Region (see Figure 2) and tied for 33rd highest in the nation. While nationally this was well below that of the highest ranked state, Maine (28.7 percent), it was still several percentage points higher than the rate of the lowest, Georgia (17.8 percent). It was also slightly higher than the overall U.S. rate of 21.6 percent from 2015 through 2017.

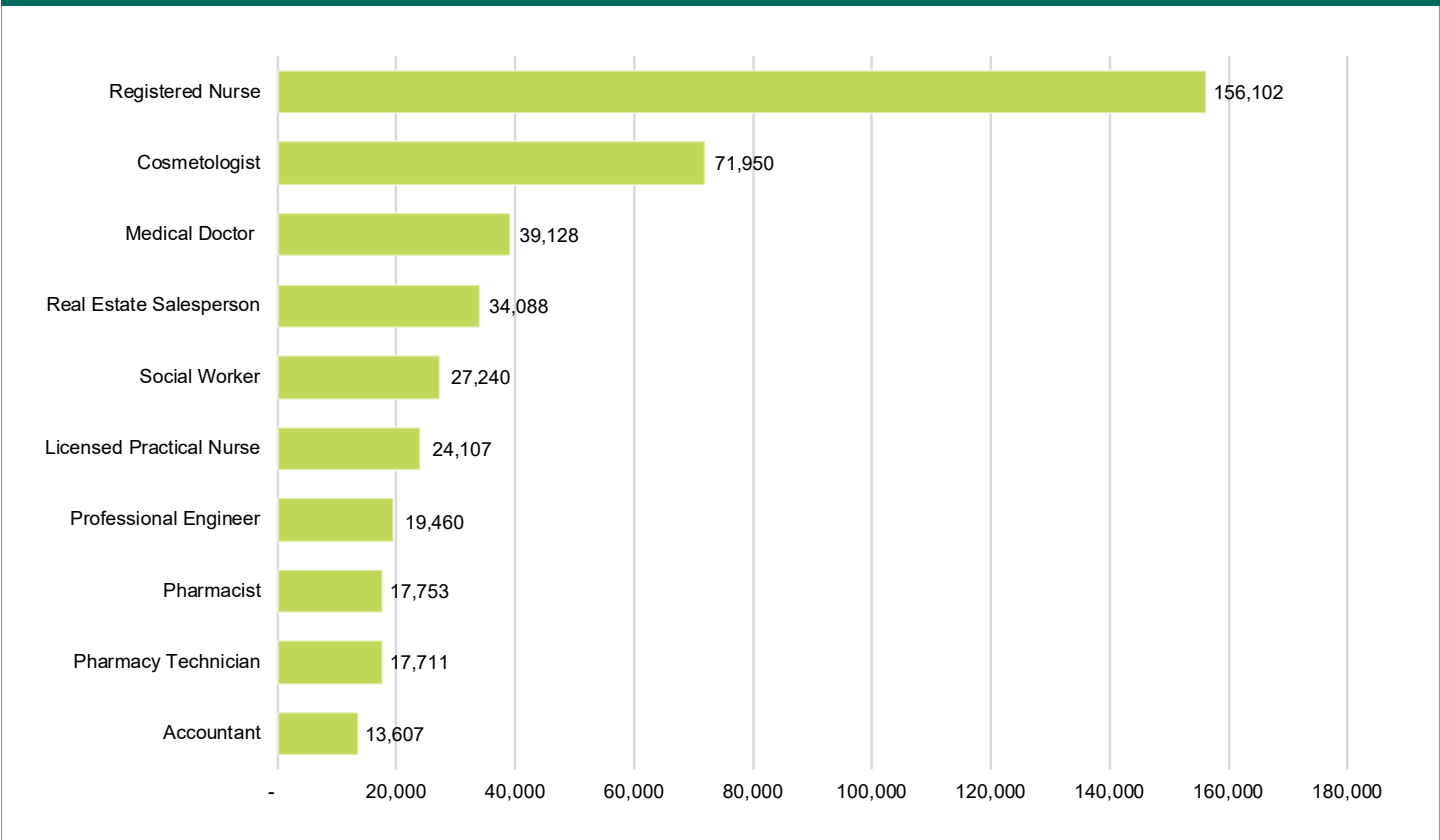
Perhaps equally revealing is the average education or experience required for licensure. Another study on occupational licenses was conducted by the Institute for Justice and published in November 2017 in "License to Work: A National Study of Burdens from Occupational Licensing." For 102 selected low-and medium-wage occupations across the U.S., this study showed an average of 255 days of education or experience was required to receive a license in Michigan, ranking it 7th highest out of 12 in the Midwest region (see Figure 3). Based on these metrics, relative to the region and the nation, Michigan is relatively in the middle when it comes to licensing requirements.

Though data on all occupational licenses in Michigan is not available, Michigan's largest

licensing agency, LARA's BPL, does publish active license counts on a monthly basis. Using these figures, a partial snapshot of occupational trends in Michigan licensing can be obtained. Overall, BPL counts for January 2019 indicate there are more than 500,000 occupational licenses spread across several different professions. The ten professions with the most licenses seen in Figure 4 make up over half of the occupational licenses tracked by the BPL. The professions with the highest number of awarded licenses are *Registered nurse* (156,102), *Cosmetologist* (71,950), and *Medical doctor* (39,128), while those with the lowest counts include *Natural hair culturist* (54), *Personnel agent* (40), and *Oral pathologist* (7).

In terms of labor market outcomes, there are some indications that suggest that Michigan's licensed occupations will experience faster long-term employment growth and exhibit higher median wages relative to the state as a whole. Looking at 35 selected licensed occupations across Michigan's major occupational groups, from 2016 to 2026 the total employment level for these occupations is expected to increase by 9.8 percent. In comparison, during that same time period



**FIGURE 4: TOP 10 BPL PROFESSIONS BY LICENSE COUNT, JANUARY 2019**

Source: Michigan Department of Licensing and Regulatory Affairs Bureau of Professional Licensing

Michigan's total employment level for all occupations is forecast to increase by 7 percent. Similarly, the selected occupations are projected to make up nearly nine percent of the 547,120 total annual openings estimated statewide for 2016 to 2026, suggesting a significant amount of future labor market demand for licensed occupations. Finally, of the 35 selected licensed occupations where data was available, 23 had a 2018 median wage that exceeded the \$18.08 per hour median wage of all Michigan occupations (see Figure 5).

## Michigan Reforms and Initiatives

In an effort to improve Michigan's licensing system, recent reforms have been implemented at the state level. Though these modifications have largely focused on reducing barriers to entry in general, many are geared towards certain populations most affected by licensing requirements. This includes those with a criminal background, members of the military and their spouses, out-of-state citizens, and immigrants.

To assist residents with a criminal background to attain licensure, in September 2018 it was announced that LARA will no longer

ask applicants about their criminal history or convictions in occupational license applications, unless such questions are mandated by state or federal law. The idea is that banning the use of these questions will remove the perception of immediate disqualification, making it easier for qualified returning citizens to become licensed and successfully secure employment. This reform tries to complement Michigan's relevance standards, which require that, for a license to be denied, a relationship must exist between a license applicants' criminal record and the type of license they are applying for (The State of Occupational Licensing - Research, State Policies and Trends 2017).

Licensing barriers for out-of-state residents that move across state lines have also received attention from policymakers. Like other out-of-state citizens, if military personnel relocate to Michigan and they or their family members are licensed out-of-state, they must still apply for licensure in Michigan. Different legislation has been implemented to try to decrease the personal and economic costs of these requirements and expedite the overall process. For example, Public Acts 423 and 424 of 2016 allows military spouses who

are licensed in another state to be able to practice law without having to take Michigan's state bar exam. In 2014, Michigan began granting temporary licenses to active military personnel's spouses so they may continue to practice while waiting for initial state licensure, and some veterans became eligible for registration, application fee, renewal fee, and continuing education waivers. Other reforms are more generally targeted to out-of-state citizens. For instance, according to the Federation of State Medical Boards, in late 2018, two bills were signed into law that made Michigan the 25th state to join the Interstate Medical Licensure Compact, which expedites the licensing process for physicians who want to practice across state lines.

Finally, to help immigrants better integrate into Michigan's economy, initiatives have been launched to try to make it easier for them to acquire professional licenses. As discussed in the Michigan's Foreign-Born Population and Workforce report from August 2017, the Michigan International Talent Solutions (MITS) program administered by the Michigan Office for New Americans (MONA) helps new skilled immigrants who are unemployed or underemployed to return to their professional

**FIGURE 5: SELECTED LICENSED OCCUPATIONS IN MICHIGAN**

LICENSED OCCUPATION	2016-2026 EMPLOYMENT CHANGE	2017 MEDIAN HOURLY WAGE	LICENSED OCCUPATION	2016-2026 EMPLOYMENT CHANGE	2017 MEDIAN HOURLY WAGE
Claims Adjusters, Examiners, and Investigators	-3.0%	\$32.21	Dental Assistants	19.9%	\$17.63
Accountants and Auditors	9.4%	\$31.66	Security Guards	5.6%	\$11.74
Appraisers and Assessors of Real Estate	13.5%	\$25.67	Pesticide Handlers, Sprayers, and Applicators, Vegetation	7.9%	\$16.11
Architects, Except Landscape and Naval	9.2%	\$33.96	Gaming Dealers	-2.9%	\$9.66
Surveyors	18.8%	\$27.63	Hairdressers, Hairstylists, and Cosmetologists	12.3%	\$11.73
Clinical, Counseling, and School Psychologists	13.5%	\$36.22	Manicurists and Pedicurists	12.6%	\$11.73
Psychologists, All Other	2.2%	\$48.29	Securities, Commodities, and Financial Services Sales Agents	6.1%	\$24.55
Substance Abuse and Behavioral Disorder Counselors	22.9%	N/A	Real Estate Brokers	3.4%	\$35.15
Child, Family, and School Social Workers	13.6%	\$24.05	Real Estate Sales Agents	4.3%	\$22.19
Healthcare Social Workers	18.6%	\$26.79	Electricians	6.8%	\$28.82
Lawyers	7.3%	\$45.67	Plumbers, Pipefitters, and Steamfitters	12.6%	\$32.24
Elementary School Teachers, Except Special Education	5.6%	N/A	Security and Fire Alarm Systems Installers	13.6%	\$22.28
Middle School Teachers, Except Special and Career/Technical Education	5.8%	N/A	Automotive Service Technicians and Mechanics	5.7%	\$18.57
Secondary School Teachers, Except Special and Career/Technical Education	5.8%	N/A	Stationary Engineers and Boiler Operators	7.6%	\$31.53
Dentists, General	19.4%	\$89.91	Water and Wastewater Treatment Plant and System Operators	-3.8%	\$22.73
Registered Nurses	13.5%	\$33.94	Heavy and Tractor-Trailer Truck Drivers	9.7%	\$19.88
Pharmacy Technicians	11.2%	\$15.11	Taxi Drivers and Chauffeurs	9.1%	\$11.16
Massage Therapists	28.6%	\$19.35	<b>All Michigan Occupations</b>	<b>7.0%</b>	<b>\$18.08</b>

Source: Michigan DTMB, Bureau of Labor Market Information and Strategic Initiatives, Employment Projections Program and the Bureau of Labor Statistics Occupational Employment Statistics Program



fields. This includes actively working with LARA to help immigrants become licensed. Additionally, working with Upwardly Global, LARA has published Michigan Professional Licensing Guides online for 38 professions that are specifically written for foreign-born skilled immigrants. These guides explain how each profession is organized in Michigan, how to become eligible for licensing, what tests are needed, and how to maintain licensure.

## Conclusion

As with the rest of the country, occupational licensing has become a part of Michigan's labor market, affecting employers and workers alike. While the process to acquire a license varies depending on the licensing authority or state, all licenses have some form of qualifications to meet, and all result in a government-granted authority to practice in an occupation. Compared to other states in

the nation and region, Michigan is considered near average in the time requirements and workforce prevalence of licensing, though licensed professions will continue to make up a significant percentage of the workforce in the coming years. New laws and regulations have been added and removed in a continuous effort to maximize the value they provide, especially for specific populations in the workforce.<sup>1</sup>

## References/Sources

Carpenter, David, Lisa Knepper, Kyle Sweetland, and Jennifer McDonald. 2017. "License to Work: A National Study of Burdens from Occupational Licensing." Institute for Justice.

Kleiner, Morris, and Evgeny Vortnikov. 2016. "Analyzing Occupational Licensing Among the States."

National Conference of State Legislatures. 2017. "The State of Occupational Licensing - Research, State Policies and Trends."

Council for Community and Economic Research and Labor Market Institute. 2018. "State Certifications and Licenses Data."

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<sup>1</sup>Occupational licenses, as a term used in this article, includes licenses for Skilled Trades, Occupational Code and Public Health Code.



# SELECT DEMOGRAPHIC TRENDS IN MICHIGAN

## Young Knowledge Population

A population that is very important to the Michigan economy is individuals 25 to 34 years of age with a bachelor's degree or higher. This is a key demographic group in Michigan that will be needed to fill many of the high demand, high wage jobs that the state wants to attract and retain. Given the imminent effects on the labor force of retiring baby boomers, retention of this group is also vital to fill the job openings that will be created due to increased retirements.

The Census Bureau provides data beginning in 2005 that allows for the examination of retention of this population. Those data are summarized in Figure 1 below. The data indicate that Michigan had significant negative

net migration of this population through 2010, after which the loss began to moderate. The state had another year of significant out-migration in 2013 before settling into a more balanced (nearing net zero) migration pattern, where the state remains currently. The two most recent years of migration data indicate that the state has attracted slightly more individuals in this population than it has lost, which is a positive development. This trend will be needed to increase the numbers of educated young persons who could begin to replace the ranks of retiring baby boomers. Baby boomer retirements began to be part of the labor force dynamic in 2010, when that generation began to cross the 65-year old mark.

Attracting this group to the state is important because of the reasons stated previously, but

also because this group's level of educational attainment provides better labor force outcomes than population segments with lower educational attainment. For example, according to 2017 data from the U.S. Census Bureau, persons of all ages with a bachelor's degree had median annual earnings of \$51,527 compared to \$34,761 for people with some college or an associate degree. For persons 25 to 34 years of age, the income gap between persons with a bachelor's degree or higher and those with less than a bachelor's degree widens to just over \$20,000 a year.

