



# MICHIGAN'S LABOR MARKET NEWS

VOL. 75, ISSUE NO. 8  
OCTOBER 2019

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## Science, Technology, Engineering, and Math (STEM) Jobs in Michigan

Feature Article pg. 15

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## Occupational Focus: Environmental Scientists and Specialists

pg. 20

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## Partner Perspective: MiSTEM Network

pg. 26



# Michigan's jobless rate edged down to 4.2 percent in August.

AUGUST 2019 JOBLESS RATE

MICHIGAN

4.2%

NATIONAL

3.7%

## TABLE OF CONTENTS

4	Michigan Employment and Unemployment Trends
6	Michigan Job Trends by Industry Sector
10	Regional Labor Market Analysis
15	Map of the Month: STEM Employment Shares by State
16	Feature Article: Science, Technology, Engineering, and Math (STEM) jobs in Michigan
20	Occupational Focus: Environmental Scientists and Specialists
22	Michigan Online Job Advertisements
24	Relevant Rankings
26	Partner Perspective: MiSTEM Network



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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 fell slightly to 4.2 percent in August but remained above the national rate of 3.7 percent. Due to a modest increase in labor force totals, the state's jobless rate rose by three-tenths of a percentage point since August 2018, despite an employment gain of 50,000. Payroll jobs also increased annually, with the largest gains in *Professional and business services*, *Government*, and *Financial activities*.

Just in time for National STEM/STEAM Day on November 8, this issue of *Michigan's Labor Market News* revisits an important topic affecting the state's labor market and economy: Science, Technology, Engineering, and Math (STEM). Our *Feature Article* provides an overview of Michigan's STEM labor market. We learn that Michigan ranked 7th nationally in terms of the share of STEM jobs at 7.3 percent and 10th by number of STEM jobs at 316,000. Comparing several supply and demand variables, our authors show that "70 percent of STEM employment was in job titles that show a balance between supply and demand," but identify several STEM occupations with a potential shortage of talent.

Building on this month's theme, our *Occupational Focus* highlights *Environmental scientists and specialists*, our *Map of the Month* displays shares of STEM employment nationally, and our *Relevant Rankings* lists states by STEM program completers and STEM employment. Finally, we share what our valued partners in the newly formed Department of Labor and Economic Opportunity (LEO) and the MiSTEM Network are doing to promote STEM across the state.

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



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## MICHIGAN'S JOBLESS RATE DECLINES IN AUGUST 2019

Michigan's seasonally adjusted jobless rate inched down by a tenth of a percentage point to 4.2 percent in August. Employment advanced by 4,000 over the month while the number of unemployed edged down by 1,000. Michigan's workforce rose slightly in August.

Since August 2018, Michigan's jobless rate advanced by three-tenths of a percentage point. During this same period, the national unemployment rate fell by a tenth of a percentage point to 3.7 percent. Michigan's August jobless rate was half a percentage point above the U.S. rate.

Over the year, total employment in the state rose by 50,000, or 1.1 percent, to 4,753,000. Michigan's August employment total was the highest recorded level in the state since September 2005. Total unemployment in the

state expanded by 20,000 since August 2018 (+10.5 percent). The drop in the number of unemployed in August followed five consecutive monthly increases.

Michigan's total labor force has advanced in each month of 2019 to date. Over the year, Michigan's workforce grew by 69,000, or 1.4 percent, a rate similar to that of the nation.

### Detroit Metropolitan Region Jobless Rate Moves Up in 2019

The second chart on the following page shows a comparison of the seasonally adjusted jobless rates for the Detroit metropolitan statistical area (MSA) and the state of Michigan for the two-year period from August 2017 to August 2019. From August 2017 until May of 2018, the state's jobless rate surpassed that of the Detroit

MSA. However, the difference between the two rates diminished during this period, resulting in an identical rate of 4.0 percent for both areas in June of 2018.

During the last five months of 2018, the Detroit region and Michigan exhibited similar jobless rates, including a period of identical jobless rates of 4.0 percent from October 2018 to December 2018.

The Detroit MSA jobless rate rose above Michigan's rate during the six-month period from March 2019 to August 2019. Detroit's August jobless rate of 4.5 percent was three-tenths of a percentage point above the statewide rate of 4.2 percent.

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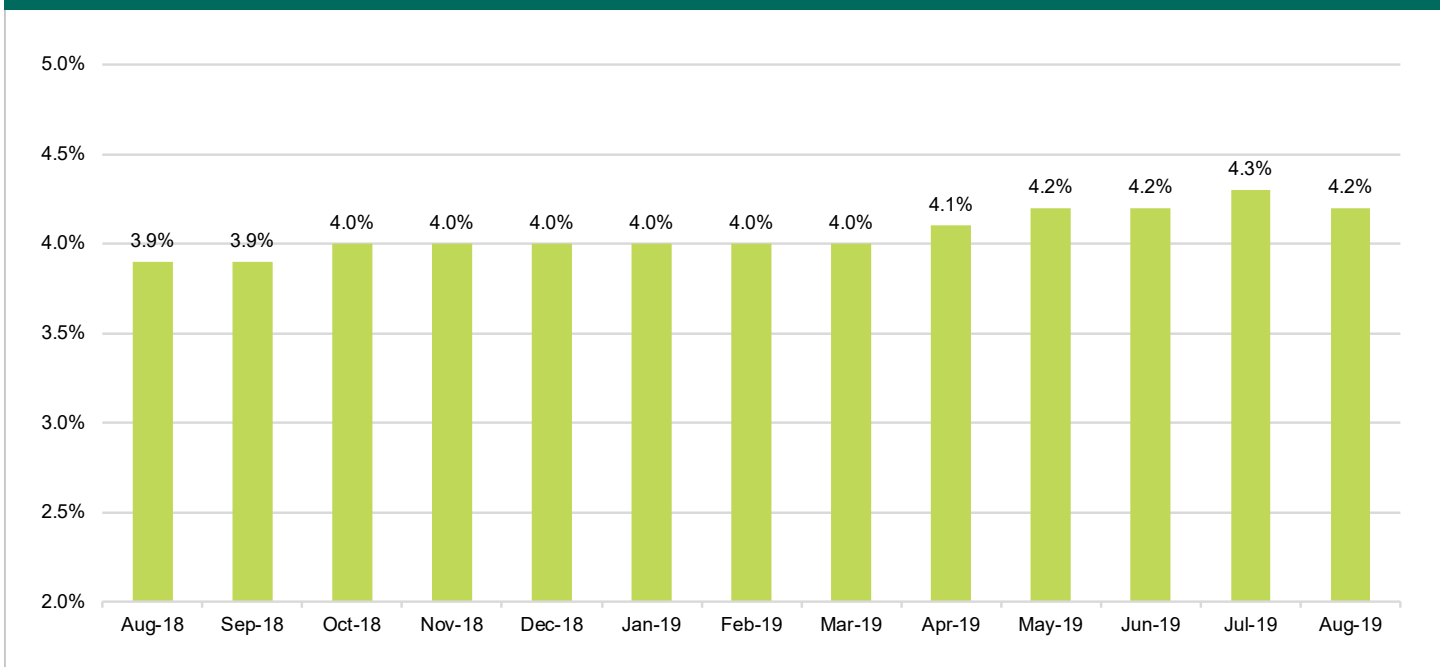
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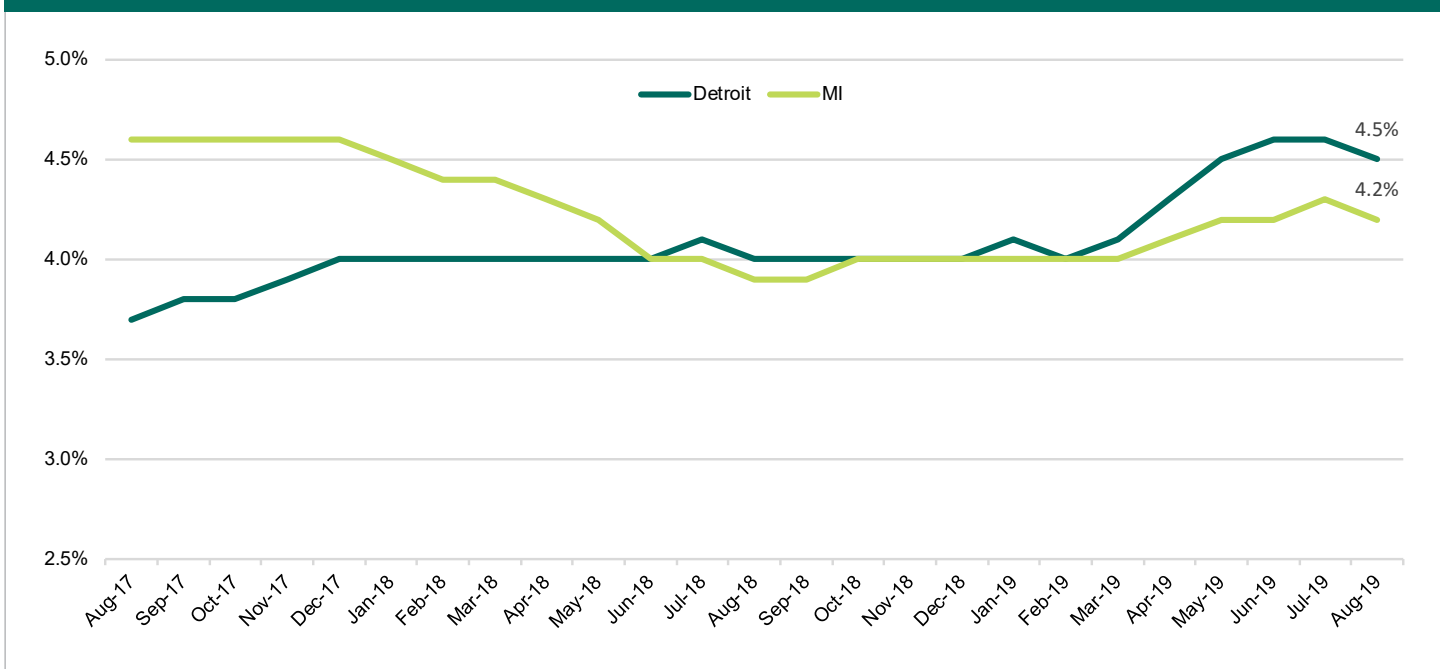
## MICHIGAN LABOR FORCE ESTIMATES (SEASONALLY ADJUSTED)

	AUGUST 2019	JULY 2019	AUGUST 2018	CHANGE OVER THE MONTH	CHANGE OVER THE YEAR
Labor Force	4,963,000	4,961,000	4,894,000	+2,000	+69,000
Employed	4,753,000	4,749,000	4,703,000	+4,000	+50,000
Unemployed	211,000	212,000	191,000	-1,000	+20,000
Jobless Rate	4.2	4.3	3.9	-0.1	+0.3

## MICHIGAN JOBLESS RATES, AUGUST 2018–AUGUST 2019



## DETROIT MSA AND MICHIGAN JOBLESS RATES, AUGUST 2017–AUGUST 2019





# MICHIGAN JOB TRENDS BY INDUSTRY SECTOR

## Monthly Overview

Payroll job levels in Michigan rose by 6,100 to 4,447,400 in August. Job advances primarily occurred in *Government* (+5,400) and *Professional and business services* (+4,600). Modest payroll gains were also recorded in *Financial activities* (+1,200) and *Education and health services* (+700). The major industry sectors with the largest job declines over the month were *Trade, transportation and utilities* (-2,000) and *Manufacturing* (-1,700). Several other industries had small job reductions in August. *Mining and logging* payroll counts were unchanged over the month.

