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Rick Snyder, Governor  
Department of Technology, Management & Budget  
Bureau of Labor Market Information & Strategic Initiatives  
[www.michigan.gov/lmi](http://www.michigan.gov/lmi)

# Michigan Economic and Workforce Indicators and Insights

## Table of Contents

Forward.....	2
Michigan Job Trends.....	3
Payroll Jobs by Industry Sector.....	4
Unemployment Rate.....	5
Michigan’s Labor Market Recovery Significant, But Incomplete.....	6
Automotive and Related Employment.....	7
Jobs in High-Tech Industries.....	8
Michigan Businesses by Size of Firm .....	9
Household Employment Dynamics - Hiring.....	10
Real-Time Demand: Online Advertised Job Vacancies .....	11
Export Related Employment and Metro Area Exports.....	12
Education Program Completers.....	13
Science, Technology, Engineering, and Math (STEM) Degrees.....	14
Wages by Industry from 2001 to Present.....	15
Per Capita Personal Income.....	16
Regional Industry and Occupational Outlook 2010-2020.....	17
What’s New From LMISI? .....	18
Appendix 1: STEM Programs, Defined.....	19
Appendix 2: High-Tech Industries, Defined.....	20
Appendix 3: Automotive and Related Employment, Defined.....	21
Contact Information.....	22

## Forward

Friends,

July 2, 2014

In her recent article, [The U.S. Economy to 2022: Settling into a New Normal](#), Bureau of Labor Statistics (BLS) Economist Maggie Woodward aptly notes that following the “Great Recession” and other economic hardships, “few people were under the illusion that recovery would be immediate. However, many may not have anticipated the protracted time it has taken for the economy to strengthen.”

In this edition of the [Michigan Economic and Workforce Indicators and Insights](#) publication, our team explores what the recovery has looked like in Michigan and what a “new normal” may look like for our state. In the pages that follow, we have assembled updates of key workforce indicators, including the unemployment rate, job trends, payroll jobs by industry, and real-time job demand. In addition, this publication provides updates of periodic indicators including education program completers, STEM degrees, employment in high-tech jobs, automotive and related employment, and export related employment.

Along the way, we provide some insights into where these critical indicators stand today, compared to pre-recession levels and recessionary lows. This is summarized best by the title of one article in this edition, “Michigan’s Labor Market Recovery . . . Significant, But Incomplete.”

As the state’s economy and labor market continue to recover and settle into a new normal, the Bureau of Labor Market Information and Strategic Initiatives is committed to providing accurate, objective, relevant, timely, and accessible labor market information and analysis. Our goal is to produce the data and provide the analysis necessary for our customers and our citizens to gauge the economy and labor market in order to make informed decisions.

Please let us know if you have any questions or comments about anything you see here, or if you have something you would like us to tackle in a future edition of the [Michigan Economic and Workforce Indicators and Insights](#) report.

Warm regards,



Jason S. Palmer

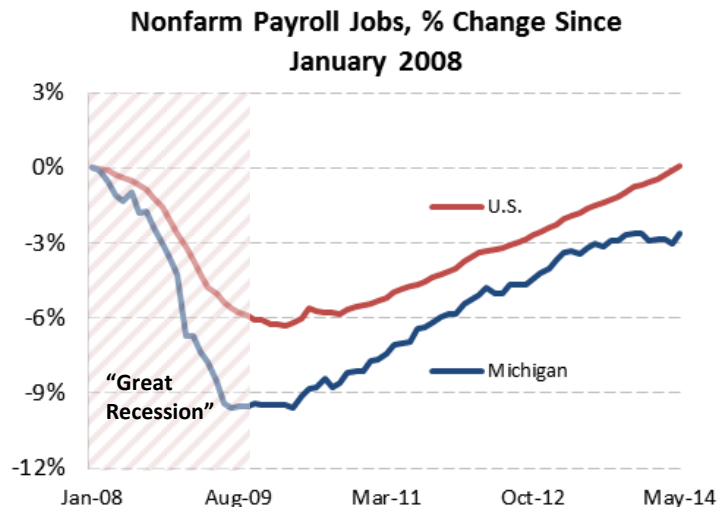
Director,  
State of Michigan  
Department of Technology, Management and Budget  
Bureau of Labor Market Information & Strategic Initiatives

## Michigan Job Trends

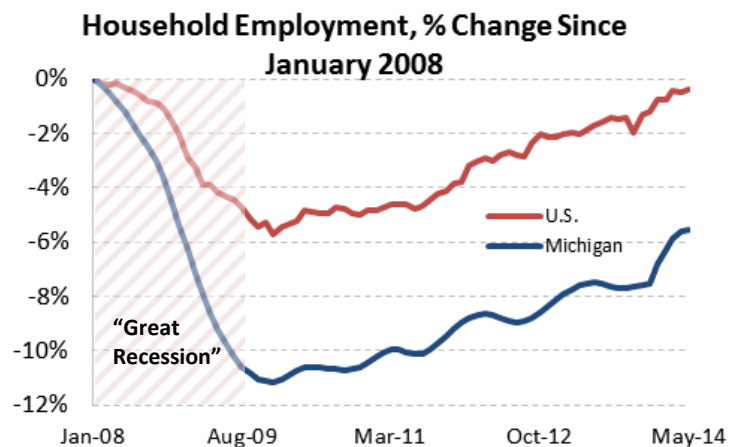
Jeffrey Aula

There are two government surveys that measure the state of the labor market: the Current Employment Statistics (CES) program, a monthly survey of nonfarm **business establishments**, and the Current Population Survey (CPS), a monthly survey of **households**. The establishment survey is the primary source used to generate monthly estimates of payroll jobs in Michigan, while the household survey is combined with other indicators to estimate total employed in Michigan, including the self-employed and agricultural workers.