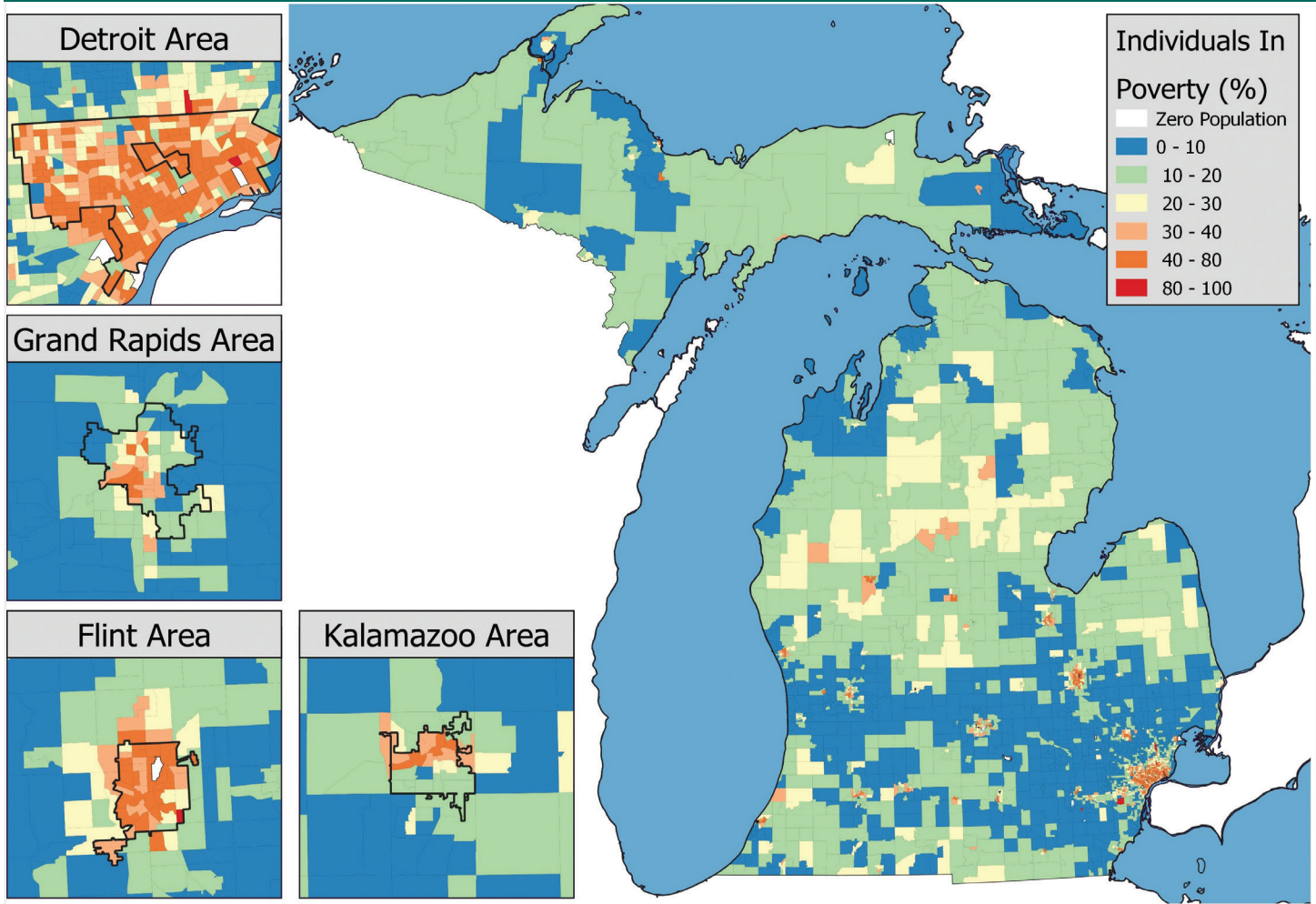
The unemployment rate for the young knowledge population is 3.1 percent versus 9.1 percent for individuals in the same age group with lower levels of educational attainment. Similarly, there are considerable differences

**FIGURE 1: MIGRATION OF YOUNG KNOWLEDGE POPULATION IN MICHIGAN, AGES 25–34 WITH BACHELOR'S DEGREE OR HIGHER**



Source: U.S. Census Bureau, 2005 to 2017, 1-year American Community Survey, Public Use Microdata Sample

**FIGURE 2: PERCENT OF INDIVIDUALS IN POVERTY AT THE CENSUS TRACT LEVEL**



in the levels of participation in the labor force overall between members of this age group based on levels of educational attainment. The young knowledge population participates in the labor force at a rate of 89.2 percent while 79.4 percent of members of the same age group with lower levels of educational attainment are also in the labor force.

## Poverty

Poverty is present throughout the state in different degrees. While there is no region that is free from the effects of poverty, it does exist in varying concentrations and these trends are important to recognize. The map provided in Figure 2 displays poverty rates at the census tract level.

Of particular importance are areas that exceed 20 percent of individuals who are living in poverty. There is disagreement in the academic literature as to what levels begin to be severe enough to begin to cause effects that cross census tracts, but there is some

consensus that levels between 20 and 40 percent are important to recognize.

Levels beginning with 20 percent poverty can be thought of as areas of low income and they may start to see effects that cross boundaries. As is visible in Figure 2, there are areas across the state that exceed the 20 percent threshold.

Once an area reaches 40 percent of individuals living in poverty, there is no doubt that the residents are experiencing concentrated poverty and the effects of poverty will begin to impact neighboring communities. While not exclusively, areas that are experiencing poverty at levels beyond 40 percent tend to be in the state's urban centers.

When viewing the state's poverty income at the census tract level, it is important to be cognizant of areas like college campuses where there is often the appearance of very high levels of poverty due to definitional issues with how poverty is measured and the particularities of the college population. Poverty

is a family measure based on cash income that may not adequately capture the financial realities of how college students live and receive support.

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# MICHIGAN'S POPULATION PROJECTIONS TO 2045

## Why Population Projections?

Until now, Michigan lacked a readily available set of state and sub-state population projections. Filling this vital information gap, the Bureau of Labor Market Information and Strategic Initiatives recently completed an initiative to produce long-term population projections for the state, counties, and other sub-state areas. Culminating in 36,936 cells of data, projections were produced for males and females, and aggregated into five-year age groups at five-year increments from 2020 to 2045.

Population projections are an important public and private planning tool. For example, such data provides information on:

- the senior citizen population, allowing health and human services professionals to anticipate demand on their services.
- youth and young adults, giving administrators and educators insights on the school-age population.

- future demand for infrastructure, helping planners decide on new projects and prioritize improvements.
- inputs into labor force projections, that, when complete, will help educators and workforce developers prepare our talent for in-demand jobs.

The purpose of this article is to provide a brief overview of some of the key findings from these newly released projections. This article discusses Michigan's recent population trends, methodology and assumptions behind the projections, and provides some highlights from the data, including the importance of migration to the state's projected population growth.

## Recent Population Trends

Michigan's population is particularly susceptible to economic downturns. So, with two recessions<sup>1</sup> in the first part of the century, it is no wonder the state has seen population reductions. In fact, Michigan was the only state

in the nation to register a decline in population between the 2000 and 2010 decennial censuses (Mackun and Wilson, 2011). And as job losses continued<sup>2</sup> and state unemployment rates peaked<sup>3</sup>, Michigan faced negative net migration of up to 87,000 people annually in the years following the Great Recession. Since 2010, Michigan has fallen from the 8th to the 10th most populous state, being passed by Georgia and North Carolina.

Population cuts of this significance have consequences. First, more than 100 federal programs used Census Bureau data to distribute more than \$675 billion in funds during fiscal year 2015 (Hotchkiss, M. and Phelan, J., 2017). Therefore, declining population can mean less federal funding for Michigan. Next, Michigan's political influence at the national level is also impacted because a smaller population equates to less representation in Congress. After the 2010 census, Michigan lost one seat in the U.S. House of Representatives and correspondingly one electoral college vote, continuing a trend

<sup>1</sup> According to the National Bureau of Economic Research the U.S. economy was in recession from March 2001 to November 2001 and December 2007 to June 2009.

<sup>2</sup> Michigan's estimated annual average nonfarm payroll job count fell by 404,500, or 9.5 percent, between 2007 and 2010 (U.S. Bureau of Labor Statistics, Current Employment Statistics).

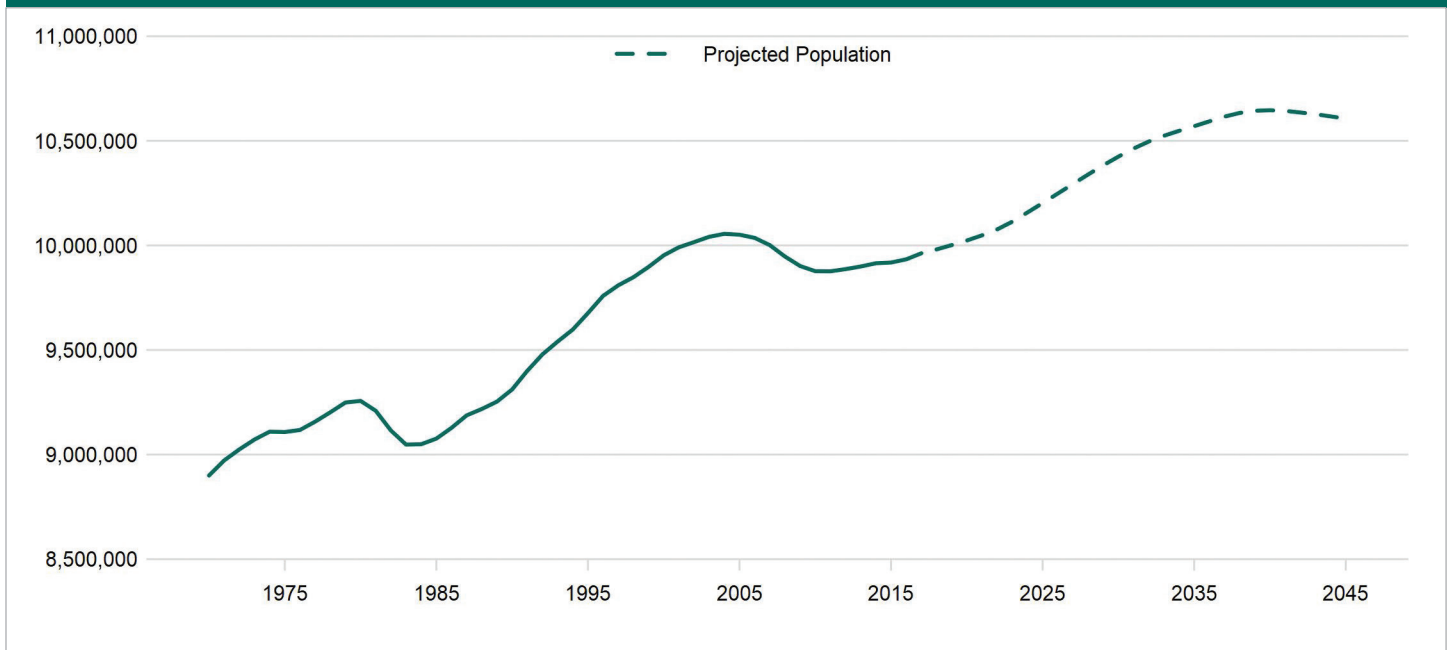
<sup>3</sup> Michigan's unemployment rate peaked at 14.6 percent in June 2009 (U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics).

*\*This article previously appeared in the March 2019 edition of Michigan's Labor Market News.*





**FIGURE 1: PROJECTED MICHIGAN POPULATION**



Source: U.S. Census Bureau, Population Estimates Program

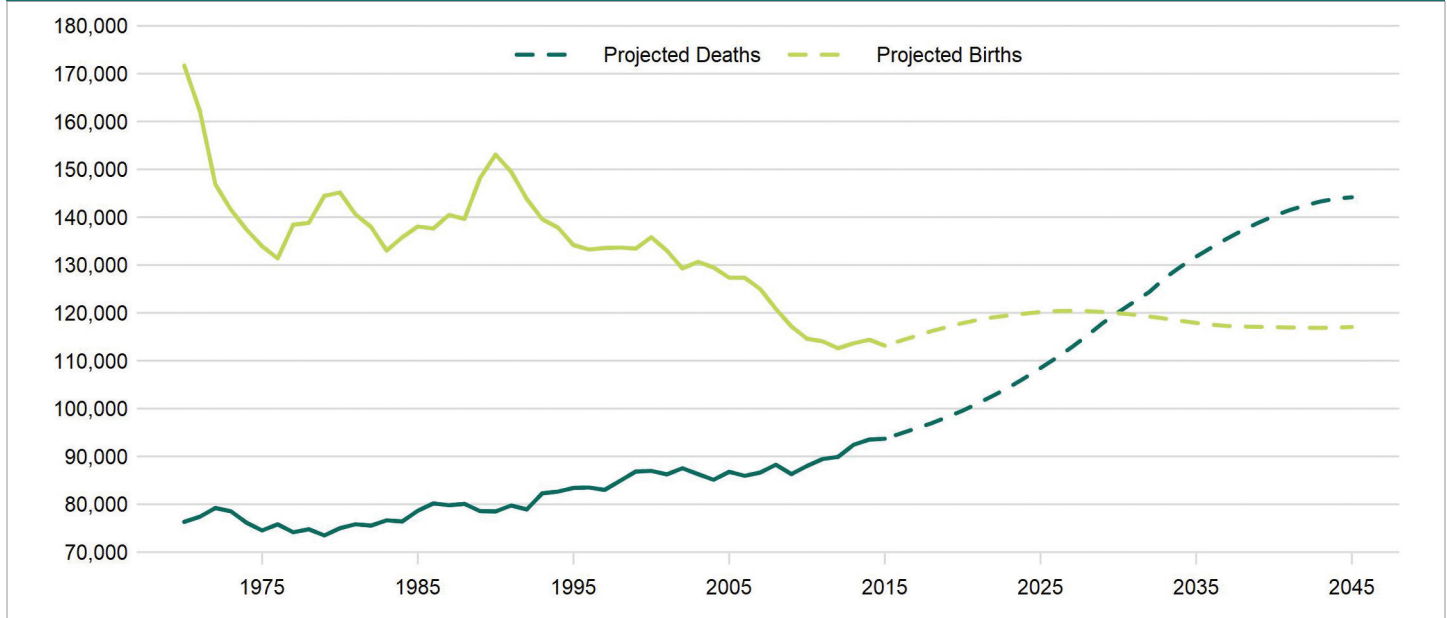
of Michigan losing at least one seat in the U.S. House of Representatives following each census since 1980. Finally, a declining population also means a shrinking labor force, and therefore fewer workers to meet the demand of employers today and in the future.