## Over-the-Year Analysis

Since August 2018, Michigan nonfarm job levels moved up by 16,000 or 0.4 percent. This was well below the 1.4 percent growth nationally over the year. In Michigan, the major sectors of *Professional and business services* (+7,100), *Leisure and hospitality* (+6,300), and *Government* (+6,200) added the most jobs. Significant payroll increases also occurred in *Financial activities* (+4,400) and *Other services* (+3,800) with smaller gains recorded in *Manufacturing* (+1,700), *Information* (+1,200), and *Construction* (+400).

These additions were offset, however, by job declines in *Education and health services* (-8,800) and *Trade, transportation and utilities* (-6,300). *Mining and logging* employment remained unchanged while job levels rose by 4,200 in the state's key *Transportation equipment manufacturing* industry.

## 2019 Job Change by Major Sector

In Michigan, total nonfarm payroll employment has increased in five out of the first eight months of 2019, edging up by 0.3 percent and adding 15,200 jobs. This was below the 0.8 percent rate of growth nationally in the first eight months of this year and also below the 1.1 percent job gain statewide during the January through August period in 2018.

The broad industry sectors in Michigan with higher job growth during the first eight months of 2019 compared to the same period in 2018 were *Mining and logging*, *Information*, *Financial activities*, *Leisure and hospitality*, *Other services*, and *Government*.

The broad sectors with 2019 job growth below the January-August 2018 pace, or with job contractions so far this year, were *Professional and business services*, *Construction*, *Manufacturing*, *Trade, transportation, and utilities*, and *Education and health services*.

## Significant Industry Employment Developments

### MANUFACTURING

The number of payroll jobs declined by 1,700 in August. This decrease occurred in both the *Durable goods* (-1,000) and *Nondurable goods* (-700) subsectors. For the most part, however, job levels in this sector have been relatively stable so far this year. A major influence on *Manufacturing* job levels during the summer months is model changeover in the automotive industry. In a typical year, job levels decline in July and rebound in August. July layoffs and August recalls occurred again this year, but the August recall in the *Transportation equipment manufacturing* industry (-900) was somewhat muted. The August job reductions in the *Nondurable goods* sector were partly due to job cuts in *Printing and related support activities*.

Since August 2018, *Manufacturing* payrolls have grown by 1,700 (+0.3 percent) with all of this increase recorded in the *Durable goods* (+3,400) subsector. Nationally, broad sector payrolls grew by 3,000 jobs during August and by 1.1 percent over the year.

### LEISURE AND HOSPITALITY

Job levels moved lower by 900 in August as seasonal job cuts occurred in *Arts, entertainment, and recreation* (-600) and *Accommodation and food services* (-300). This industry sector has a significant seasonal trend in hiring patterns in Michigan. Job levels tend to rise significantly in the spring and decline as the tourism season winds down in August.

This year, seasonal hiring started strong in March and continued at high levels through June. In previous years most of the payroll cutbacks would start in September. In 2019, unadjusted job levels declined in August, and this was likely related to an earlier start to the school year in many districts throughout the state. Over the year, job levels have grown by 6,300 or 1.4 percent. All of these job gains

occurred in *Accommodation and food services* (+7,400). Nationally, employment rose by 12,000 in August and by 1.9 percent over the year.

### GOVERNMENT

Public sector payrolls grew by 5,400 jobs in August. The largest portion of this gain was reported at the *Local government* level (+4,300) and was partially due to hiring among school districts that began classes earlier during this school year. *Federal government* job levels rose by 1,000 as the hiring of workers for the 2020 Census began. Since August 2018, the total number of public sector jobs has increased by 6,200 with the majority of the hiring in *Local government*. Nationally, job levels rose by 34,000 over the month and by 0.4 percent over the year.

## Metropolitan Statistical Areas (MSAs)

On a not seasonally adjusted basis, seven Michigan regions had job gains in August. These job advances ranged from 0.1 percent in the Lansing and Detroit metro areas to 0.9 percent in Jackson. Four other regions besides Jackson recorded job additions above the statewide average of 0.2 percent and included Battle Creek (+0.3 percent), Ann Arbor and Flint (+0.4 percent each), and Kalamazoo (+0.7 percent).

Six metropolitan areas recorded job declines that ranged from 0.2 percent in Benton Harbor to 0.8 percent in Bay City. Common to these areas were nominal reductions in the *Private service providing* sector. The Benton Harbor, Saginaw, and Monroe metro areas also saw small job cuts in *Manufacturing* during August.

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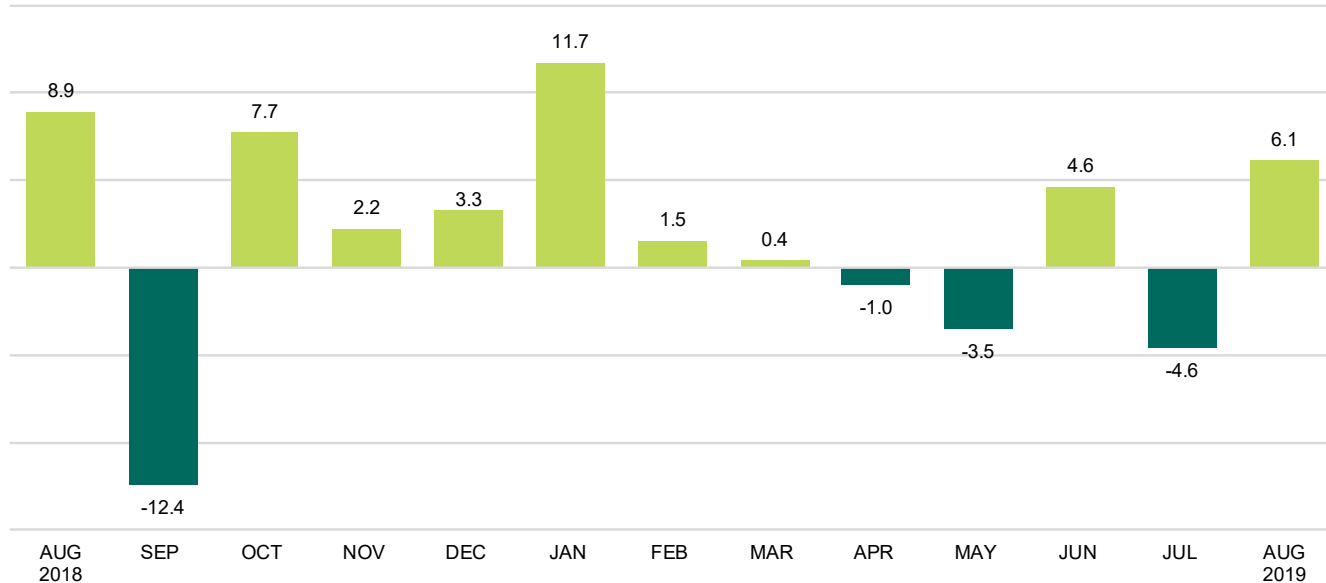




MICHIGAN PAYROLL JOBS (SEASONALLY ADJUSTED)							
INDUSTRY	AUGUST 2019	JULY 2019	AUGUST 2018	OVER THE MONTH		OVER THE YEAR	
				LEVEL	PERCENT	LEVEL	PERCENT
<b>TOTAL NONFARM</b>	<b>4,447,400</b>	<b>4,441,300</b>	<b>4,431,400</b>	<b>6,100</b>	<b>0.1%</b>	<b>16,000</b>	<b>0.4%</b>
Total Private	3,830,300	3,829,600	3,820,500	700	0.0%	9,800	0.3%
Private Service-Providing	3,018,800	3,015,600	3,011,100	3,200	0.1%	7,700	0.3%
<b>GOODS-PRODUCING</b>	<b>811,500</b>	<b>814,000</b>	<b>809,400</b>	<b>-2,500</b>	<b>-0.3%</b>	<b>2,100</b>	<b>0.3%</b>
Mining, Logging, and Construction	178,600	179,400	178,200	-800	-0.4%	400	0.2%
Mining and Logging	7,200	7,200	7,200	0	0.0%	0	0.0%
Construction	171,400	172,200	171,000	-800	-0.5%	400	0.2%
Manufacturing	632,900	634,600	631,200	-1,700	-0.3%	1,700	0.3%
Durable Goods	482,000	483,000	478,600	-1,000	-0.2%	3,400	0.7%
Transportation Equipment Manufacturing	197,500	198,400	193,300	-900	-0.5%	4,200	2.2%
Non-Durable Goods	150,900	151,600	152,600	-700	-0.5%	-1,700	-1.1%
<b>SERVICE-PROVIDING</b>	<b>3,635,900</b>	<b>3,627,300</b>	<b>3,622,000</b>	<b>8,600</b>	<b>0.2%</b>	<b>13,900</b>	<b>0.4%</b>
Trade, Transportation, and Utilities	787,400	789,400	793,700	-2,000	-0.3%	-6,300	-0.8%
Wholesale Trade	172,800	172,800	172,100	0	0.0%	700	0.4%
Retail Trade	462,400	463,700	471,500	-1,300	-0.3%	-9,100	-1.9%
Transportation, Warehousing, and Utilities	152,200	152,900	150,100	-700	-0.5%	2,100	1.4%
Information	57,300	57,400	56,100	-100	-0.2%	1,200	2.1%
Financial Activities	223,200	222,000	218,800	1,200	0.5%	4,400	2.0%
Finance and Insurance	166,100	165,800	163,900	300	0.2%	2,200	1.3%
Real Estate and Rental and Leasing	57,100	56,200	54,900	900	1.6%	2,200	4.0%
Professional and Business Services	668,600	664,000	661,500	4,600	0.7%	7,100	1.1%
Professional, Scientific, and Technical Services	306,100	304,900	299,400	1,200	0.4%	6,700	2.2%
Management of Companies and Enterprises	67,700	67,500	69,400	200	0.3%	-1,700	-2.4%
Administrative and Support and Waste Management and Remediation Services	294,800	291,600	292,700	3,200	1.1%	2,100	0.7%
Education and Health Services	669,800	669,100	678,600	700	0.1%	-8,800	-1.3%
Educational Services	70,600	70,600	74,600	0	0.0%	-4,000	-5.4%
Health Care and Social Assistance	599,200	598,500	604,000	700	0.1%	-4,800	-0.8%
Leisure and Hospitality	441,600	442,500	435,300	-900	-0.2%	6,300	1.4%
Arts, Entertainment, and Recreation	52,400	53,000	53,500	-600	-1.1%	-1,100	-2.1%
Accommodation and Food Services	389,200	389,500	381,800	-300	-0.1%	7,400	1.9%
Other Services	170,900	171,200	167,100	-300	-0.2%	3,800	2.3%
Government	617,100	611,700	610,900	5,400	0.9%	6,200	1.0%
Federal Government	53,500	52,500	52,600	1,000	1.9%	900	1.7%
State Government	192,800	192,700	192,700	100	0.1%	100	0.1%
Local Government	370,800	366,500	365,600	4,300	1.2%	5,200	1.4%