### Projection Methodology and Assumptions

Population change is determined by two factors: natural change (births minus deaths) and net migration (people moving in minus people moving out). Natural increase occurs

when births exceed deaths. Conversely, natural decline happens when deaths exceed births. Positive net migration occurs when there are more people moving in than moving out; whereas, negative net migration is when more people are moving out than moving in.

**FIGURE 2: PROJECTED MICHIGAN BIRTHS AND DEATHS**



Source: Michigan Department of Health and Human Services, Vital Statistics

### METHODOLOGY

Projecting migration is often the biggest challenge to projecting population. This is particularly so under the dynamic conditions currently facing Michigan, which includes continued economic recovery and an aging population. Simply projecting an average net migration from the past several years would likely underestimate migration in the short-term because Michigan's net migration recently changed from negative to positive. Similarly, a method that used past rates of increase to project net migration would produce unrealistic population growth, because the recent rate of gain in Michigan's net migration is unlikely to continue. Another consideration for estimating Michigan's future net migration is the dramatic change in age structure that is currently affecting Michigan's workforce. Michigan's baby boomers, which are currently a large portion of the population, will continue retiring through at least 2029. This will lead to further declines in the state's workforce and should fuel demand for labor, which will require immigration to replace retiring workers.

To project net state migration, a regression equation was developed that estimated annual net migrants from 2000 to 2017 as a function of jobs, and the population of Michigan residents aged 25–74. As expected, Michigan's past numbers of net migrants were positively related to job numbers but negatively related to the number of working age people in Michigan. Thus, since the number of jobs is projected to increase, while the prime-age working population declines, net migration into Michigan is projected to advance during the next decade.

Net migration, along with births and deaths, was applied to 2017 official U.S. Census Bureau resident population estimates for each county to advance projections forward each year. These projections use the cohort component method, which requires independent estimates of birth rates, survival rates, and net migration. Age specific birth rates for women 15–54 were calculated from county-level birth records collected from 2013 to 2015 (Michigan Department of Health and Human Services). Age specific (0–85+ years-old) survival rates were calculated from county-level mortality records collected from 2011 to 2015 (Michigan Department of Health and Human Services).

County-level projections relied on a combination of methods to estimate net migration. First, to estimate a recent migration baseline that accounted for county-to-county and interstate migration, differences between expected population (population in the prior year multiplied by survival rates) and observed population estimates from 2015–2017 from the U.S. Census Bureau were compared. Counties with observed populations exceeding the expected population were assumed to have positive net migration, and vice versa. Second, during each year of the projections, the total predicted state-level net migrants were allocated to each county based on its share of the state's total migration flow.

### ASSUMPTIONS

As with any projection, the degree to which the underlying assumptions are robust determines

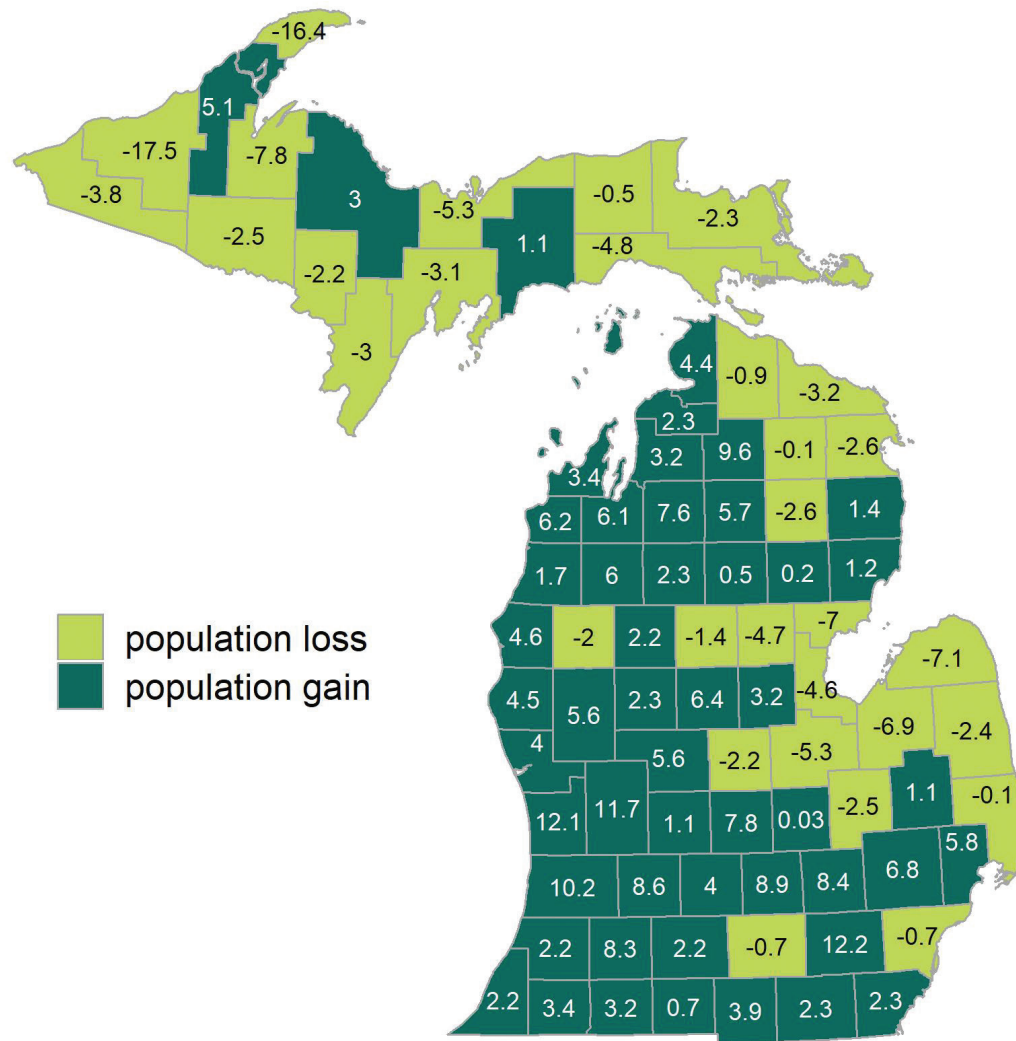
the accuracy of the population estimates. The projections discussed here assume no major economic recession will occur, and that job openings created by baby boomer retirements will attract people from outside Michigan. However, increased labor force participation rates among older Michiganders or job automation could reduce job openings and net migration.

It is also crucial to recognize that, although the U.S. Census Bureau estimated a net migration of 10,481 people into Michigan in 2017, the number of people moving to Michigan from within the United States was –12,698. Thus, Michigan is still losing residents to other states and therefore the state's population growth is largely dependent on international migration. Thus, to the extent that barriers to international migration limit the flow of people, the projections could overestimate population growth.

### Highlights from Michigan's Population Projections

Migration into Michigan is expected to expand for the next decade as workers move to the state to fill job openings left by retiring baby boomers. Michigan's population is expected to increase to around 10,646,000 by about 2040 and then decline through 2045 as the baby boomer generation shrinks. As with any projection, there is more confidence in the short-term, in this case the 2020 to 2030 period. These projections are also more relevant to planners.

**FIGURE 3: PROJECTED PERCENT CHANGE IN POPULATION, 2020–2030**



In the short-term, 2020–2030, Michigan's population is projected to increase from 10,023,000 to 10,425,000 residents (Figure 1). This represents a modest annual population growth rate of 0.4 percent, which is less than the projected U.S. population annual growth rate of 0.7 percent during this time frame (Census, 2017). Since Michigan's population growth rates are projected to trail the nation, the state will likely be home to a smaller share of the nation's population over the next decade. Even though Michigan will likely continue to gain residents in the near-term, the relative contribution of natural change to population growth will continue its long-term decline. For example, in 1970 the state experienced a natural increase of 95,346 residents, a number trimmed to just 19,456 by 2015. Importantly, by 2030 Michigan will be in natural

decline, meaning deaths will exceed births (Figure 2). Thereafter, through the end of the projection period, Michigan's natural population change will no longer positively contribute to population gains, and growth will depend entirely on migration.

#### COUNTY-LEVEL POPULATION PROJECTIONS

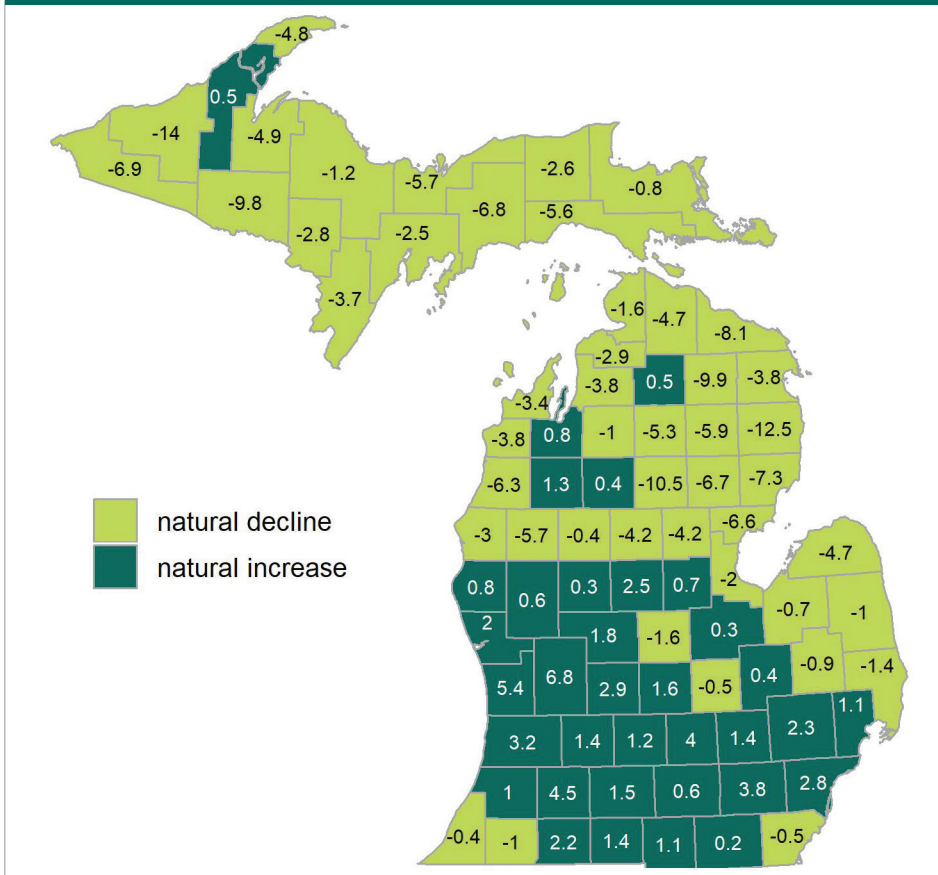
There is wide variation in projected population trajectories among counties, ranging from a loss of 17.5 percent to a gain of 12.2 percent between 2020 and 2030 (Figure 3). Counties with projected reductions in population are mostly in the Upper Peninsula, Northeastern Lower Peninsula, and Thumb area (Figure 3). Alternatively, between 2020 and 2030, 52 counties are projected to gain residents (Figure 3). Of these, 20 counties are projected

to increase by less than 3 percent over the decade (less than 0.3 percent annually), which is relatively minor growth. Counties with the largest projected rates of population expansion are mostly concentrated in the southern Lower Peninsula, particularly in the greater Detroit and Grand Rapids metro areas.

The variation among counties in population growth rates are driven by differences in natural change and net migration (Figures 4 through 7). Considering natural change, 48 counties are expected to be in natural decline by 2020, including nearly all rural counties in the Thumb, Northern Lower Peninsula, and Upper Peninsula (Figure 4). Additionally, many of these same counties will continue to experience net migration that is negative, or insufficient to offset natural decline (Figures 6 and 7).