## MICHIGAN OVER THE MONTH PAYROLL JOB CHANGE (IN THOUSANDS)



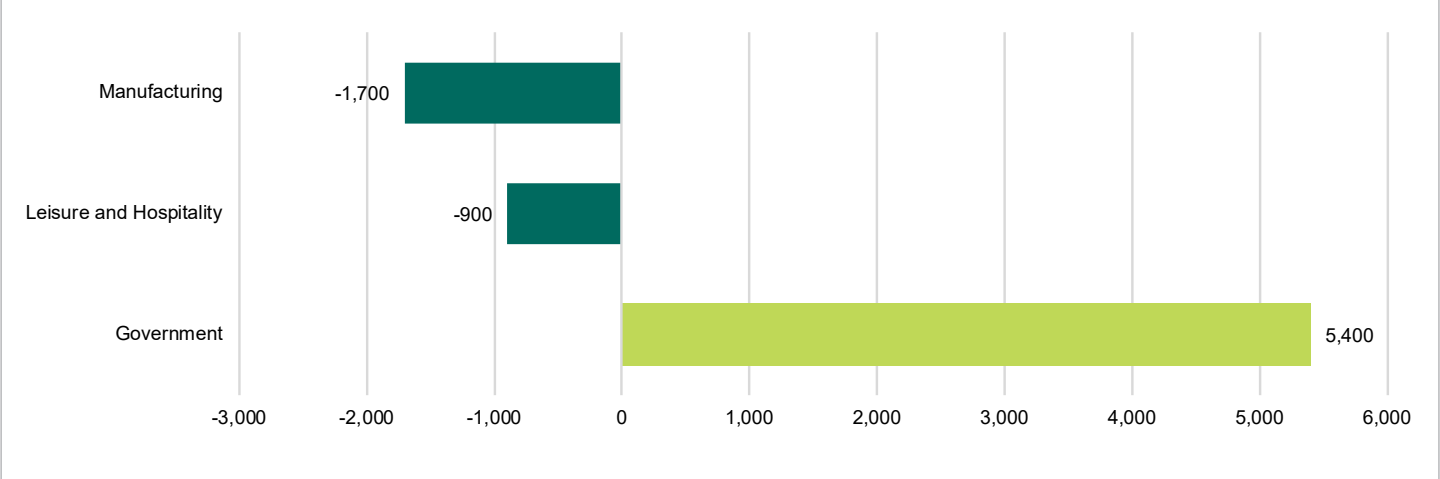
## JOB CHANGE BY MAJOR INDUSTRY SECTOR, MICHIGAN, JANUARY–AUGUST 2018 AND JANUARY–AUGUST 2019

INDUSTRY	2018		2019	
	LEVEL	PERCENT	LEVEL	PERCENT
<b>TOTAL NONFARM</b>	<b>47,000</b>	<b>1.1%</b>	<b>15,200</b>	<b>0.3%</b>
Mining and Logging	0	0.0%	100	1.4%
Construction	7,500	4.6%	-3,200	-1.8%
Manufacturing	9,900	1.6%	-1,300	-0.2%
Trade, Transportation, and Utilities	7,200	0.9%	-7,000	-0.9%
Information	-500	-0.9%	1,600	2.9%
Financial Activities	1,400	0.6%	3,000	1.4%
Professional and Business Services	10,100	1.6%	6,600	1.0%
Educational and Health Services	2,100	0.3%	-7,500	-1.1%
Leisure and Hospitality	2,200	0.5%	7,000	1.6%
Other Services	1,800	1.1%	4,300	2.6%
Government	6,000	1.0%	11,600	1.9%

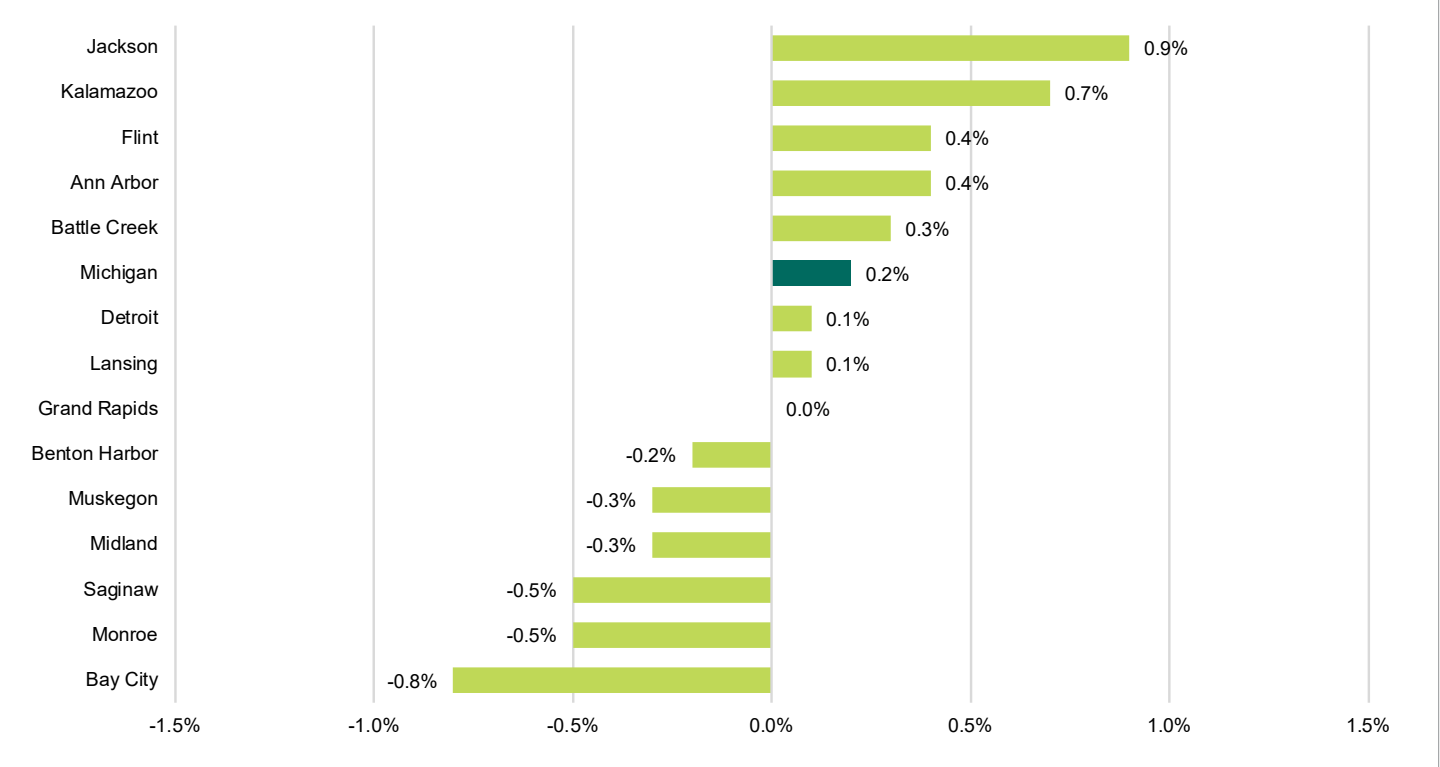




**MICHIGAN OVER THE MONTH JOB CHANGE BY SELECT INDUSTRY, JULY–AUGUST 2019**



**METROPOLITAN AREA JOB CHANGE, JULY–AUGUST 2019 (NOT SEASONALLY ADJUSTED)**





# REGIONAL LABOR MARKET ANALYSIS

## ANN ARBOR METROPOLITAN AREA

- The jobless rate in Ann Arbor fell by nine-tenths of a percentage point over the month to 3.3 percent.
- Total unemployment in the MSA edged up by 4.9 percent over the year, an increase slightly above that of the state at 4.5 percent.

### MONTHLY INDUSTRY DEVELOPMENTS

- Payroll jobs in Ann Arbor rose by 900 over the month, or 0.4 percent, largely due to a 1,200 seasonal job increase in *Government*.

### INDUSTRY TRENDS

- *Accommodation and food services* in Ann Arbor reached its all-time high level of 16,500 jobs in August, a level last seen in June of 2019.

## BATTLE CREEK METROPOLITAN AREA

- The Battle Creek metro area jobless rate fell by seven-tenths of a percentage point over the month to 4.5 percent in August.
- The area exhibited the largest over-the-year unemployment rate increase out of all Michigan metro areas, advancing by 0.5 percentage points since August 2018.

### MONTHLY INDUSTRY DEVELOPMENTS

- Nonfarm employment in Battle Creek edged up by 200 over the month, or 0.3 percent.
- All industries exhibited little or no change in August.

### INDUSTRY TRENDS

- Battle Creek was the only region with no payroll job change over the year.

## BAY CITY METROPOLITAN AREA

- Bay City's unemployment rate receded by nine-tenths of a percentage point in August to 4.6 percent.
- Bay City was the only area to exhibit an employment decline over the year, edging down by 0.2 percent since August 2018.

### MONTHLY INDUSTRY DEVELOPMENTS

- Nonfarm jobs in Bay City fell by 300 over the month, or 0.8 percent, with minor declines seen in multiple Bay City industries.

### INDUSTRY TRENDS

- Bay City's payroll employment in the *Trade, transportation and utilities* industry is trending lower in 2019 than it has in 20 years.

## DETROIT-WARREN-DEARBORN METRO AREA

- Joblessness in the Detroit metro region fell by eight-tenths of a percentage point over the month to 4.5 percent.
- Detroit was the only region to exhibit no change in the jobless rate over the year.

### MONTHLY INDUSTRY DEVELOPMENTS

- Detroit's nonfarm job count edged up by 2,500 over the month, or 0.1 percent.
- A gain of 4,400 jobs in *Manufacturing* was partially offset by declines in *Leisure and hospitality* and *Trade, transportation, and utilities*.

### INDUSTRY TRENDS

- The Detroit region's *Mining, logging and construction* industry reached a 14-year high level of 82,000 jobs in August.

## FLINT METROPOLITAN AREA

- The unemployment rate in Flint fell by 1.2 percentage points in August to 4.9 percent.
- Flint's civilian workforce advanced by 2.2 percent over the year.

### MONTHLY INDUSTRY DEVELOPMENTS

- Payroll employment in Flint advanced by 600 over the month, or 0.4 percent, mainly due to recalls in the region's *Manufacturing* sector.

### INDUSTRY TRENDS

- Flint's *Durable goods* sector reached an 11-year high level of 10,700 jobs in August.