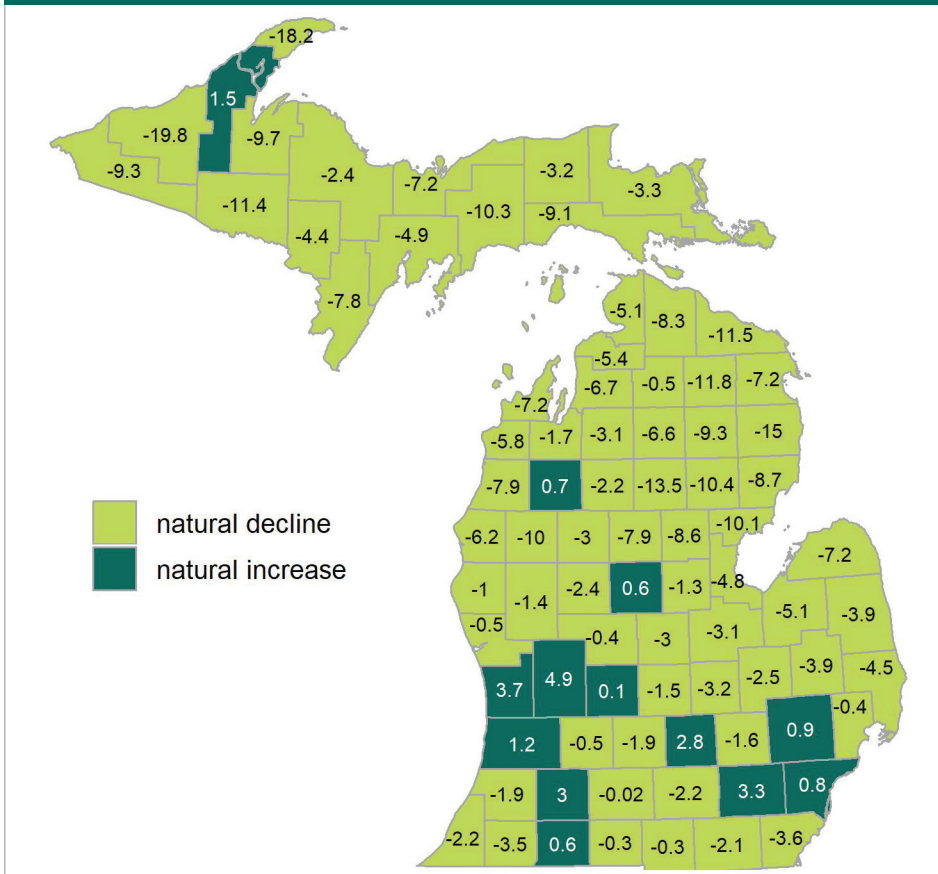
**FIGURE 4: NATURAL RATE OF CHANGE (PER 1,000 RESIDENTS), 2020**



One reason for this is that many rural counties experience substantial out-migration of residents after completion of high school, which has been occurring for decades. This out-migration of young people contributes to natural decline in two ways. First, it results in fewer residents in the reproductive age classes (20s and 30s), reducing births. Second, these counties are experiencing an accelerating number of deaths due to a large percentage of residents over age 65, compared to the state. As a result, natural change has turned negative sooner in many rural counties than in other areas of the state.

By 2030, however, many urban counties will also be experiencing natural decline, resulting largely from two factors. First, the large outflow of young people during much of this century reduced the number of women giving birth throughout the state. Second, Michigan, along with the nation, has experienced a long-term drop in birth rates. In 2017, the number of children born per 1,000 women aged 15–44 in Michigan was about 60, well below the approximate 92 recorded in 1970. Correspondingly, only 13 counties are expected to have positive rates of natural change by 2030, and nearly all these counties will experience a narrowing between numbers of births and deaths during the next decade (Figures 4 and 5).

**FIGURE 5: NATURAL RATE OF CHANGE (PER 1,000 RESIDENTS), 2030**

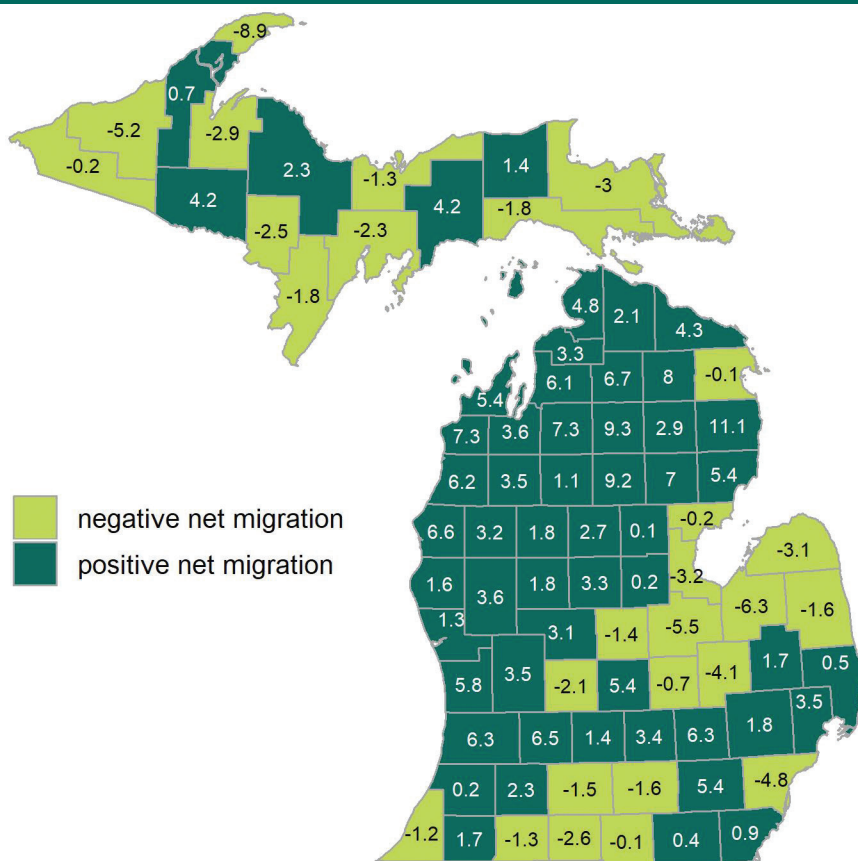


Out-of-state net migration also varies substantially across counties. For example, Kent, Macomb, Oakland, Washtenaw, and Wayne counties are estimated to experience 50 percent of Michigan's total, non-student migration flow (Census, 2016). As a result, because Michigan is expected to have positive net migration over the next decade, many of the anticipated migrants moving to Michigan will likely settle in these counties. This is one reason that most of these counties are expected to have relatively high population growth rates, except for Wayne County, which is projected to decline in population (Figure 3). Although Wayne County is projected to lose fewer people to migration in 2030 than 2020 (Figures 6 and 7), it is expected to continue to have negative net migration partially because it tends to lose residents to surrounding counties.

## Conclusions

During the early 21st Century, the decrease in Michigan's population was caused by the large number of young people leaving the state in search of jobs and the fall in births that followed (Figure 2). Simultaneously, the number of deaths in Michigan rose because the state's median age advanced during this time. Further, by 2030, Michigan's population will pass a

**FIGURE 6: NET MIGRATION RATE (PER 1,000 RESIDENTS), 2020**



critical demographic juncture; one where all baby boomers will be over age 65. Although births in Michigan are projected to move up from current levels, particularly over the next decade, the disproportionate aging of the population is projected to result in state-level natural decline by 2030. Thus, growth of Michigan's population will increasingly depend on attracting people from outside the state.

Michigan's population has yet to recover to its peak of 10,055,315 residents in 2004 but is projected to pass this milestone around 2022. Thereafter, these projections depict three phases to Michigan population dynamics through 2045. First, in the short-term, Michigan's population is projected to continue increasing as baby boomer retirements attract out-of-state workers, who will live in Michigan simultaneously with retirees. Next, after 2029, Michigan's net migration will fall because most job openings vacated by baby boomers will have been filled. Finally, as migration recedes, the state's population is projected to decrease as the baby boomer generation experiences the increased effects of mortality.

A detailed report containing full methodology and projections of county-level births, deaths, net migrants, and population is available on our website. The full set of population projections also can be downloaded from the Bureau's website at <https://milmi.org/datasearch/popproj>

## References

- Hotchkiss, M. and Phelan, J. 2017. Uses of Census Bureau Data in Federal Funds Distribution. United States Census Bureau.
- Mackun, P. and Wilson, S. 2011. Population distribution and change: 2000 to 2010. United States Census Bureau.
- United States Census Bureau. 2016. 2012 – 2016 American Community Survey 5-year Public Use Microdata Samples. U.S. Census Bureau's American Community Survey Office.
- United States Census Bureau. 2017. 2017 National Population Projections Tables.

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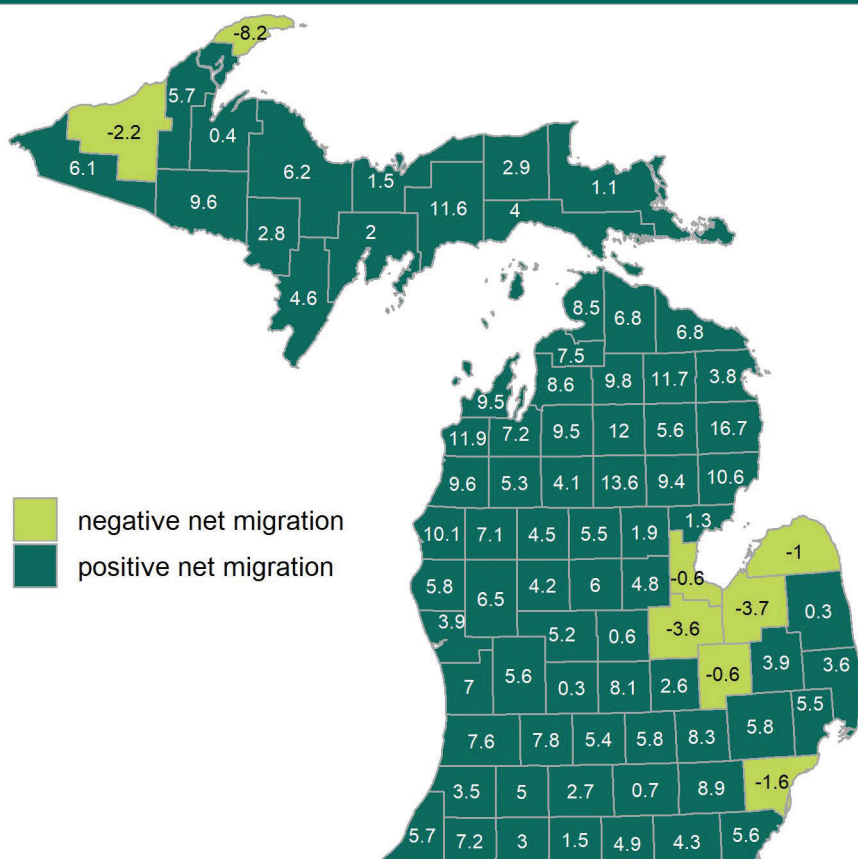
## ALAN LEACH

Demographic Analyst

## ASHLEY TARVER

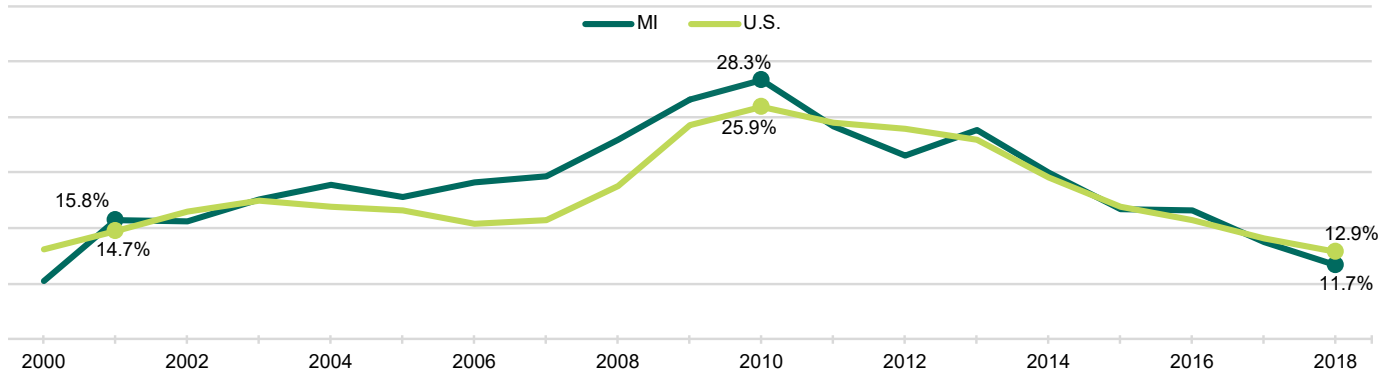
Demographic Analyst

**FIGURE 7: NET MIGRATION RATE (PER 1,000 RESIDENTS), 2030**



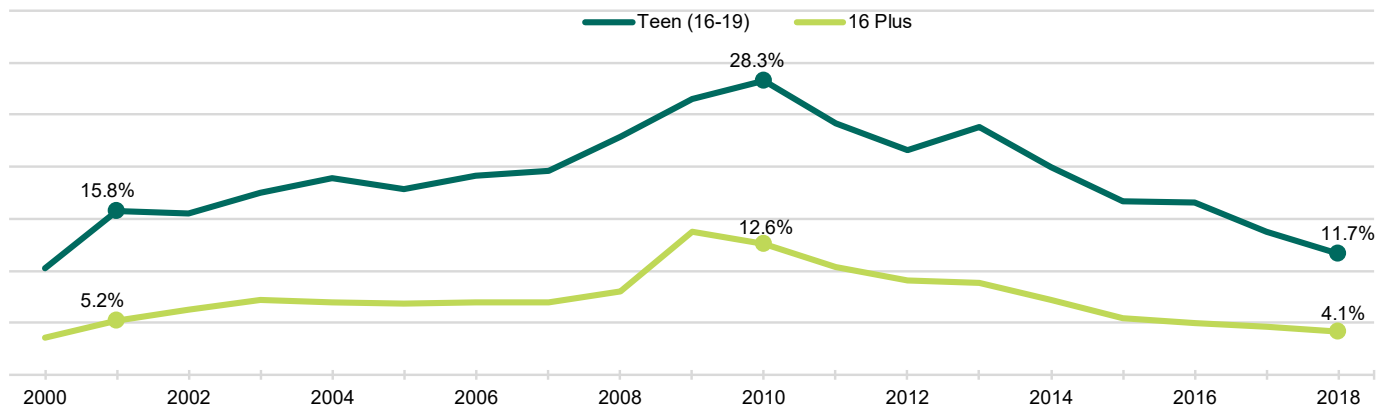
# TEEN LABOR FORCE CHARACTERISTICS

## TEEN UNEMPLOYMENT RATES, MICHIGAN AND U.S., 2000–2018



Source: U.S. Bureau of Labor Statistics, Current Population Survey

## MICHIGAN JOBLESS RATE COMPARISON, TEEN (16-19) AND TOTAL (16 PLUS), 2000–2018



Source: U.S. Bureau of Labor Statistics, Current Population Survey

### Teen Unemployment Rate Characteristics

#### MICHIGAN VS. U.S.

A comparison of Michigan's annual average teen (defined as 16- to 19-year-olds) unemployment rates to the national teen rates between 2000 and 2018 shows that both groups generally move in tandem over time. Both groups saw increases in the percent jobless during the recession in 2001 and the Great Recession in 2009. In the years following the 2001 recession, Michigan teens generally had higher jobless rates than their peers nationally. The Great Recession saw sharp rises in unemployment rates for all teens with Michigan teens peaking at 28.3 percent compared to 25.9 percent nationally during 2010. Since that time, jobless rates for teens have

declined and the gap between the two groups has narrowed.

#### MICHIGAN TEEN RATE VS. MICHIGAN TOTAL (16 PLUS) RATE

A primary characteristic of the teen labor market is higher jobless rates compared to the overall (16 plus) jobless rates. In Michigan, this gap can be quite large with differences that typically range between 10 and 16 percentage points. This gap widens somewhat during economic downturns but remains significantly above the overall rate even as labor market conditions improve.

#### Teen Summer Employment Trends

Michigan teen employment levels typically rise sharply during the summer months (June–August) from a low point recorded during the

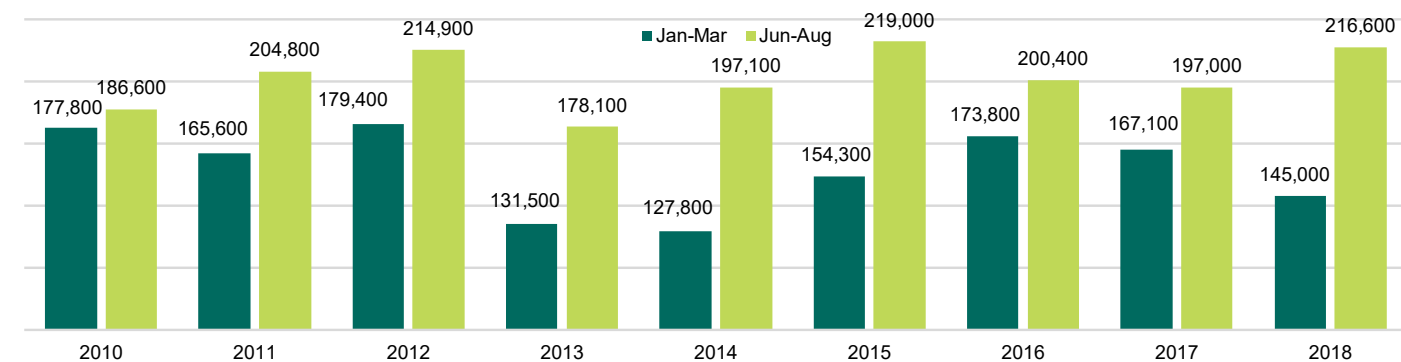
first three months of the year. This pattern was less evident during the year 2010 when the state's employment level fell to a recessionary low point. The seasonal teen employment advance during the summer months has been very evident from 2011 to 2018. This increase in employment during the summer months of this decade has ranged from 4.9 percent in 2010 to 54.2 percent in 2014. The average rise has been 27.6 percent for the 2010–2018 time period.

The industry sectors in which teens typically find summer jobs include *Arts, entertainment, and recreation, Accommodation and food services, Food and beverage stores, and Clothing and clothing accessories stores*. The public sector also provides a significant number of summer jobs that are ideal for teens through summer jobs programs in areas such as parks

*\*This article previously appeared in the June 2019 edition of Michigan's Labor Market News.*

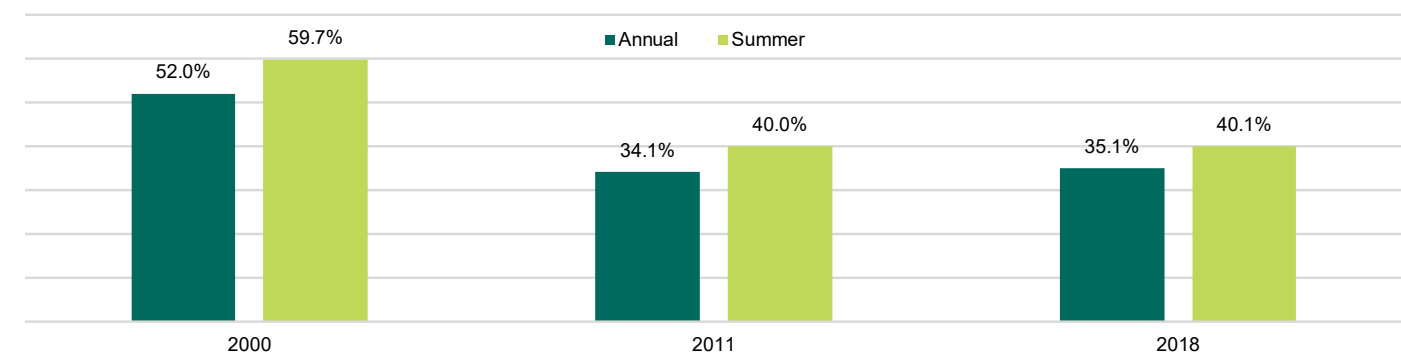


## MICHIGAN AVERAGE TEEN EMPLOYMENT LEVELS, JANUARY–MARCH AND JUNE–AUGUST



Source: U.S. Bureau of Labor Statistics, Current Population Survey

## NATIONAL TEEN LABOR FORCE PARTICIPATION RATES, SELECT YEARS



Source: U.S. Bureau of Labor Statistics, Current Population Survey

## MICHIGAN TEEN SUMMER 2019 EMPLOYMENT FORECAST

TEEN LABOR FORCE	TEEN EMPLOYMENT	TEEN UNEMPLOYMENT	TEEN UNEMPLOYMENT RATE (%)
246,400	208,200	38,200	15.5

Source: U.S. Bureau of Labor Statistics, Current Population Survey

and recreation. Many of these industries are seasonal in nature and require larger staff levels during the spring/summer period when teens are available for work.

### TEEN LABOR FORCE PARTICIPATION TRENDS

One of the most prominent characteristics of the teen labor force over the past two decades has been a steady decline in attachment. This attachment is measured by the number of teens in the labor force divided by their population. The resulting figure is termed the Labor Force Participation Rate (LFPR). National Current Population Survey (CPS) data show that in the year 2000 the annual teen LFPR was 52.0 percent with a summer increase to 59.7 percent. This participation rate recorded steady declines in the years leading up to the Great Recession

and reached recessionary lows during the summer of 2011 at 34.1 percent and 40.0 percent, respectively.

Since that time, teen labor force participation has essentially remained constant nationally with an annual rate of 35.1 percent and corresponding summer rate of 40.1 percent during 2018. Some of the reasons cited for this include an increased emphasis on school and attending college; more summer school attendance; and an increased use of internships. College tuition costs have continued to rise substantially, and teen earnings are often low and now pay little towards the overall costs of college. Additionally, teens face continued competition for jobs from adult job seekers.

### Summer 2019 Forecast

About 208,200 teens (16-19 years) were projected to find jobs in Michigan during the summer of 2019 (June–August). In addition, another 38,200 teens will be actively seeking jobs but will remain unemployed. Michigan's teen summer jobless rate has been on a downward trend during this decade. With the positive condition of the state's labor market in the summer of 2019, the teen unemployment rate is expected to be 15.5 percent. This is well below the teen jobless rate for most of the last decade but remains above rates of unemployment for adults.

**JEFFREY AULA**  
Economic Analyst



# AN ANALYSIS OF OCCUPATIONAL SUPPLY AND DEMAND IN THE MICHIGAN LABOR MARKET

Balancing the supply and demand of workers in the labor market is of critical importance to the Michigan economy. If the market demands more workers than are currently trained and available, the goal of creating more and better jobs in the Michigan labor market is constrained. Alternatively, if there are an oversupply of trained workers, these workers may have difficulty finding jobs, especially jobs that effectively use their skills. Consequently, achieving labor market alignment is crucial to building an economy that meets the needs of firms and workers alike. In this article, Michigan builds off work other states have done regarding labor supply and demand relationships.

## Methods

In this analysis, occupations were assigned scores for supply and demand determined from composite indices. These scores ranged from one to five. Variables used to create these indices are listed in Table 1. Shortages, alignments, or surpluses were then determined based on the differences between the supply and demand scores. This is referred to as the talent gap. For example, *Nursing assistants* were found to have a demand score of five and a supply score of only four, so they were determined to have a weak

TABLE 1: MICHIGAN SUPPLY AND DEMAND VARIABLES	
SUPPLY	DEMAND
Employment (2017)	Online Job Postings (2017)
Employment Change (2014–2017)	Annual Projected Openings
Program Completers (2017)	Projected Growth Rate
Program Completers Change (2014–2017)	
MiTalent Connect Resumes (2017)	

shortage. *Information security analysts* have a demand score of four and a supply score of two, so they were determined to have a strong shortage. Because data for one measure of labor supply, program completers, are only available for occupations typically requiring some sort of post-secondary award, the analysis had to be split into two parts. This led to one analysis for non-degreed occupations and another analysis for degreed occupations. Occupations were dropped from the analyses if they did not typically require any education or training beyond high school or if employment statewide was below 1,000. Given these exclusions, 366 of the 746 detailed occupations in the state were incorporated across the two analyses.

## Non-Degreed Occupations

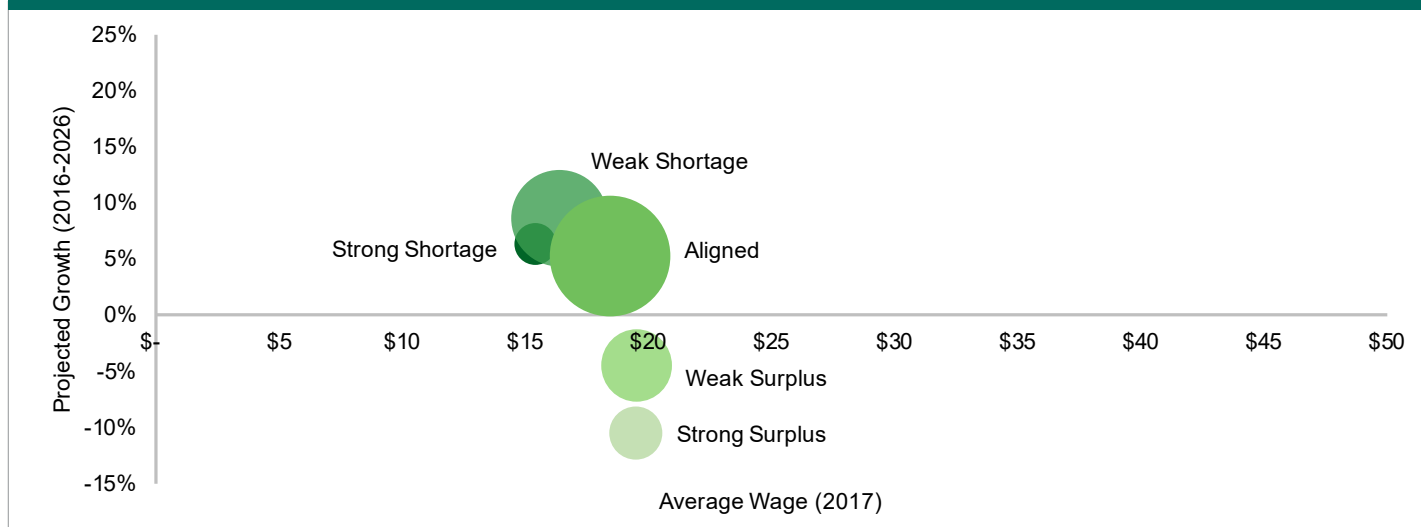
This section analyzes occupations that typically require less than a post-secondary certificate, but still require some form of education and/or training beyond high school, according to the Bureau of Labor Statistics. Occupations were also examined that may require a post-secondary certificate but are more reliant on training experience. Throughout this report, these occupations will be referred to as non-degreed occupations, or NDOs. In the NDO analysis, resume data from Michigan's labor exchange, MiTalent Connect, were used in supply calculations in place of education program completers.

\*This article previously appeared in the December 2018 edition of Michigan's Labor Market News.





**FIGURE 1: ALIGNMENT OF NON-DEGREEED OCCUPATIONS BY WAGE AND PROJECTED GROWTH RATE**



Source: DTMB-BLMISI, Occupational Employment Statistics and 2016-2026 Employment Projections

Looking at the overall alignment of non-degreeed occupations, 54 occupations (25 percent) of the 220 NDOs analyzed demonstrate some level of shortage. 119 (54 percent) of NDOs appeared to be have supply and demand aligned. The remaining 21 percent had some level of surplus.

This report also looks at the number of workers in occupations. Non-degreeed occupations evaluated in this section employ more than 2.6 million workers in Michigan and of those, about 17 percent of workers were in occupations that have some level of shortage, 13 percent showed a surplus, and the remaining 70 percent of workers were in aligned occupations. On

average, non-degreeed occupations employ roughly 12,000 workers. It should be noted that not all occupations are the same size.