## GRAND RAPIDS-WYOMING METRO AREA

- The Grand Rapids unemployment rate fell by eight-tenths of a percentage point between July and August to 3.1 percent.
- Total unemployment in Grand Rapids advanced by 10.2 percent over the year, an increase over double that of the state.

### MONTHLY INDUSTRY DEVELOPMENTS

- Nonfarm employment in Grand Rapids inched down by 200 over the month.
- A seasonal increase of 1,300 jobs in the region's *Government* sector was offset by declines in most of the other industries.

### INDUSTRY TRENDS

- *Financial activities* in Grand Rapids reached an all-time high level of 27,200 jobs in August.

## CIVILIAN LABOR FORCE AND NONFARM PAYROLL JOBS

	ANN ARBOR			BATTLE CREEK			BAY CITY		
	AUG 2019	JUL 2019	AUG 2018	AUG 2019	JUL 2019	AUG 2018	AUG 2019	JUL 2019	AUG 2018
<b>PLACE OF RESIDENCE</b>									
Labor Force	194,300	195,000	191,600	62,800	63,100	62,100	50,200	50,900	50,100
Employment	187,900	186,700	185,500	60,000	59,800	59,600	47,900	48,100	48,000
Unemployment	6,400	8,200	6,100	2,800	3,300	2,500	2,300	2,800	2,100
Rate (percent)	3.3%	4.2%	3.2%	4.5%	5.2%	4.0%	4.6%	5.5%	4.2%
<b>PLACE OF WORK</b>									
Total Nonfarm Jobs	220,500	219,600	219,700	57,600	57,400	57,600	35,000	35,300	35,700
Mining, Logging, and Construction	4,900	4,900	4,700	1,800	1,800	1,800	1,400	1,400	1,400
Manufacturing	15,300	15,200	15,200	12,100	12,100	11,800	4,600	4,600	4,600
Trade, Transportation, and Utilities	25,700	25,900	26,100	9,100	9,200	9,100	7,200	7,300	7,600
Wholesale Trade	6,300	6,300	6,200	*	*	*	*	*	*
Retail Trade	15,500	15,700	16,000	5,800	5,800	5,700	4,800	4,900	5,000
Information	5,500	5,500	5,400	*	*	*	400	400	400
Financial Activities	7,000	7,000	7,100	1,200	1,200	1,200	1,300	1,300	1,300
Professional and Business Services	30,800	30,700	30,500	5,900	5,800	5,900	2,700	2,800	2,700
Educational and Health Services	27,200	27,300	27,400	10,600	10,500	10,800	6,400	6,500	6,600
Leisure and Hospitality	19,300	19,400	18,800	4,600	4,600	4,600	4,500	4,600	4,500
Other Services	6,500	6,600	6,500	1,800	1,800	1,900	1,200	1,200	1,300
Government	78,300	77,100	78,000	10,100	10,000	10,100	5,300	5,200	5,300
	DETROIT-WARREN- DEARBORN			FLINT			GRAND RAPIDS-WYOMING		
	AUG 2019	JUL 2019	AUG 2018	AUG 2019	JUL 2019	AUG 2018	AUG 2019	JUL 2019	AUG 2018
<b>PLACE OF RESIDENCE</b>									
Labor Force	2,180,000	2,202,000	2,142,000	184,200	185,600	180,200	584,600	588,000	575,000
Employment	2,081,000	2,086,000	2,045,000	175,200	174,300	172,000	566,300	565,100	558,400
Unemployment	98,000	116,000	97,000	9,000	11,400	8,200	18,300	23,000	16,600
Rate (percent)	4.5%	5.3%	4.5%	4.9%	6.1%	4.6%	3.1%	3.9%	2.9%
<b>PLACE OF WORK</b>									
Total Nonfarm Jobs	2,034,100	2,031,600	2,039,900	142,500	141,900	140,500	564,500	564,700	561,300
Mining, Logging, and Construction	82,000	81,900	79,900	6,500	6,400	6,200	26,700	27,000	26,200
Manufacturing	258,100	253,700	262,100	13,700	13,200	12,700	119,700	120,600	118,600
Trade, Transportation, and Utilities	377,100	378,300	376,400	29,700	29,600	29,700	98,200	98,500	98,800
Wholesale Trade	87,000	87,900	87,200	5,600	5,500	5,300	32,000	31,900	32,200
Retail Trade	209,700	210,200	212,700	19,500	19,600	20,300	50,200	50,600	50,500
Information	27,200	27,300	27,600	3,800	3,800	3,800	6,500	6,600	6,500
Financial Activities	117,200	117,800	117,600	6,000	6,000	6,100	27,200	26,800	26,500
Professional and Business Services	396,100	394,800	401,800	16,700	16,800	16,400	73,800	73,900	75,700
Educational and Health Services	312,700	312,300	316,600	25,900	26,000	26,400	91,000	90,900	91,100
Leisure and Hospitality	212,800	214,400	208,600	16,300	16,400	15,800	54,300	54,500	52,100
Other Services	75,900	75,600	76,300	5,600	5,600	5,500	22,600	22,700	22,400
Government	175,000	175,500	173,000	18,300	18,100	17,900	44,500	43,200	43,400
* Data Not Available									



## JACKSON METROPOLITAN AREA

- Joblessness in the Jackson region fell by one percentage point in August down to 3.9 percent.
- The Jackson MSA tied with the Kalamazoo MSA for the largest over-the-month employment increase, a gain of 1.0 percent since July 2019.

### MONTHLY INDUSTRY DEVELOPMENTS

- The industries with the largest August job gains in Jackson were *Government* (+300) and *Educational and health services* (+200).

### INDUSTRY TRENDS

- Jobs in Jackson's *Goods producing* sector matched a 14-year high level of 12,400 in August.

## KALAMAZOO-PORTAGE METRO AREA

- The Kalamazoo-Portage MSA jobless rate fell by eight-tenths of a percentage point in August to 3.8 percent.
- Kalamazoo and Jackson were the only labor markets with slight labor force increases in August.

### MONTHLY INDUSTRY DEVELOPMENTS

- Most industries showed little or no change in the Kalamazoo-Portage region in August, except for the *Government* sector which exhibited an over-the-month gain of 700.

### INDUSTRY TRENDS

- For the fourth consecutive month, Kalamazoo's *Financial activities* sector exhibited its record high level of 8,500 jobs in August.

## LANSING-EAST LANSING METRO AREA

- Joblessness in the Lansing region fell by a full percentage point in August down to 3.6 percent.
- Total employment in the Lansing MSA edged up by 0.3 percent over the month.

### MONTHLY INDUSTRY DEVELOPMENTS

- The Lansing payroll job count rose by 200 over the month, or 0.1 percent, with a nearly equal amount of major industry sectors exhibiting equivalent increases and decreases over the month.

### INDUSTRY TRENDS

- In August, Lansing's *Professional, scientific, and technical services* industry reached a fifteen-year high level of 9,400 jobs, a level last seen in April 2004.

## MIDLAND METROPOLITAN AREA

- Midland's jobless rate declined by seven-tenths of a percentage point over the month to 3.8 percent in August.
- Midland was one of only two Michigan regions to exhibit no change in employment over the month.

### MONTHLY INDUSTRY DEVELOPMENTS

- The nonfarm job count in Midland fell by 100 over the month, or 0.3 percent.

### INDUSTRY TRENDS

- On a percentage basis, the Midland MSA exhibited the second largest over-the-year decline in payroll employment (behind Bay City), edging down by 0.5 percent since August 2018.

## MONROE METROPOLITAN AREA

- The Monroe metro area jobless rate fell by 1.8 percentage points over the month to 3.9 percent in August.
- The MSA demonstrated the most pronounced over-the-month drop in the unemployment rate in August.

### MONTHLY INDUSTRY DEVELOPMENTS

- Payroll employment in Monroe fell by 200 over the month, or 0.5 percent, with little change seen in most regional industries.

### INDUSTRY TRENDS

- *Retail trade* in Monroe remained stagnant at its low level of 4,700 jobs for the seventh consecutive month in August.

## MUSKEGON METROPOLITAN AREA

- The unemployment rate in Muskegon receded by 1.1 percentage points between July and August to 4.3 percent.
- The area's workforce fell by 1.1 percent over the month.

### MONTHLY INDUSTRY DEVELOPMENTS

- Nonfarm jobs in Muskegon edged down by 200 in August, or 0.3 percent, due to declines in the region's *Leisure and hospitality*, *Other services*, and *Government* sectors.

### INDUSTRY TRENDS

- For the third consecutive month, Muskegon's *Goods producing* sector reached its 18-year high level of 16,700 jobs in August.

## CIVILIAN LABOR FORCE AND NONFARM PAYROLL JOBS

	JACKSON			KALAMAZOO-PORTAGE			LANSING-EAST LANSING		
	AUG 2019	JUL 2019	AUG 2018	AUG 2019	JUL 2019	AUG 2018	AUG 2019	JUL 2019	AUG 2018
<b>PLACE OF RESIDENCE</b>									
Labor Force	74,700	74,600	73,100	169,200	168,900	167,000	245,500	247,400	241,100
Employment	71,700	71,000	70,400	162,700	161,100	161,200	236,700	236,000	233,100
Unemployment	2,900	3,700	2,700	6,500	7,800	5,800	8,800	11,400	8,000
Rate (percent)	3.9%	4.9%	3.7%	3.8%	4.6%	3.5%	3.6%	4.6%	3.3%
<b>PLACE OF WORK</b>									
Total Nonfarm Jobs	58,800	58,300	58,200	147,800	146,800	147,700	231,900	231,700	230,200
Mining, Logging, and Construction	2,100	2,100	2,100	6,800	6,700	6,600	9,000	9,000	8,700
Manufacturing	10,300	10,200	9,900	23,000	22,900	22,800	20,200	19,900	20,100
Trade, Transportation, and Utilities	12,700	12,800	12,500	26,900	26,900	27,000	36,400	36,700	36,800
Wholesale Trade	*	*	*	6,700	6,700	6,700	6,600	6,600	6,700
Retail Trade	6,700	6,700	6,600	16,200	16,200	16,400	20,700	21,100	21,800
Information	300	300	300	800	800	900	2,800	2,800	2,800
Financial Activities	2,100	2,100	2,100	8,500	8,500	8,400	17,300	17,200	16,900
Professional and Business Services	5,000	5,000	5,100	16,200	16,100	17,000	23,100	22,800	22,800
Educational and Health Services	10,200	10,000	10,300	24,000	24,000	24,000	31,700	31,700	31,800
Leisure and Hospitality	5,700	5,700	5,600	17,400	17,400	17,200	20,000	20,100	19,800
Other Services	2,500	2,500	2,600	5,300	5,300	5,300	10,700	10,700	10,900
Government	7,900	7,600	7,700	18,900	18,200	18,500	60,700	60,800	59,600
	MIDLAND			MONROE			MUSKEGON		
	AUG 2019	JUL 2019	AUG 2018	AUG 2019	JUL 2019	AUG 2018	AUG 2019	JUL 2019	AUG 2018
<b>PLACE OF RESIDENCE</b>									
Labor Force	40,500	40,900	40,300	75,600	77,000	75,500	79,800	80,700	78,500
Employment	39,000	39,000	38,800	72,700	72,600	71,900	76,400	76,300	75,200
Unemployment	1,500	1,800	1,400	3,000	4,400	3,600	3,500	4,400	3,300
Rate (percent)	3.8%	4.5%	3.6%	3.9%	5.7%	4.8%	4.3%	5.4%	4.2%
<b>PLACE OF WORK</b>									
Total Nonfarm Jobs	37,700	37,800	37,900	41,300	41,500	41,400	66,800	67,000	66,300
Mining, Logging, and Construction	*	*	*	2,300	2,300	2,100	2,700	2,700	2,500
Manufacturing	*	*	*	5,800	5,900	5,700	14,000	14,000	14,000
Trade, Transportation, and Utilities	*	*	*	10,400	10,400	10,700	14,400	14,300	14,100
Wholesale Trade	*	*	*	1,800	1,800	1,800	*	*	*
Retail Trade	*	*	*	4,700	4,700	4,800	11,500	11,300	11,400
Information	*	*	*	*	*	*	300	300	300
Financial Activities	*	*	*	900	900	1000	1,800	1,800	1,800
Professional and Business Services	*	*	*	5,700	5,600	5,200	3,400	3,400	3,400
Educational and Health Services	*	*	*	4,800	4,800	5,000	12,100	12,100	12,300
Leisure and Hospitality	*	*	*	5,000	5,000	4,900	8,900	9,000	8,700
Other Services	*	*	*	1,400	1,400	1,400	2,400	2,500	2,400
Government	2,600	2,600	2,600	4,700	4,700	4,900	6,800	6,900	6,800
* Data Not Available									



## NILES-BENTON HARBOR METRO AREA

- The unemployment rate in Niles-Benton Harbor receded by eight-tenths of a percentage point between July and August to 4.2 percent.
- Total unemployment dropped by 15.8 percent over the month.

### MONTHLY INDUSTRY DEVELOPMENTS

- Only three industries recorded any job change in August, including *Professional and business services* (+200), *Leisure and hospitality* (-200), and *Manufacturing* (-100).

### INDUSTRY TRENDS

- Jobs in the *Trade, transportation and utilities* industry in the Niles-Benton Harbor MSA have lagged behind prior year levels for the last four months.

## SAGINAW METROPOLITAN AREA

- The Saginaw region jobless rate fell by a full percentage point in August to 4.7 percent.
- Total employment in the region rose by 1.2 percent over the year.

### MONTHLY INDUSTRY DEVELOPMENTS

- Payroll jobs in Saginaw receded by 400, or 0.5 percent, between July and August, with minor job declines seen across multiple regional industries.

### INDUSTRY TRENDS

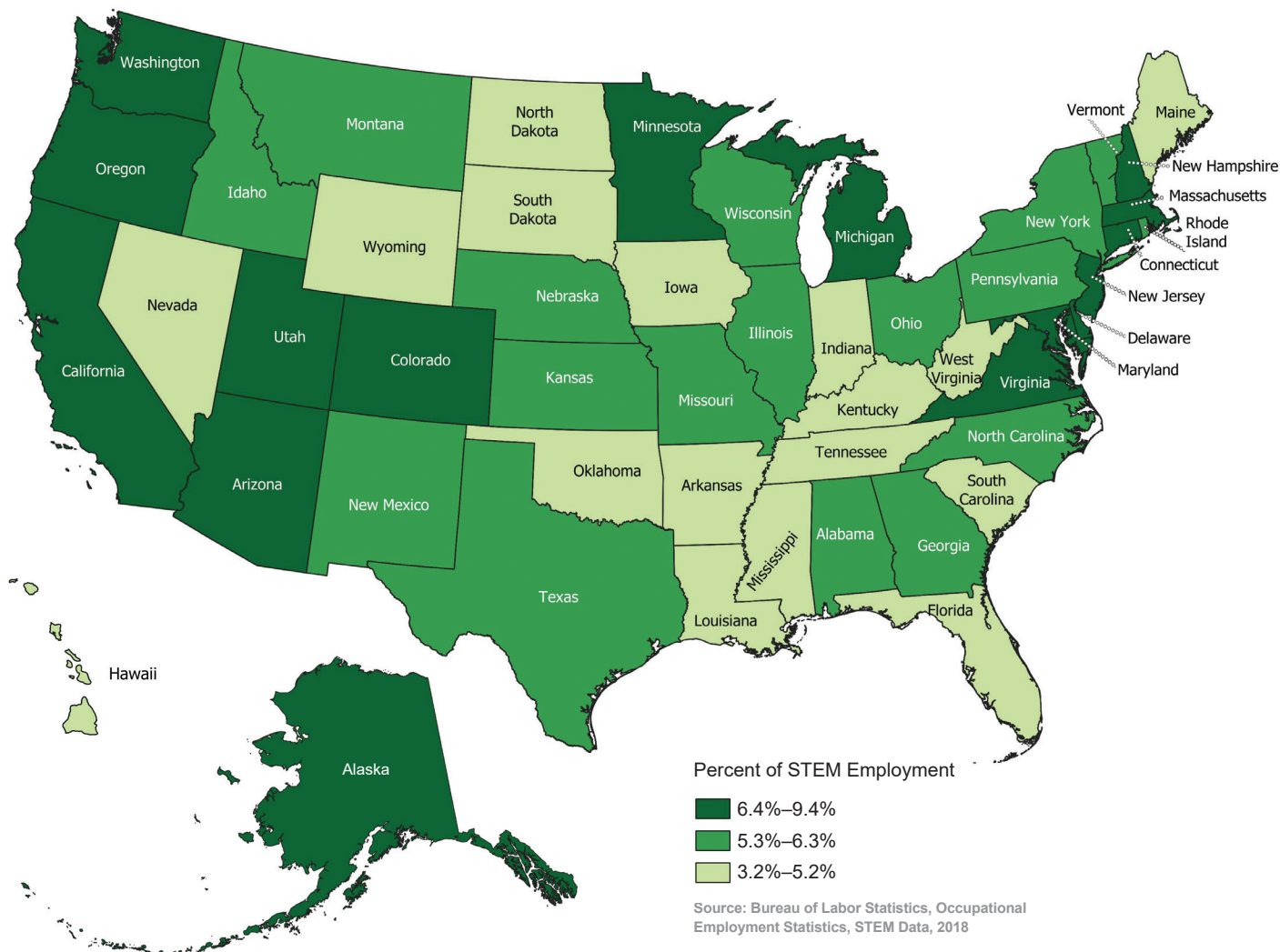
- For the second consecutive month, Saginaw's *Mining, logging and construction* sector matched a ten-year high level of 3,400 jobs.

## CIVILIAN LABOR FORCE AND NONFARM PAYROLL JOBS

	NILES-BENTON HARBOR			SAGINAW					
	AUG 2019	JUL 2019	AUG 2018	AUG 2019	JUL 2019	AUG 2018			
PLACE OF RESIDENCE									
Labor Force	75,100	75,600	73,700	87,300	88,200	86,000			
Employment	71,900	71,800	70,800	83,200	83,100	82,200			
Unemployment	3,200	3,800	2,900	4,100	5,000	3,800			
Rate (percent)	4.2%	5.0%	4.0%	4.7%	5.7%	4.4%			
PLACE OF WORK									
Total Nonfarm Jobs	63,700	63,800	63,200	87,500	87,900	87,300			
Mining, Logging, and Construction	2,300	2,300	2,300	3,400	3,400	3,400			
Manufacturing	13,700	13,800	13,300	12,600	12,700	12,400			
Trade, Transportation, and Utilities	10,600	10,600	11,100	16,600	16,800	16,600			
Wholesale Trade	*	*	*	2,000	2,000	2,100			
Retail Trade	6,900	6,900	7,000	11,900	12,000	11,900			
Information	500	500	500	1,300	1,300	1,300			
Financial Activities	2,500	2,500	2,500	3,600	3,700	3,700			
Professional and Business Services	5,600	5,400	5,300	11,300	11,300	11,400			
Educational and Health Services	9,200	9,200	9,200	15,800	15,800	15,900			
Leisure and Hospitality	8,600	8,800	8,600	9,800	9,800	9,300			
Other Services	2,400	2,400	2,300	3,100	3,100	3,200			
Government	8,300	8,300	8,100	10,000	10,000	10,100			
	UPPER PENINSULA			NORTHEAST MICHIGAN			NORTHWEST MICHIGAN		
	AUG 2019	JUL 2019	AUG 2018	AUG 2019	JUL 2019	AUG 2018	AUG 2019	JUL 2019	AUG 2018
PLACE OF RESIDENCE									
Labor Force	139,200	139,900	137,200	85,400	86,300	84,000	159,700	162,500	155,900
Employment	132,400	131,600	131,200	80,900	80,900	79,800	153,700	155,300	150,300
Unemployment	6,800	8,300	6,000	4,400	5,500	4,100	6,000	7,200	5,600
Rate (percent)	4.9%	5.9%	4.4%	5.2%	6.4%	4.9%	3.7%	4.4%	3.6%

## MAP OF THE MONTH:

# SHARE OF TOTAL STATE EMPLOYMENT IN STEM OCCUPATIONS



This month's map sorts states into three categories based on their share of total employment in STEM occupations. The three categories are: states with an above average share, states with an average share, and states with a below average share.

## Michigan Comfortably in the Top Third of States

In 2018, Michigan employers reported 316,000 jobs in STEM occupations, coming to 7.3 percent of total state employment and ranking Michigan 7th nationally in terms of its share of employment in STEM. Joining Michigan in the top third were some usual suspects in the West and Northeast. Interestingly, several states in the bottom third were concentrated in the

South and West North Central. Among them was Mississippi, which ranked last with just 3.2 percent of state employment in STEM. On the other end, Maryland ranked first with 9.4 percent of state employment in STEM.

Michigan's STEM employment level (316,000) ranked 10th nationally, making Michigan one of eight states to place in the top third in both measures. The state found itself in good company with technology-heavy states such as California, Washington, and Massachusetts and D.C. area states such as Virginia and Maryland. Not surprisingly, California ranked first by level of STEM jobs with 1,265,000.

## Engineering and IT Dominate STEM in Michigan

A state's industrial mix is undoubtedly behind its share of STEM employment. As noted in this month's feature, Michigan's professional services and manufacturing industries drive its STEM employment, evidenced by 80 percent of STEM jobs in Michigan in Engineering and IT occupations. In fact, Michigan ranks first nationally in concentration of *Mechanical engineers* and *Industrial engineers*.

**JASON PALMER**  
Director

**ASHLEY TARVER**  
Demographic Analyst





# SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM) JOBS IN MICHIGAN

Science, technology, engineering, and math (STEM) careers include a wide variety of job titles within fields such as engineering, health care, and the physical and social sciences.

Preparing the workforce for current and future openings in these jobs is an important part of keeping Michigan's economy competitive in a global labor market.

This analysis uses the list of 100 occupations defined as STEM jobs by the U.S. Bureau of Labor Statistics (BLS) and the list of 422 STEM designated degree programs maintained by the U.S. Department of Homeland Security to describe and explain STEM employment and the STEM talent pipeline in Michigan.