#### ALIGNED NON-DEGREEED OCCUPATIONS

Over half of all non-degreeed occupations in this analysis were found to be aligned. Many of the largest occupations, in terms of employment, demonstrate alignment between supply and demand. Thirteen of the top 15 largest occupations in the analysis were aligned including *Retail salespersons*, *Combined food preparation and serving workers, including fast food*, and *Office clerks, general*. The *Administrative support* major group had the highest count of total

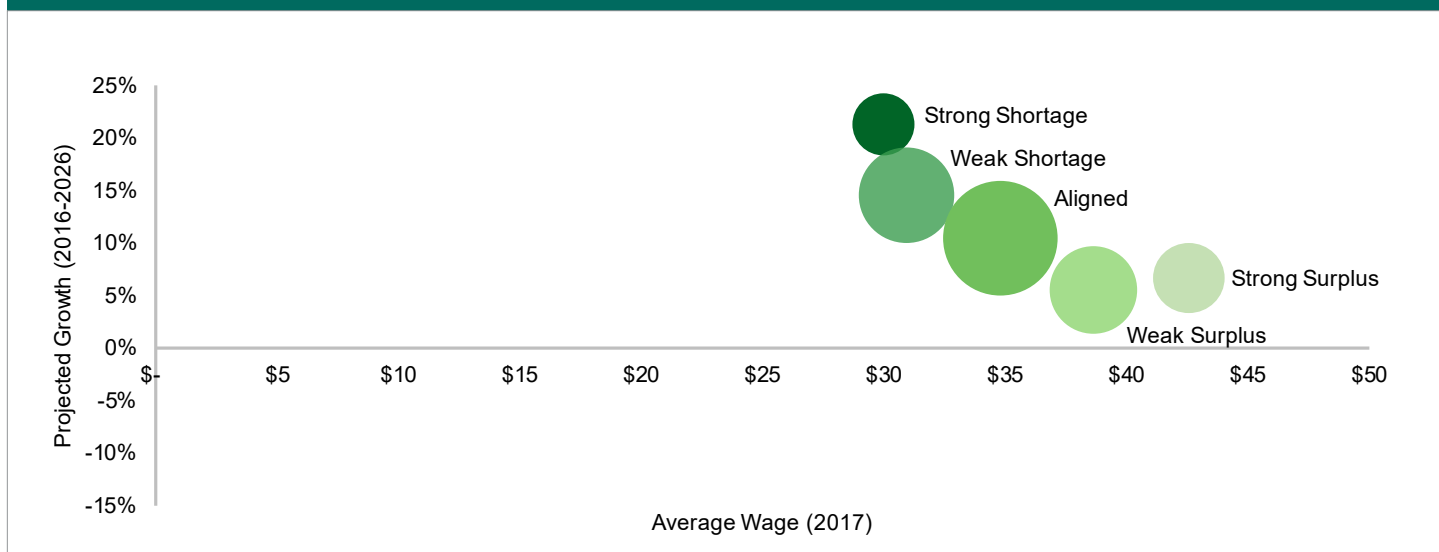
occupations aligned in the NDOs, but this partially stemmed from the large number of occupations in this major group. When looking at employment levels, 70 percent of the employees were in occupations that are balanced.

#### SHORTAGE NON-DEGREEED OCCUPATIONS

Shortages come from a variety of major occupational groups with no broad group having more than 11 percent of total shortage job titles. *Food preparation*, *Personal care*, and *Administrative support* each had six shortage occupations, but these were some of the largest major groups in the analysis.



**FIGURE 2: ALIGNMENT OF DEGREED OCCUPATION BY WAGE AND PROJECTED GROWTH RATE**



Source: DTMB-BLMISI, Occupational Employment Statistics and 2016-2026 Employment Projections

Some notable weak shortages in non-degreed occupations include *Home health aides*, *Plumbers*, *pipefitters*, and *steamfitters*, and *Welders*, *cutters*, *solderers*, and *brazers*. Non-degreed shortage occupations with some of the largest 2017 employment values include *Janitors and cleaners*, *Restaurants cooks*, and *Home health aides*.

### SURPLUS NON-DEGREED OCCUPATIONS

Roughly 21 percent (47 of 220) of the non-degreed occupations exhibit a surplus. These occupations display a larger supply value than demand. By far, the largest major occupation group with this misalignment was *Production* with more than half of the 48 occupations demonstrating a surplus. The next major group with the largest concentration was *Office and administrative support* where 10 of the occupations (24 percent) had a surplus. No other major group had more than occupations with some level of a surplus. There were 43 weak surpluses and four strong surpluses. *Production* occupations represented 23 of the weak surpluses and all four of the strongest surpluses. These 27 *Production* surplus occupations had an average employment of about 5,900 in 2017, or half the size of the average non-degreed occupation. Almost half of non-degreed occupations with some level of surplus had the word “operator” in the title.

### NON-DEGREED OCCUPATION TRENDS AND MAJOR GROUP ANALYSIS

In total, 220 occupations were included in the NDO analysis. As percentages, 54 percent of NDOs were found to be in alignment, 21 percent showed a surplus, and 25 percent demonstrated a shortage. *Production* was the most notable

major occupation group with 56 percent of occupations showing a surplus. The next most notable group was *Office and administrative support*, where 41 occupations had some level of a surplus. Shortages were spread throughout several occupational groups, but with concentrations in *Food preparation*, *Personal care*, and *Transportation*.

Figure 1 displays a noticeable difference in both the projected growth and wages of non-degreed occupations across differing levels of alignment. Specifically, occupations with shortages have higher projected growth as well as lower wages than aligned occupations. Those with surpluses show the exact opposite, with negative projected growth, but higher wage levels. This seems to indicate that people are either crowding toward higher paying jobs or perhaps listed these higher paying jobs in their MiTalent Connect resumes. Projected growth is a variable in the demand index, so the y-axis distribution is somewhat expected. The size of the circle denotes projected average annual openings.

### Degreed Occupations

Complementing the previous section, this section analyzes degreed occupations (DOs). These occupations all require a postsecondary credential, from “postsecondary award” and “no on the job training” up to doctoral degrees. Of the 146 DOs, 56 (38 percent) show some level of shortage. Nearly half (48 percent) of occupations demonstrate alignment between supply and demand. Only 20 occupations (14 percent) show some level of surplus.

Degreed occupations consist of roughly 1.1 million Michigan workers. Of those, 26 percent were in

occupations with shortages and only 11 percent of employees were in occupations with surpluses. The remaining 63 percent of employees were in occupations that are aligned. On average, degreed occupations contain about 7,200 employees. This is notably lower than the NDOs which employ, on average, almost 12,000 workers.

### ALIGNED DEGREED OCCUPATIONS

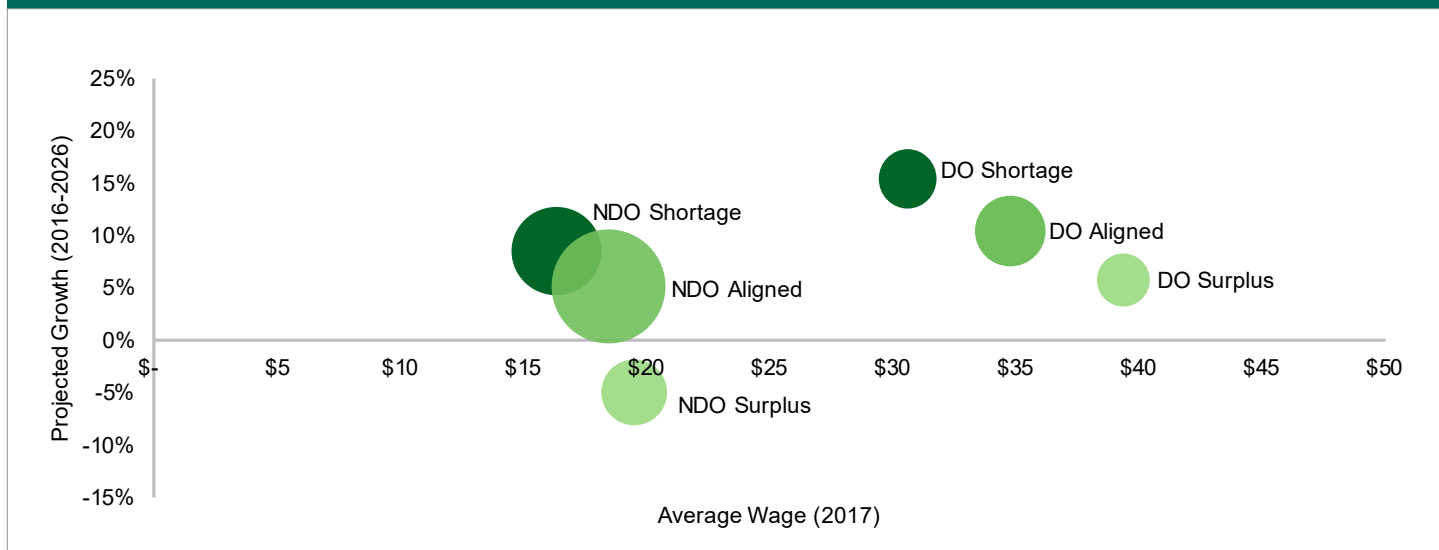
Just slightly under half of all degreed occupations were aligned. Eight of the top 10 largest occupations by employment were found to be in balance with four of the top five aligned (*Registered nurses*, *General and operations managers*, *Mechanical engineers*, and *Elementary school teachers, except special education*). *Nursing assistants* were the third largest degreed occupation and have a shortage. The *Healthcare practitioners*, *Management*, and *Educational* major groups contained some of the highest numbers of aligned occupations and workers.

63 percent of all degreed employees were in balanced occupations which totaled nearly 660,000 workers. These occupations may remain attractive to future job seekers with job openings from growth as well as openings caused by older workers changing careers or leaving the labor force.

### SHORTAGE DEGREED OCCUPATIONS

Weak shortages appeared in 51 of the 146 degreed occupations (35 percent) and come from a variety of major groups. The largest number of shortages come from *Education, training and library* occupations and *Healthcare practitioner* occupations. Of the 12 education occupations

**FIGURE 3: ALIGNMENT OF ALL OCCUPATIONS BY WAGE AND PROJECTED GROWTH RATE**



Source: DTMB-BLMISI, Occupational Employment Statistics and 2016-2026 Employment Projections

with shortages, eight of them were postsecondary instructors from a variety of fields. *Kindergarten teachers, except special education, Middle school teachers, except special and career/technical education, Career/technical education teachers, secondary school*, as well as *Librarians* were the remaining four and are all integral in communities across the state. In *Healthcare practitioner* occupations, *Licensed practical and licensed vocational nurse, Dental hygienists, and Physical therapists* are larger than the average degreed occupation and have shortages. Some degreed occupations with shortages are extremely large like the two *Healthcare support* occupations *Nursing assistants* and *Medical assistants*, which employ more than 50,000 and nearly 22,800 respectively.

### SURPLUS DEGREED OCCUPATIONS

Between the two analyses, a surplus in degreed occupations was easily the smallest of any of the levels of misalignment. Of the 146 degreed occupations, only 16 (11 percent) showed a weak surplus. These 16 occupations were spread throughout occupational groups with the largest grouping in the *Management* occupations, which had five occupations with surpluses. These five surpluses represent 28 percent of all *Management* occupations in the degreed analysis. No trend appeared in the *Management* occupations which ranged from several different industries (*Chief executives, Administrative services managers, Industrial production managers, Architectural and Engineering managers, and Education administrators, postsecondary*). *Business, Social services, and Arts* occupations each had two weak surpluses.

### DEGREED OCCUPATION TRENDS AND MAJOR GROUP ANALYSIS

In total there were 146 occupations in the degreed occupations analysis. Employees in the *Healthcare practitioners* major group made up 21 percent of all employees (19 percent of occupations) in the degreed analysis. Of these 65 percent of employees were in aligned occupations while 28 percent were in occupations with shortages and the remaining 7 percent were in occupations with surpluses. None of the well-represented major groups in the degreed analysis heavily leaned toward having surpluses.

Figure 2 shows differences in projected growth and wages for degreed occupations across the varying levels of alignment. Like non-degreed occupations, surplus positions had a higher average wage than those in alignment or with shortages. Those with a shortage have higher average projected growth rates than those with surpluses. Projected growth is a factor in calculating occupational alignment while wage is not. Again, it appears that workers and students may be crowding toward occupations with higher wages even if these may not have projected growth rates as high as other occupations. The size of the circle denotes projected average annual openings.

Figure 3 addresses degreed and non-degreed occupations concurrently. In the chart, it is evident that all levels of degreed occupations have higher average wages than any level of non-degreed occupations. Non-degreed occupations are typically larger and have higher rates of turnover leading to more average annual openings than degreed occupations.

It is also notable that degreed occupations that show a surplus have the lowest 10-year growth rate of any degreed occupation group but are projected to expand more quickly (5.8 percent) than aligned non-degreed occupations (5.2 percent).

### Conclusion

While it has been stated that the Michigan labor market has a shortage of workers, this analysis has demonstrated that the reality is a bit more complicated. All occupations continue to have some demand for new workers, but this demand may or may not line up with supply. New workers are needed to fill holes left by existing employees retiring, moving to new occupations, or due to occupational growth, but that alone is not evidence of a worker shortage. Indeed, most occupations in this analysis were aligned or showed at most a weak form of misalignment. Non-degreed occupations were 54 percent aligned while 70 percent of employees were in aligned occupations. For degreed occupations, 48 percent of these job titles were in alignment while 63 percent of workers were employed in these aligned occupations. Only six of the 220 non-degreed occupations had a strong misalignment, while nine of the 146 degreed occupations had a strong misalignment. Overall, this analysis has shown the inherent complexity of the supply and demand of workers in the Michigan labor market, and that the existence of talent shortages should be evaluated on an occupational basis rather than for the labor market as a whole.

**EVAN LINSKEY**  
Economic Analyst

# MICHIGAN SHORT-TERM EMPLOYMENT PROJECTIONS

Each year, the Bureau of Labor Market Information and Strategic Initiatives releases short-term employment projections that run through the second quarter of the following year and cover both industries and occupations in Michigan. In February, the Bureau released short-term employment projections for the period of the second quarter 2018 through the second quarter of 2020. The projections, much like the current series of long-term employment projections, see Michigan continuing to record relatively strong employment growth through the middle of 2020.

Michigan employment is projected to expand by 89,820, or 1.9 percent, over the two-year period. Although the pace of growth is somewhat lower than the previous 2017 Q2 - 2019 Q2 growth rate, the difference is attributable to the positive performance of the labor market. The rate of employment growth is expected to decline not due to a downturn in the labor market but rather as a result of a strong market. It is becoming more difficult to increase employment levels due to the tightness of the job market, as employers attempt to fill job vacancies.

## Industry

The fastest-growing sectors over the two-year period, seen in Table 1, are expected to be *Construction* and *Government*, while the sectors expected to be the greatest contributors to employment growth are *Education and health services* and *Professional and business services*. Both *Education and health services* and *Professional and business services* are large sectors that are adding jobs at a similar rate to the statewide average, but add many more jobs than average due to their large employment size. No entire sector is expected to see a decline in employment over the two-year period, but the slowest-growing areas of employment are expected to be *Information* and *Natural resources and mining*.

Growth in the *Construction* sector is expected to be fastest in the *Construction of buildings* industry, with nearly 60 percent of new jobs in the industry stemming from *Residential building construction*. The portion of the *Construction* sector employed in *Specialty trade contractors* will add the most jobs in this sector.

Jobs in the *Manufacturing* sector are expected to expand slightly slower than total employment through the second quarter of 2020, with

TABLE 1: MICHIGAN INDUSTRY SECTOR PROJECTIONS

SECTOR	2018 Q2	2020 Q2	2-YEAR NUMERIC CHANGE	2-YEAR PERCENT CHANGE
<b>Total, All Industries</b>	<b>4,710,580</b>	<b>4,800,400</b>	<b>89,820</b>	<b>1.9%</b>
Self Employed Workers, All Jobs	223,100	228,380	5,280	2.4%
Natural Resources and Mining	61,880	62,570	690	1.1%
Construction	171,470	178,930	7,460	4.4%
Manufacturing	630,730	639,850	9,120	1.4%
Trade, Transportation, and Utilities	787,360	798,340	10,980	1.4%
Information	56,460	57,000	540	1.0%
Financial Activities	204,460	209,140	4,680	2.3%
Professional and Business Services	666,850	679,310	12,460	1.9%
Educational and Health Services	1,017,810	1,036,480	18,670	1.8%
Leisure and Hospitality	441,160	447,230	6,070	1.4%
Other Services (except Government)	184,270	187,150	2,880	1.6%
Government	265,030	276,020	10,990	4.1%

Source: DTMB Bureau of Labor Market Information and Strategic Initiatives

most of its 9,120 projected job increase coming from *Durable goods manufacturing* and *Miscellaneous manufacturing*. The *Transportation equipment manufacturing* industry, an important influence on Michigan's economy, is expected to expand jobs by 1.6 percent over the period, just below the statewide rate of 1.9 percent. *Miscellaneous manufacturing* is expected to contribute about one in every three new jobs in the *Manufacturing* sector, expanding by 3,390, or 12.8 percent. *Miscellaneous manufacturing* contains employers creating a wide variety of products, including medical equipment and supplies, jewelry, sporting goods, and musical instruments, as examples.

The *Retail trade* industry is expected to remain relatively flat over the two-year period. Within the industry, the fastest-growing areas are expected to be *Miscellaneous store retailers* and *Nonstore retailers*, up by nearly 6 percent and 5 percent, respectively. Conversely, the largest percentage decreases in employment are expected to be in *Sporting goods, hobby, book, and music stores* and *Clothing and clothing accessory stores*, two areas that have been

hard hit by retail spending increasingly moving to e-commerce.

Expected job increases in the *Education and health services* sector are largely driven by expectations for growth in *Health care and social assistance*. These gains are expected to be spread relatively evenly across the industry, with the greatest number of projected employment advances coming from *Ambulatory health care services*. Gains in the sector contributed by *Educational services* (including public education) will largely be driven by *Colleges, universities, and professional schools*, offsetting losses expected at the *Elementary and secondary school* level.

*Leisure and hospitality*, an extremely important sector for many parts of the state, is expected to grow below the statewide average, adding 6,070 new jobs to the sector for a 1.4 percent increase in employment. *Accommodation and food service* will contribute most of these new jobs, with a majority of those coming from *Food service and drinking places*. Employment in the *Accommodation* portion of the industry will expand at a similar rate, but is expected to contribute just over 500 new jobs to the sector.

\*This article previously appeared in the April 2019 edition of Michigan's Labor Market News.



**TABLE 2: OCCUPATIONS WITH THE GREATEST NUMBER OF NEW JOBS REQUIRING LESS THAN A BACHELOR'S DEGREE AND AT LEAST SOME TRAINING BEYOND HIGH SCHOOL**

SOC TITLE	2018 Q2	2020 Q2	2-YEAR NUMERIC CHANGE	2-YEAR PERCENT CHANGE	ANNUAL AVERAGE JOB OPENINGS
Personal Care Aides	43,960	46,370	2,410	5.5%	7,520
Home Health Aides	28,090	29,900	1,810	6.4%	4,130
Heavy and Tractor-Trailer Truck Drivers	58,310	59,830	1,520	2.6%	6,970
Customer Service Representatives	93,100	94,460	1,360	1.5%	12,510
Light Truck or Delivery Services Drivers	31,300	32,510	1,210	3.9%	3,960
Carpenters	28,620	29,790	1,170	4.1%	3,210
Sales Representatives, Wholesale and Manufacturing	53,240	54,410	1,170	2.2%	5,960
Nursing Assistants	53,010	54,030	1,020	1.9%	6,470
Maintenance and Repair Workers, General	44,750	45,660	910	2.0%	4,810
Electricians	24,930	25,710	780	3.1%	3,150

Source: DTMB Bureau of Labor Market Information and Strategic Initiatives

In a notable exception to recent trends, *Government* will be the source of a large number of new jobs in the second quarter of 2020. This is due to the coincidence of the projection period with the 2020 Decennial Census. Census counts are sources of huge influxes of temporary employment in every state's public sector, which can be seen in the 10,570-job increase expected in Michigan's *Federal government administration, excluding post office employment*. These jobs are limited in term and most frequently appear in the form of Census Enumerators, employees who visit and interview Census non-respondents in order to provide the federal government with the most complete count of U.S. residents possible. At the state and local levels of government, there is expected to be little change in employment.

## Occupation

Projections of employment by occupation show many of the same trends seen in the industry projections, such as high growth expected for health- and construction-related jobs, but they also provide pieces of additional information that deliver valuable insight for job seekers and workforce professionals. This extra information comes in the form of expected annual openings for each occupation. Annual openings data show the level of new workers needed in an occupation due to others' exit from the labor force or transfer to another occupational area.

The greatest sources of annual job openings are expected to come from *Office and administrative support* and *Food preparation and serving related occupations*. Due to a near-equal mix of labor

force exits and occupational transfers, these groups, respectively, are expected to have about 83,000 and 70,700 openings for new entrants each year. These two occupational groups have another common factor—most of the openings within these groups are for occupations which require little education and training, such as *Combined food preparation and serving workers* (most frequently found in fast food), and *Office clerks, general*. While these types of occupations do not offer high wages, they do offer a job opportunity for workers who do not have the training or education needed for other types of occupations.

As previously noted, *Construction and extraction occupations*, the occupational group most closely tied to the *Construction* industry, will be a strong source of Michigan employment gains. The group will also provide many opportunities for new workers, having about 20,000 openings each year. The majority of these openings are expected to come from workers transferring to other occupational groups. Within the large *Construction and extraction group*, the greatest number of annual openings are expected in *Construction laborers, Carpenters, and Electricians*.

In fact, the greatest utility of the short-term projections for job-seekers may be for occupations such as *Carpenters, Electricians, and others* in Table 2. Within the narrow, two-year projection period, occupations which require a bachelor's degree may not be available to some, due to the time it takes to complete a degree.

However, occupations such as *Carpenters* and *Electricians* are potentially attainable for these workers as the projection endpoint is near the time of potential entry into these occupations. Additionally, occupations which require less than a bachelor's degree are expected to be the fastest-growing educational group over the two-year period. Some other examples of fast-growing occupations that require less than a four-year degree include *Personal care aides, Home health aides, and Heavy and tractor-trailer truck drivers*.

### KEVIN DOYLE

Economic Specialist



# EMPLOYMENT PROJECTIONS THROUGH 2026 FOR MICHIGAN REGIONS

Each July the Bureau of Labor Market Information and Strategic Initiatives releases long-term employment projections for the Michigan labor market. These projections alternate each year between statewide projections (in even-numbered years) and regional projections (in odd-numbered years). In July 2019, the Bureau released long-term projections for Michigan's 10 Prosperity Regions for the period of 2016-2026.

In July 2018, we released the 2016-2026 Michigan statewide projections. The employment growth rate expected statewide through 2026 was 7 percent, an addition of 320,910 new jobs to the Michigan economy. In the new round of regional projections, we have modeled regional employment growth, seen in Figure 1, to aggregate total regional job gains and declines to equal the growth published in last year's statewide projections.

Another improvement to regional projections that has been introduced in this round has been made possible by the population projections published earlier in early 2019 by the Bureau of Labor Market Information and Strategic Initiatives. Population projections provide a basis upon which assumptions about labor force size can be made, which in turn govern an area's ceiling for total employment. This is especially important because long-term projections are

made with an assumption of full employment (i.e. unemployment rates similar to today's labor market), following the methodology used by state labor market information offices nationwide. The addition of population projections to the projections input data provides an important guideline for regional growth that was previously missing from statewide and regional projections.

Using regional population as a guide for total job growth is, however, one of the main reasons that total employment in several Prosperity Regions is expected to remain flat over the next 10 years. These regions are expected to see slightly negative and slightly positive percent job change over the entire projection period, and expected annualized change should amount to only 0.1 to 0.2 percent, negative or positive, per year. Over the course of the 10-year projection period, this is very slight forecast job change.

## Major Industry Trends

At the broadest level, industry employment can be divided into two domains: *Goods-producing* industries and *Service-providing* industries. In most of the 10 Prosperity Regions, job expansion in *Service* industries is expected to outperform *Goods* industries, or, in the case of Prosperity Region 5, perform equally. Industries such as *Other information services*, *Ambulatory*

*health care services*, and *Social assistance* are examples of high-performing *Service* industries across the 10 regions.

That is not to say that there are not *Goods-producing* industries that are expected to record employment growth in the next 10 years. *Beverage and tobacco manufacturing* in Northwest Michigan, *Food manufacturing* in East Central Michigan, and *Miscellaneous manufacturing* in Southwest Michigan are some examples of *Goods-producing* industries that are expected to record high percent job gains over the projection period.

## Trends by Major Occupational Group

### HEALTHCARE

With only one exception, the *Health care practitioners and technical* occupational group is expected to be the fastest-growing group throughout Michigan's 10 regions. These occupations are becoming increasingly important as Michigan's population continues to age, especially in more rural areas. Strong expansion in this occupational group will create many additional job openings each year, with most regions expected to see at least 100 openings annually from employment growth alone. There are a

\*This article previously appeared in the July 2019 edition of Michigan's Labor Market News.





variety of occupations in the *Healthcare* major occupational group that are expected to both show high growth and offer many annual openings. Leading the group in terms of percent job additions in many areas are emerging occupations such as *Physician assistants*, expected to advance by about 34 percent in West Michigan, and *Nurse practitioners*, with a forecast job gain of 22 percent in East Michigan.

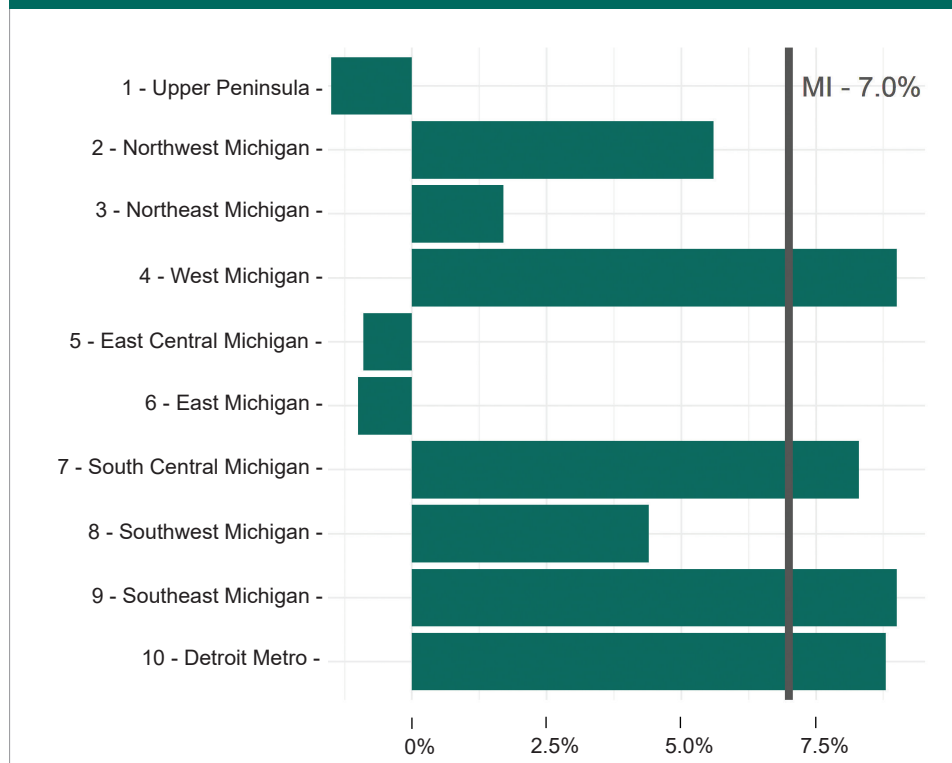
While these two occupations require more than a bachelor's degree, there are many opportunities in *Healthcare* that require fewer years of education. *Home health aides*, with no education required beyond high school, are expected to generate 150 openings annually in the Upper Peninsula, mostly due to job growth but also due to exits from the occupation. In the Northeast Michigan region, *Nursing assistants* are expected to have 90 openings annually.

## PROFESSIONAL

The *Professional* occupations major group is another that is expected to be a strong source of job additions for many regions, and is expected to see the highest growth in metropolitan areas of Michigan. In the West, South Central, Southeast, and Detroit Metro regions, growth in this occupational group is expected to exceed 12 percent.

Among these regions, annual openings in the group are expected to range from 5,500 in South Central Michigan to 40,000 in the Detroit Metro area.