- As expected, STEM occupations are high paying, are in high demand, and require high levels of education for entry.
- Likewise, STEM program completers are trending upward, are in advanced award levels, and are disproportionately awarded to men and non-resident aliens.

- Interestingly, most STEM occupations show a balance between supply and demand, but a handful of job titles show a shortage or a surplus.

## Employment and Earnings

Nationally, employment in STEM occupations reached just over 9 million in 2018, accounting for 6.3 percent of total employment that year. Since 2013, jobs in STEM have increased by nearly 1 million or 11.4 percent, above the 9.2 percent overall employment gain during the period.

The median hourly wage for STEM occupations nationally was \$40.81 in 2018, more than two times higher than the non-STEM median wage (\$17.80).

In Michigan, STEM employment was 316,000 in 2018, and represented 7.3 percent of total jobs. The state's share of jobs in STEM ranked 7th nationally, a list led by Maryland with 9.4 percent of employment in STEM.

Since 2013, STEM jobs in Michigan were up by 39,000 or 14 percent, well above the state's 8 percent overall increase in employment.

The median wage for STEM occupations was slightly lower in Michigan at \$38.23, but still double the state's non-STEM wage (\$17.20). Since 2013, the median hourly wage for STEM workers increased by \$3.70 or 10.7 percent, up slightly more than non-STEM jobs.

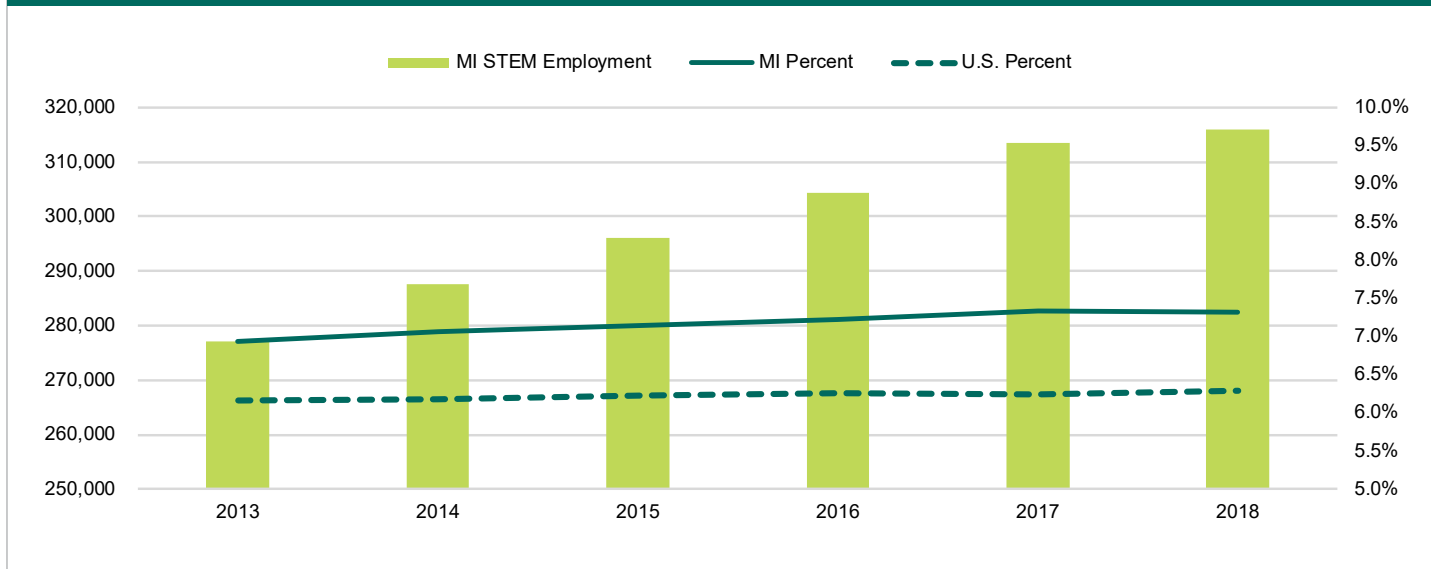
## A Note on the Auto Industry

In Michigan, nearly one in four STEM jobs were in two detailed occupations: *Mechanical engineers* and *Industrial engineers*. Michigan is unique in this regard as the national share was much lower at 6.4 percent. Michigan's high concentration in these specific STEM job titles reflects the state's dominance in *Manufacturing*, and specifically the auto industry.





## EMPLOYMENT IN STEM OCCUPATIONS



Source: Occupational Employment Statistics, Michigan Bureau of Labor Market Information and Strategic Initiatives, DTMB, 2018

### STEM Employment by Region

The Detroit-Warren-Dearborn metro area had the most STEM employment with 190,000 positions, accounting for 60 percent of the state's total STEM employment. This was 9.6 percent of total employment in the metro area, slightly above the statewide average for STEM employment (7.3 percent).

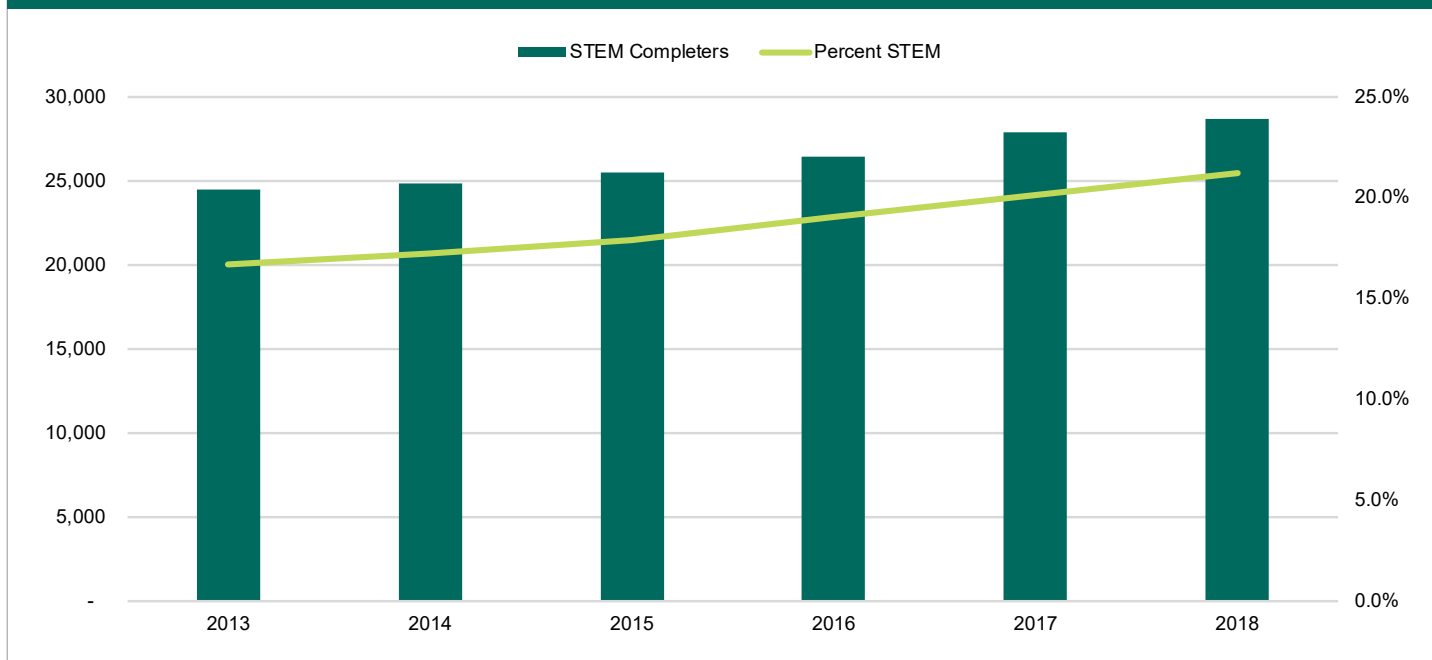
The metro area with the largest concentration of STEM employment was Ann Arbor, where 11 percent of employment was in STEM jobs. In fact, the Ann Arbor metro area ranked 14th nationally in share of STEM jobs. The Detroit metro area ranked 25th and the Midland metro area ranked 31st in the same measure.

### Current and Projected Demand for STEM Employment

This analysis relies on two sources to identify the current and projected demand for STEM employment: Michigan's Job Vacancy Survey and Long-term Employment Projections.



## STEM PROGRAM COMPLETERS AND PERCENT, MICHIGAN



Source: National Center for Education Statistics (NCES), Integrated Postsecondary Education Data System (IPEDS), 2013–2018

- Michigan's Job Vacancy Survey is a scientific survey of approximately 12,000 businesses in Michigan, providing vital information on job openings by occupation, by industry, and by region.
- Long-term Employment Projections are produced in cooperation with the U.S. Department of Labor and provide information on anticipated growth and annual openings by occupation, by industry, and by region.

According to Michigan's Job Vacancy Survey, there were around 10,000 vacancies for STEM occupations in the second quarter of 2019. Compared to the 179,000 total vacancies during the period, STEM job titles were responsible for just 5.8 percent of the total.

Among the STEM occupations with the most vacancies were: *Software developers*, *Mechanical engineers*, *Industrial engineers*, *Computer user support specialists*, *Engineers (all other)*, and *Computer programmers*.

According to Michigan's Long-term Employment Projections, STEM occupations are expected to grow by 13 percent from 2016 to 2026, almost double the 7 percent overall growth expected during the period. In fact, many STEM job titles are expected to grow much faster than average. For example, *Information security analysts* (think cybersecurity) are among the fastest growing jobs, expected to grow five times the average rate. Notably, *Information security analysts* earned a median wage of nearly \$91,000.

Statewide, STEM occupations are expected to generate nearly 30,000 annual openings through 2026. The occupations that are projected to have the most annual openings are *Mechanical engineers*, *Industrial engineers*, *Software developers*, and *Computer user support specialists*, together accounting for more than one in four annual openings in STEM careers.

### Educational Attainment

Typically, STEM occupations require high levels of education. In fact, three in four STEM job titles usually require workers to hold a bachelor's degree or higher, with 25 percent of those requiring a master's degree or above. On the other hand, 21 percent of STEM jobs typically require an associate degree. (The remaining 4 percent either do not require a degree or do not report the education required.)

Eighty-six percent of STEM jobs typically do not require on-the-job training, meaning job seekers may need to acquire most of their skills before starting work. Only a small number of STEM job titles require an internship or residency, among them *Surveyors*, *Architects*, and *Landscape architects*.

### Supply of STEM Workers

Like demand, this analysis relies on two sources to identify the current supply of STEM workers: the Occupational Employment

Statistics (OES) survey and the Integrated Postsecondary Education Data System (IPEDS).

- The OES survey is the largest survey of businesses on employment and wage by occupation. The survey is done by the Michigan Bureau of Labor Market Information and Strategic Initiatives (LMISI) in cooperation with the U.S. Bureau of Labor Statistics.
- IPEDS collects data on postsecondary education in the U.S. in eight areas, including degrees and certificates conferred.

As noted above, the OES survey estimated 316,000 STEM jobs in Michigan in 2018. The two occupational groups with the most STEM employment were *Architecture and engineering* and *Computer and mathematical*, together accounting for 80 percent of all STEM employment. Employment can be an indicator of labor supply as it provides a baseline number of people working in an occupation.

### PROGRAM COMPLETERS

Turning to program completers, the most recent data from IPEDS shows that there were roughly 135,000 people who completed a program from Michigan schools, colleges, or universities during the 2017–2018 academic year. Among them almost 28,700 or 21.2 percent completed a program in one of the 422 STEM fields. At 21.2 percent Michigan ranked 8th in STEM completers as a percentage of all completers.

## STEM OCCUPATIONS DISPLAYING A SHORTAGE, MICHIGAN

OCCUPATION	EMPLOYMENT	HOURLY WAGE RANGE	PROJECTED ANNUAL OPENINGS	EDUCATION
Biological Science Teachers, Postsecondary	1,240	\$31.67–\$51.73	120	Doctoral or Professional Degree
Chemical Technicians	2,170	\$12.96–\$24.35	240	Associate Degree
Civil Engineering Technicians	1,690	\$21.21–\$29.29	280	Associate Degree
Computer Network Support Specialists	2,780	\$21.27–\$35.95	490	Associate Degree
Computer Programmers	3,960	\$28.18–\$44.49	250	Bachelor Degree
Electrical and Electronics Engineering Technicians	2,790	\$21.39–\$34.50	340	Associate Degree
Environmental Engineers	1,420	\$34.95–\$53.41	130	Bachelor's Degree
Information Security Analysts	1,460	\$34.17–\$56.04	240	Bachelor's Degree
Mathematical Science Teachers, Postsecondary	1,730	\$28.23–\$52.16	140	Doctoral or Professional Degree
Mechanical Drafters	2,530	\$21.19–\$34.31	410	Associate Degree
Medical Scientists, Except Epidemiologists	2,550	\$22.25–\$38.21	370	Doctoral or Professional Degree
Operations Research Analysts	1,640	\$32.75–\$51.37	180	Bachelor's Degree
Web Developers	2,690	\$22.84–\$40.05	300	Associate Degree

Source: Occupational Employment Statistics, Michigan Bureau of Labor Market Information and Strategic Initiatives, DTMB; Industry and Occupational Employment Projections (2016–2026), Michigan Bureau of Labor Market Information and Strategic Initiatives, DTMB; Table 5.3 Educational Attainment for Workers 25 years and Older by Detailed Occupation, 2016–17, U.S. Bureau of Labor Statistics

Nationwide, 17.8 percent of all completers earned an award in a STEM program. With 28,700 award completers, Michigan ranked 9th nationally in the number of STEM completers. The state ranks 12th in total completers across all programs.

Since the 2013–2014 academic year, the number of STEM completers grew 16.9 percent while total completers of all programs fell 8.2 percent in Michigan. Nationwide completers in STEM programs grew 31.2 percent while total completers grew 5.0 percent.

### AWARD LEVEL

The majority of STEM completers earned a bachelor's degree, but people finished programs in a range of levels:

- 57 percent earned a bachelor's degree
- 23 percent earned a master's degree (or postbaccalaureate certificate)
- 10 percent earned an associate degree
- 4 percent earned a doctorate degree
- The remaining 6 percent of awards were in short-term programs, typically lasting less than two years.

### TOP DEGREES

The STEM degrees with the highest number of awards were mechanical engineering, biology, computer and information sciences, and electrical and electronics engineering. These made up 27.0 percent of all STEM degrees awarded in Michigan.

### DEMOGRAPHICS

Completers of STEM programs were predominately male. Of the 28,700 STEM completers, 65.2 percent were male. This is in contrast to completers of all programs where only 42.5 percent were male.

Interestingly, non-resident aliens received 18.5 percent of total STEM degrees compared to just 7.3 percent of all degrees. Among degrees earned by non-resident aliens, 53.8 percent were in STEM programs.

### Equilibrium in the STEM Labor Market

Understanding supply and demand in the labor market for STEM workers is important in knowing whether educational institutions and training providers are graduating enough people from STEM programs to fill current and future vacancies in STEM jobs.

Linskey (2018) analyzed 366 occupations in the Michigan labor market and calculated for each a "talent gap" based on five supply variables and three demand variables. The talent gap was used to classify occupations in one of three groups: occupations with a shortage, occupations in alignment, and occupations with a surplus.

As noted above, most STEM occupations are aligned. In fact, 70 percent of STEM employment was in job titles that show

a balance between supply and demand. Conversely, 10 percent of STEM employment was in occupations that show some level of shortage and 6 percent was in job titles with a surplus. (The remaining 14 percent of employment was in unanalyzed occupations, mostly because of their small size or because of missing data.)

Particularly important are the jobs that showed some level of shortage. Table 1 lists these occupations, along with information on employment, wages, projected openings, and typical education requirements.

### References

Linskey, Evan. 2018. "An Analysis of Occupational Supply and Demand in the Michigan Labor Market." Michigan's Labor Market News, Vol. 74, Issue 10. Lansing, MI: Bureau of Labor Market Information and Strategic Initiatives, Michigan Department of Technology, Management & Budget.

**EVAN LINSKEY**  
Economic Analyst

**CATHERINE CLOSNER**  
Economic Analyst





## OCCUPATIONAL FOCUS

# ENVIRONMENTAL SCIENTISTS AND SPECIALISTS

As discussed in this issue's feature article, engineering occupations tend to fuel much of Michigan's STEM-related workforce and economy. This is largely due to the rich history of the state's automotive manufacturing sector and the prevalence of strong engineering programs throughout Michigan's university system. However, there are many other STEM occupations apart from engineering (and computer science) that are important to the state's economy and well-being. This month's *Occupational Focus* centers on one of these, *Environmental scientists and specialists, including health*.

According to the BLS, individuals working in this occupation "conduct research or perform investigation for the purpose of identifying, abating, or eliminating sources of pollutants or hazards that affect either the environment or the health of the population. Using knowledge of various scientific disciplines, may collect, synthesize, study, report, and recommend action

based on data derived from measurements or observations of air, food, soil, water, and other sources." Nationally, the majority of these jobs are found in either *Government* (43 percent) or *Professional, scientific, and technical services* (39 percent).

Examples of job titles reported to BLS include: Environmental Analyst, Environmental Health and Safety Specialist, Environmental Programs Specialist, Environmental Protection Specialist, Environmental Scientist, Environmental Specialist, Hazardous Substances Scientist, Registered Environmental Health Specialist (REHS), Research Environmental Scientist, Senior Environmental Scientist.

Many *Environmental scientists and specialists* spend time working outdoors or in laboratory environments. Those who work in *Government* help collect and analyze data that may ultimately be used in broad or specific environmental policy-making. Those employed by professional

consulting and law firms may be contracted by private entities as well and government and non-profit agencies to help study and understand environmental impacts of activities or current or proposed policies.

Some of the detailed work activities of people working in this occupation include:

- Advising others about environmental management or conservation.
- Developing environmental sustainability plans or projects.
- Compiling environmental or climatological data.
- Researching environmental impact of industrial or development activities.
- Providing technical information or assistance to the public.



## MICHIGAN ENVIRONMENTAL SCIENTISTS AND SPECIALISTS BY THE NUMBERS



**2,780**  
TOTAL  
EMPLOYMENT 2018

**9TH**  
NATIONAL  
EMPLOYMENT RANK



**6.4**  
JOBS PER  
10,000 TOTAL

**1.2**  
LOCATION  
QUOTIENT



**\$63,970**  
MEDIAN  
ANNUAL WAGE

**\$30.75**  
MEDIAN  
HOURLY WAGE



**+10.6%**  
2016-2026 PROJECTED  
JOB GROWTH

**260**  
PROJECTED ANNUAL  
OPENINGS



**BACHELOR'S  
DEGREE**  
REQUIRED  
EDUCATION

The majority of these jobs require at least a bachelor's degree in related fields (over 70 percent nationally) while some higher-level positions may prefer workers to have additional education beyond that (28 percent have a master's or professional degree). The associated Classification for Instructional Program (CIP) codes associated with this occupation include:

- Environmental Studies
- Environmental Science
- Marine Sciences

- Environmental Chemistry
- Environmental Health

Related occupations include:

- Environmental Compliance Inspectors
- Environmental Engineers
- Conservation Scientists
- Geoscientists, Except Hydrologists and Geographers
- Hydrologists

The outlook for this occupation is generally positive. *Environmental scientists and specialists* are projected to outpace total employment growth in Michigan through 2026, with median wages that are 30 percent higher than the statewide median for all jobs. As with many occupations, job openings in this field will be largely concentrated in Michigan's urban areas.

**MARK REFFITT**  
Economic Specialist

### ENVIRONMENTAL SCIENTISTS PER 10,000 EMPLOYED

AREA	ENVIRONMENTAL SCIENTISTS AND SPECIALISTS	ENVIRONMENTAL SCIENTISTS PER 10,000 EMPLOYED	PROJECTED GROWTH RATE 2016-2026	MEDIAN ANNUAL WAGE
Lansing-East Lansing MSA	490	23	11.1%	\$71,750
Kalamazoo-Portage MSA	260	18	14.6%	\$54,060
Ann Arbor MSA	390	18	14.5%	\$77,090
Bay City MSA	50	15	3.4%	\$65,800
Jackson MSA	60	10	14.6%	\$71,340
Northwest Lower Peninsula	120	10	No Projected Change	\$62,860
Upper Peninsula	80	7	No Projected Change	\$68,040
Michigan	2,780	6	10.6%	\$63,970
Midland MSA	20	6	3.4%	\$61,170
Northeast Lower Peninsula	40	5	12.5%	\$75,660
Detroit-Warren-Dearborn MSA	910	5	15.2%	\$61,920
Battle Creek MSA	20	4	14.6%	\$80,710
Grand Rapids-Wyoming MSA	190	3	13.9%	\$61,610
Niles-Benton Harbor MSA	20	3	14.6%	\$50,880
South Central Lower Peninsula	40	1	14.6%	\$47,740

# MICHIGAN ONLINE JOB ADS DECLINE MARGINALLY IN AUGUST

Seasonally adjusted online job advertisements fell slightly in August by 1.1 percent (-1,674 ads). This minor downtick contrasts with August 2018 when ad levels rose 1.6 percent. Over the last 12 months, postings are down in Michigan.

## Advertisement Rate Contracts

The advertisement rate, or the number of job postings per 100 persons in the labor force, fell over the month to 2.87 from 3.00. The rate was also down from August 2018 when it was 3.19. The lower rate comes from a slightly expanded labor force over the year along with a drop in total advertisements.

## Non-Seasonally Adjusted Job Postings

Information is available on advertised jobs by broad occupational group from the Help Wanted Online Data Series, but the data is *not seasonally adjusted*.