**FIGURE 1: PROJECTED 10-YEAR PERCENT EMPLOYMENT CHANGE, 2016–2026**



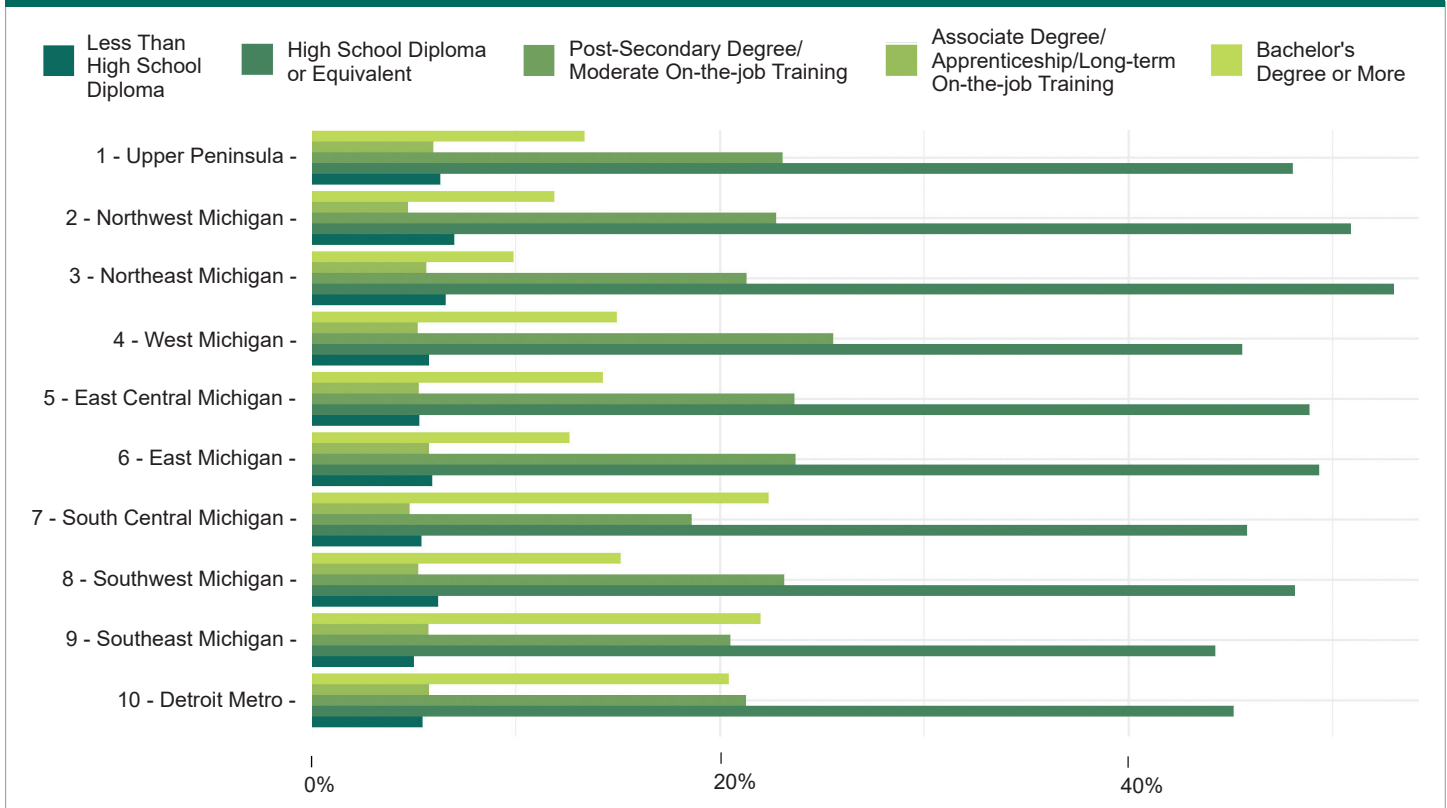
Source: DTMB Bureau of Labor Market Information and Strategic Initiatives

The *Professional* occupations group has a wide array of jobs, ranging from *Accountants* to *IT security analysts* to *Lawyers* to *News analysts, reporters, and journalists*. Many of the occupations expected to generate the most annual openings, however, are education-

related. *Elementary school teachers*, *Teacher assistants*, and other occupations in the *Education, training, and library* group are expected to generate between 17 and 35 percent of the annual openings within the *Professional* group.



**FIGURE 2: JOB OPENINGS BY EDUCATION**



Source: DTMB Bureau of Labor Market Information and Strategic Initiatives

expected to create the greatest number of new jobs through 2026 include *Industrial engineers, Accountants and auditors, and Market research analysts*. Various IT-related jobs such as *IT security analysts* and *Software applications developers* are expected to appear at the top of the list of high-growth *Professional* occupations in seven of the 10 regions.

## SERVICE

*Service* occupations are another group integral to many regions in the state. This diverse set of occupations is expected to outperform regional total job growth by an average of about 2.5 percentage points in each of the 10 Prosperity Regions. These positions are also available to a wider share of the workforce than many *Healthcare* and *Professional* occupations. About 85 percent of the annual job openings in this occupational group are available for job seekers who do not have education or training beyond high school. While these jobs do not typically pay as well as *Healthcare* or *Professional* occupations, their main advantage is that they can be obtained by those who have not had the opportunity or desire to pursue additional education.

While most *Service* job openings are expected to be for occupations requiring at most a high school diploma and on-the-job training,

about one in 10 annual openings for the group throughout the 10 regions will be for jobs requiring either at least some post-secondary education or moderate term on-the-job training. *Correctional officers, Police and sheriff's patrol officers, and Hairdressers, hairstylists, and cosmetologists* are the occupations in this group which are notable throughout the projections for the 10 regions. For example, these three occupations alone will be responsible for about 220 annual job openings in the Upper Peninsula.

## Projections by Education

The regional employment projections show a familiar relationship between growth and level of education. In general, occupations requiring additional education are projected to register above average rates of job expansion. In fact, occupations that require at least a bachelor's degree are expected to add jobs at a rate that will be three percentage points above the respective regional growth rate. Additionally, these jobs are expected to generate about 15 percent of each region's total annual openings – signaling that in addition to strong growth, there may be many opportunities for employment in jobs requiring a bachelor's degree.

Jobs that require either an associate degree, an apprenticeship, or long-term on-the-job training

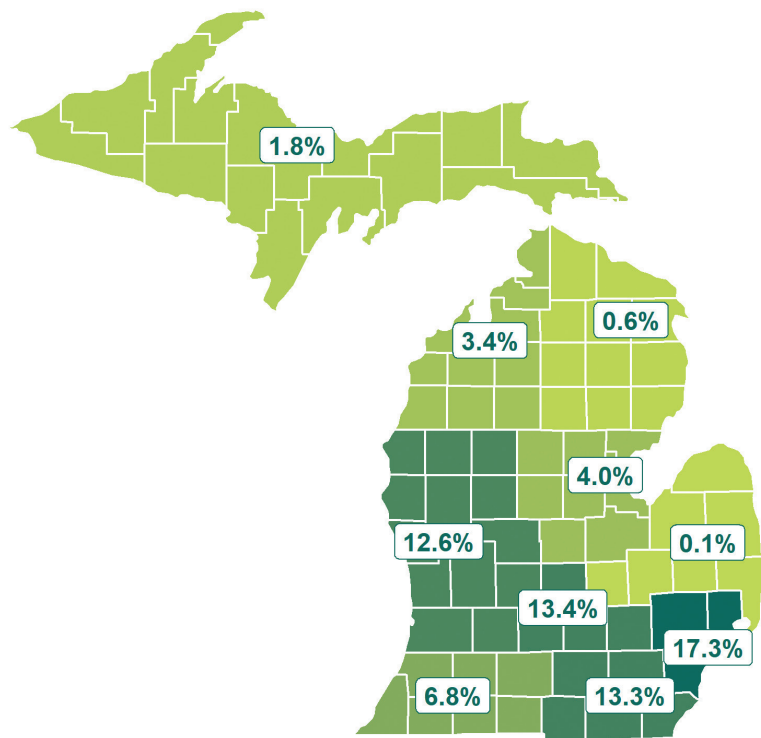
are also expected to see higher-than-average rates of gain in most Michigan regions (the only exception is the Upper Peninsula). On average, these jobs are expected to advance by nearly two percent faster than average regional job levels.

While occupations within this group are expected to register job growth rates similar to those requiring a bachelor's degree or more, they represent a fairly small slice of the regional job markets. In terms of annual openings, jobs requiring this level of education comprise only 5 percent of annual total openings in most regions.

Jobs requiring only a post-secondary certificate, some college, or moderate on-the-job training are not expected to fare as well as more highly specialized occupations. These jobs are expected to expand slower than average in regions across the state.

Jobs requiring this level of education are expected to generate, on the low end, 1,600 annual job openings in Northeast Lower Michigan, and on the high end, 47,000 openings in the Detroit Metro area. In percentage terms, jobs requiring this level of education are expected to generate just over 20 percent of each region's total annual openings through 2026.

**FIGURE 3: PROJECTED 10-YEAR PERCENT STEM EMPLOYMENT CHANGE, 2016–2026**



Source: DTMB Bureau of Labor Market Information and Strategic Initiatives

## STEM Jobs

STEM occupations are expected to register faster job expansion than the total regional rate with the exception of Northeast and Northwest Lower Michigan. For example, the group is expected to grow 4.9 percent more than the regional rate in East Central Michigan and 3.3 percent faster in the Upper Peninsula. The group's highest outperformance of regional expectations is in the Metro Detroit region, where STEM jobs are expected to grow 8.5 percent faster than total regional jobs through 2026. Job advances in the Metro Detroit region can, at least in part, be attributed to a gain of 7,180 jobs, or 11.6 percent in STEM-related *Healthcare practitioner and technical* occupations. A similarly high growth rate of 10.8 percent in *Healthcare practitioner and technical* is one of the driving factors in the East Central region's strong expected STEM job expansion.

Throughout most of the state, as much as half of the total annual openings for STEM jobs will come from *Architecture and engineering* occupations, highlighting the group's importance in Michigan. The proportion of all STEM job openings found within this group ranges from 20 percent in South Central Michigan to 50 percent in the Metro Detroit area. Within the set of occupations, as many as half of the annual job openings may come from

the *Drafters, engineering technicians, and mapping technicians* occupations, an especially notable figure because the group generally requires less education than the bachelor's degree-only *Engineers* minor occupational group.

*Computer and mathematical* occupations, and more specifically, *Computer* occupations, are typically the second-highest source of STEM openings for the 10 regions. At its lowest, this group contributes nearly 20 percent of Northeast Lower Michigan's STEM job openings, but at its peak in South Central Michigan, this group is expected to contain just over 40 percent of all STEM job openings.

## Professional Trades

Professional trades occupations, highlighted in the State of Michigan's Going PRO ad campaign, are another group of jobs that are expected to exceed total regional growth rates in all 10 of the Prosperity Regions. Expected to expand by an average of 2.5 percent more than the regional rate, this group of jobs is projected to advance by more than 10 percent in the West, South Central, Southeast, and Detroit Metro regions, while moving up just under 10 percent in Northwest Lower Michigan. Additionally, these positions are expected to outperform the regional growth rate by 3 to 3.5 percent in East and East Central Michigan.

Between 45 and 60 percent of the annual openings from the professional trades occupations come from occupations in the *Construction and repair* group of jobs. Throughout the state, *Maintenance and repair workers, Electricians, and Automotive service technicians and mechanics* are generating many of the openings in this group throughout the state.

Another source of many annual openings in the professional trades is *Healthcare practitioners and technical* occupations. Throughout the 10 regions, among the top jobs for annual openings in this broad group is a mix of *Registered nurses, Licensed practical and licensed vocational nurses, and Dental hygienists*. The job titles of *Licensed practical and licensed vocational nurses* and *Dental hygienists* highlight an important reason for analyzing top occupations by annual openings. In a few regions, these occupations are expected to have fewer total jobs in 2026 than in 2016, but many new entrants will still be needed to fill vacant positions over the 10-year period.

## Conclusion

Each regional economy within Michigan is unique. Whether it is a highly metropolitan economy with numerous fast-growing *Professional* occupations or a northern Michigan region with a concentration of *Service* occupations, a region's unique job structure can be illustrated using these occupational projections.

There are examples of high-demand job titles in every Michigan region and in most broad occupational groups, and data users can gain a little more assistance by utilizing the Bureau of Labor Market Information and Strategic Initiatives' *Regional Career Outlook through 2026* publications. These brochures list high-growth, high-wage occupations by many education levels and occupational groups for each of the 10 Prosperity Regions. They are available to be viewed and downloaded on the research page of [www.michigan.gov/lmi](http://www.michigan.gov/lmi).

**KEVIN DOYLE**  
Economic Specialist

# ADDITIONAL RESOURCES AND PUBLICATIONS

FROM THE MICHIGAN BUREAU OF LABOR MARKET INFORMATION AND STRATEGIC INITIATIVES

Stay up-to-date on Michigan's population and labor market by exploring the variety of publications, research, and tools found on the Bureau of Labor Market Information and Strategic Initiatives website. View the selected resources below and more at [www.michigan.gov/lmi](http://www.michigan.gov/lmi).



## Michigan's 2018 Job Vacancy Survey Pilot

This report provides the results of a fourth quarter 2018 employer survey conducted in partnership with Michigan State University. This information is intended to give our partners insight on current Michigan job vacancies, and to inform decisions around education, hiring, and workforce development.



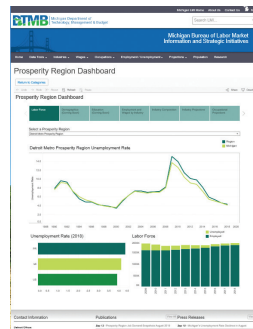
## Michigan's Hot 50 Occupations Through 2026

This publication, available in poster and brochure formats, highlights statewide high-demand, high-wage careers that show a favorable mix of long-term job growth, projected annual job openings, and median wages.



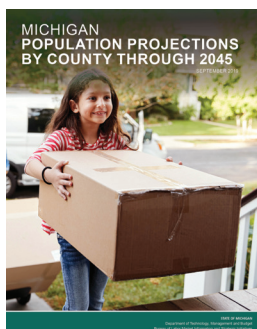
## Regional Career Outlook Through 2026

View in-demand occupations by education and training requirements, as well as the most in-demand STEM careers for each of Michigan's Prosperity Regions.



## Regional Dashboard Tool

Explore data visualizations at the state level or by Prosperity Region, Michigan Works! area, county, or city. Begin by selecting your geographic area of choice and use the filter to hone in on your area of interest.



## Michigan Population Projections by County Through 2045

This report provides a summary of Michigan's historical and projected population trends, population projection methodology, and demographic information for all Michigan counties through 2045.



## MiEconomy Mobile App

The MiEconomy app provides you with the key labor market and economic metrics necessary to stay informed on the Michigan economy. This app provides same-day updates for 44 metrics including the unemployment rate, payroll jobs, and gross domestic product.









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