Major groups are the broadest classification of related occupations. Over the month, ad levels among most major groups held relatively stable. The largest exceptions were in seasonal occupations. *Farming, fishing, and forestry* job ads dropped sharply on a percentage basis in August, following the summer peak. *Food preparation and serving related* occupations rose 9.1 percent (+952 ads) as universities and private schools began to hire kitchen staff for the upcoming school year. *Healthcare practitioners and technical* occupations had the largest numeric change in August, down by 1,030

## MOST ADVERTISED STEM OCCUPATIONS, AUGUST 2019

OCCUPATION	VOLUME	EDUCATION
Software Developers, Applications	2,463	Bachelor's Degree
Computer Occupations, All Other	2,175	Bachelor's Degree
Industrial Engineers	2,030	Bachelor's Degree
Mechanical Engineers	1,860	Bachelor's Degree
Computer Systems Analysts	1,128	Bachelor's Degree
Computer User Support Specialists	1,010	Some College, No Degree

job ads (-5.3 percent). Even with the monthly reduction, the *Healthcare practitioners and technical* category remained the second largest group in terms of total postings.

## STEM Occupations Account for 14 percent of Total Job Ads

In August, Michigan had nearly 21,000 job ads for STEM occupations, comprising 13.8 percent of all job postings in the state. Of the 100 STEM occupations, 88 occupations had postings this month in Michigan. 30 of those had more than 100 postings. *Software developers, applications* led all STEM jobs with 2,463 postings. *Computer occupations, all other* (2,175), *Industrial engineers* (2,030), *Mechanical engineers* (1,860), and *Computer systems analysts* (1,128) rounded out the top five STEM occupations. All of these most advertised STEM occupations typically require a bachelor's degree.

In fact, 86.6 percent of all STEM postings required a bachelor's degree or above.

## Most Advertised STEM Occupations Require a Bachelor's Degree or Beyond

Occupations that typically require an associate degree made up 8.5 percent of online job ads, while occupations requiring some college, no degree accounted for 4.9 percent. For all online job ads, occupations typically requiring a bachelor's degree or above had the highest share of 35.1 percent. Occupations needing a high school degree or equivalent were a close second at 34.4 percent.

EVAN LINSKEY  
Economic Analyst



## TYPICAL EDUCATIONAL REQUIREMENT FOR ALL JOB POSTINGS, MICHIGAN\*

Bachelor's Degree and Above, 35.1%	High School Diploma or Equivalent, 34.4%	No Formal Educational Credential, 15.7%	Postsecondary Nondegree Award, 8.2%
		Associate Degree, 3.1%	Some College, No Degree, 1.5%

\*1.9 percent of occupations do not have typical education requirements associated with the occupations

## LABOR DEMAND BY OCCUPATION (NOT SEASONALLY ADJUSTED)

OCCUPATION CATEGORIES	AUG 2019	JUL 2019	AUG 2018	OVER THE MONTH	
				LEVEL	PERCENT
<b>TOTAL</b>	<b>150,665</b>	<b>152,338</b>	<b>164,226</b>	<b>-1,673</b>	<b>-1.1%</b>
Administrative Support	15,555	15,580	15,820	-25	-0.2%
Office and Administrative Support	15,555	15,580	15,820	-25	-0.2%
Construction and Repair	8,814	8,970	9,604	-156	-1.7%
Construction and Extraction	2,374	2,339	2,808	35	1.5%
Installation, Maintenance, and Repair	6,440	6,631	6,796	-191	-2.9%
Farming, Fishing, and Forestry	391	696	501	-305	-43.8%
Farming, Fishing, and Forestry	391	696	501	-305	-43.8%
Healthcare	24,010	25,515	26,820	-1,505	-5.9%
Healthcare Practitioners and Technical	18,373	19,403	20,264	-1,030	-5.3%
Healthcare Support	5,637	6,112	6,556	-475	-7.8%
Management	10,302	10,727	11,763	-425	-4.0%
Management	10,302	10,727	11,763	-425	-4.0%
Production	4,565	4,530	5,736	35	0.8%
Production	4,565	4,530	5,736	35	0.8%
Professional	38,529	38,941	42,287	-412	-1.1%
Architecture and Engineering	6,723	6,877	8,417	-154	-2.2%
Arts, Design, Entertainment, Sports, and Media	2,781	2,850	2,775	-69	-2.4%
Business and Financial Operations	6,885	6,861	7,319	24	0.3%
Community and Social Services	3,298	3,395	3,550	-97	-2.9%
Computer and Mathematical	10,393	10,862	11,694	-469	-4.3%
Education, Training, and Library	6,457	6,120	6,458	337	5.5%
Legal	378	385	433	-7	-1.8%
Life, Physical, and Social Science	1,614	1,591	1,641	23	1.4%
Sales	20,872	20,500	20,926	372	1.8%
Sales and Related	20,872	20,500	20,926	372	1.8%
Service	19,647	18,849	21,170	798	4.2%
Building and Grounds Cleaning and Maintenance	3,434	3,472	4,365	-38	-1.1%
Food Preparation and Serving Related	11,373	10,421	11,241	952	9.1%
Personal Care and Service	2,388	2,586	2,823	-198	-7.7%
Protective Service	2,452	2,370	2,741	82	3.5%
Transportation	7,980	8,030	9,599	-50	-0.6%
Transportation and Material Moving	7,980	8,030	9,599	-50	-0.6%



# RELEVANT RANKINGS

STEM EMPLOYMENT BY STATE				
RANK BY STEM PERCENT	STATE	TOTAL EMPLOYMENT, ALL OCCUPATIONS	STEM EMPLOYMENT	PERCENT STEM EMPLOYMENT
1	Maryland	2,684,010	252,890	9.4
2	Washington	3,259,150	300,330	9.2
3	Massachusetts	3,571,360	320,470	9.0
4	Virginia	3,832,840	340,120	8.9
5	Colorado	2,620,640	229,680	8.8
7	Michigan	4,317,830	315,930	7.3
23	Ohio	5,416,810	322,330	6.0
24	Rhode Island	482,030	28,050	5.8
25	Illinois	5,991,270	348,080	5.8
26	Wisconsin	2,848,560	164,360	5.8
27	Missouri	2,804,780	160,060	5.7
46	Kentucky	1,889,870	76,290	4.0
47	Arkansas	1,210,120	48,740	4.0
48	Louisiana	1,913,770	71,190	3.7
49	Nevada	1,347,130	46,260	3.4
50	Mississippi	1,123,830	36,390	3.2

Source: Bureau of Labor Statistics, Occupational Employment Statistics, STEM Data, 2018

STEM PROGRAM COMPLETERS BY STATE				
RANK BY STEM PERCENT	STATE	TOTAL COMPLETERS, ALL PROGRAM AREAS	STEM COMPLETERS	PERCENT STEM COMPLETERS
1	Delaware	15,481	3,993	25.8
2	Vermont	11,618	2,986	25.7
3	Maryland	87,590	22,149	25.3
4	Massachusetts	136,458	32,095	23.5
5	Montana	11,324	2,581	22.8
8	Michigan	134,894	28,658	21.2
23	North Carolina	151,209	27,213	18.0
24	Wyoming	7,406	1,327	17.9
25	Alabama	73,561	13,172	17.9
26	Rhode Island	21,892	3,907	17.8
27	Texas	374,484	66,698	17.8
46	Hawaii	14,878	2,099	14.1
47	Arizona	46,353	6,146	13.3
48	Florida	318,706	42,068	13.2
49	Tennessee	84,734	10,952	12.9
50	New Mexico	33,635	4,125	12.3

Source: National Center for Education Statistics (NCES), Integrated Postsecondary Education Data System (IPEDS), 2017–2018





## PARTNER PERSPECTIVE

The Bureau of Labor Market Information and Strategic Initiatives provides a wealth of information and insights to help support programs and policies throughout the state. The focus of this issue has been information, data, and trends regarding Michigan's STEM labor market. In this month's Partner Perspective, we feature an overview of what state agencies are doing to promote STEM education and jobs across the state.



# THE MiSTEM NETWORK: HELPING TO MAKE MICHIGAN A WORLD LEADER IN STEM

Situated within the Michigan Department of Labor and Economic Opportunity and in collaboration with the Michigan Department of Education, the MiSTEM Network—together with business, education and community partners all across the state—is helping to transform the way Michigan does STEM.

Established by the Michigan Science, Technology, Engineering and Math (MiSTEM) Advisory Council, the MiSTEM Network is a new vision for STEM career preparation and education. Its goal is to foster a statewide ecosystem of collaborators working to better prepare Michigan's workforce for the jobs of the future.

The council has outlined four pillars needed to establish a system that will produce STEM-equipped students and educators:

1. Create a STEM culture,
2. Empower STEM teachers,
3. Integrate business and education, and
4. Ensure high-quality STEM experiences.

These four pillars do not work in isolation from each other, but instead operate as an integrated vision of STEM.

In fact, all components of the MiSTEM Network plan work together to build a robust STEM culture in Michigan that is focused on providing STEM learning experiences that move forward workforce talent development, and significantly contribute to the vibrancy and vitality of Michigan communities.

In its first year of operation, MiSTEM has:

- Established 16 regional hubs for STEM education, each with a strategic plan designed to support and further STEM goals and challenges through collaboration with local education providers, businesses, nonprofits and governmental entities;

- Dramatically expanded and diversified the network from 160 participants, primarily from schools and ISDs, to approximately 400 participants, including representatives from STEM employers and higher education;
- Boosted leadership and participation at STEM-related events, including conferences, task forces and national, state and regional committees, to contribute to continued progress in closing the skills gap;

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**“States and communities that develop and attract professionals in all the STEM fields have a competitive edge in economic growth and opportunity.”**

– **JEFF DONOFRIO**, Director, Michigan Department of Labor and Economic Opportunity

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- Strengthened relationships with partners within each region to jointly focus on goals and solutions and increased communication between regions to share successes;
- Provided grants to support implementation of K-12 STEM programs with a proven track record of effectiveness and new programs to expand access to work-related experiences and professional training.

In February, the council awarded \$3.05 million in state grants for STEM programs at 21 educational entities across Michigan. Each of the 10 funded projects is designed to increase student engagement and achievement in STEM.

The funded projects included Michigan-developed Cereal City Science, Great Lakes Stewardship Initiative, and Michigan Science Teaching and Assessment Reform (MiSTAR). Other grants went to projects that have built capacity in Michigan including Math Recovery, AP Computer Science Principles and Computer Science Discoveries, Project Lead the Way (PLTW), TESLA/Next Generation Science Exemplars (NGSX), Engineering is Elementary, and Vex Robotics.

The MiSTEM Network is encouraged by the widespread potential that will be harnessed and directed toward the further advancement of STEM education for all students throughout the state.

The council is expected to allocate additional grants in the 2019–2020 school year.

The MiSTEM Network welcomes individuals to join one of the 16 regional networks to reimagine what is possible and scale up what works across the Great Lakes state.

The Network welcomes opportunities to meet and work with groups in support of building an aligned education and workforce development system.

To learn more about the MiSTEM Network, visit [www.michigan.gov/mistem](http://www.michigan.gov/mistem).



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