- In 2013, total Michigan nonfarm jobs expanded by 1.8 percent, similar to the 1.7 percent advance nationally. Job levels have remained relatively flat in Michigan through the first five months of 2014.
- The industry sectors with the highest rates of employment growth in 2013 included *Information* (3.8 percent), *Professional and business services* (3.6 percent), *Manufacturing* (3.3 percent), and *Construction* (3.2 percent).
- Total nonfarm jobs plunged by 9.4 percent or 398,500 between January 2008 and the end of the “Great Recession” in June 2009. Since that time, employment gains have occurred in nine of the eleven broad industry sectors in Michigan.
- Despite these post-recessionary gains, payroll employment remains 2.6 percent, or 111,300, below January 2008 levels.
- The household survey has also registered strong employment trends over the last year. Total Michigan employment advanced by 89,000 since May 2013, up by 2.1 percent. This exceeded the national rate of gain of 1.3 percent.
- The share of the Michigan 16+ population that was employed in 2013 was just 55.3 percent, well below the national rate of 58.6 percent .
- Total employment in Michigan is approaching 4.4 million, and that level of employment was last reached back in late 2008. However, Michigan employment still lags well below January 2008 levels, down by 259,000 or 5.6 percent. Nationally, total employment in May 2014 was very close to matching January 2008 levels.
- Total employment peaked in Michigan in March 2000, and current employment counts remain nearly 600,000 or 12 percent below this level.



Source: U.S. Bureau of Labor Statistics / DTMB



Source: U.S. Bureau of Labor Statistics / DTMB

# Payroll Jobs by Industry Sector

Jeffrey Aula

Payroll job estimates come from a monthly survey of business establishments and government agencies nationwide known as the *Current Employment Statistics (CES)* program. This survey helps to produce monthly estimates of nonfarm jobs by detailed industry (except self-employed) for the nation, states, and metro areas.

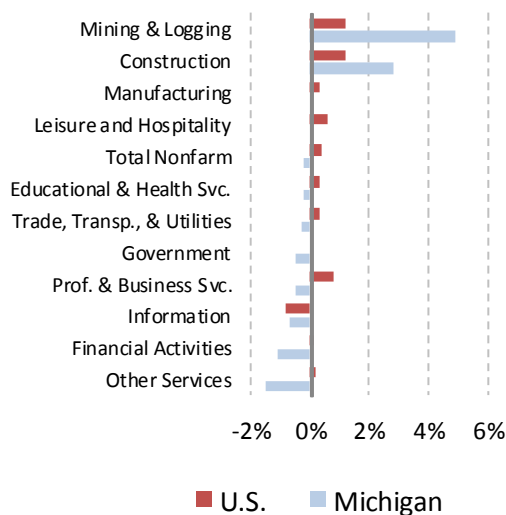
- Between the end of the recent recession in June 2009 and May 2014, total nonfarm employment in Michigan has grown by 287,200, or 7.5 percent. This compares favorably to the 5.7 percent growth nationally during this period.
- The industry sectors in Michigan where job creation has been above the national average since June 2009 include *Manufacturing, Professional and business services, Construction, and Financial activities*.
- During the 1st quarter of 2014, nonfarm job levels remained flat in Michigan, notching lower by 0.2 percent. This was the first quarterly employment decline since the 1st quarter 2010 when payrolls dipped by 0.1 percent. The *Other services* and *Financial activities* sectors reported the largest percent reductions in jobs while *Mining and logging* and *Construction* recorded increases.

**Michigan & U.S. Job Change (%)  
June 2009 - May 2014 A**

Industry Sectors	Michigan	U.S.
Total Nonfarm	+7.5%	+5.7%
Mining and Logging	+25.0%	+32.1%
Construction	+7.9%	-0.1%
Manufacturing	+27.3%	+3.2%
Trade, Transportation, and Utilities	+5.2%	+5.7%
Information	-0.9%	-5.0%
Financial Activities	+2.8%	+1.3%
Professional and Business Services	+22.4%	+16.5%
Educational and Health Services	+4.1%	+9.7%
Leisure and Hospitality	+5.8%	+11.6%
Other Services	+0.9%	+2.6%
Government	-7.0%	-3.1%

Source: U.S. Bureau of Labor Statistics / DTMB

**Over-the-Quarter (1st Qtr. 2014) Percentage Job Change**



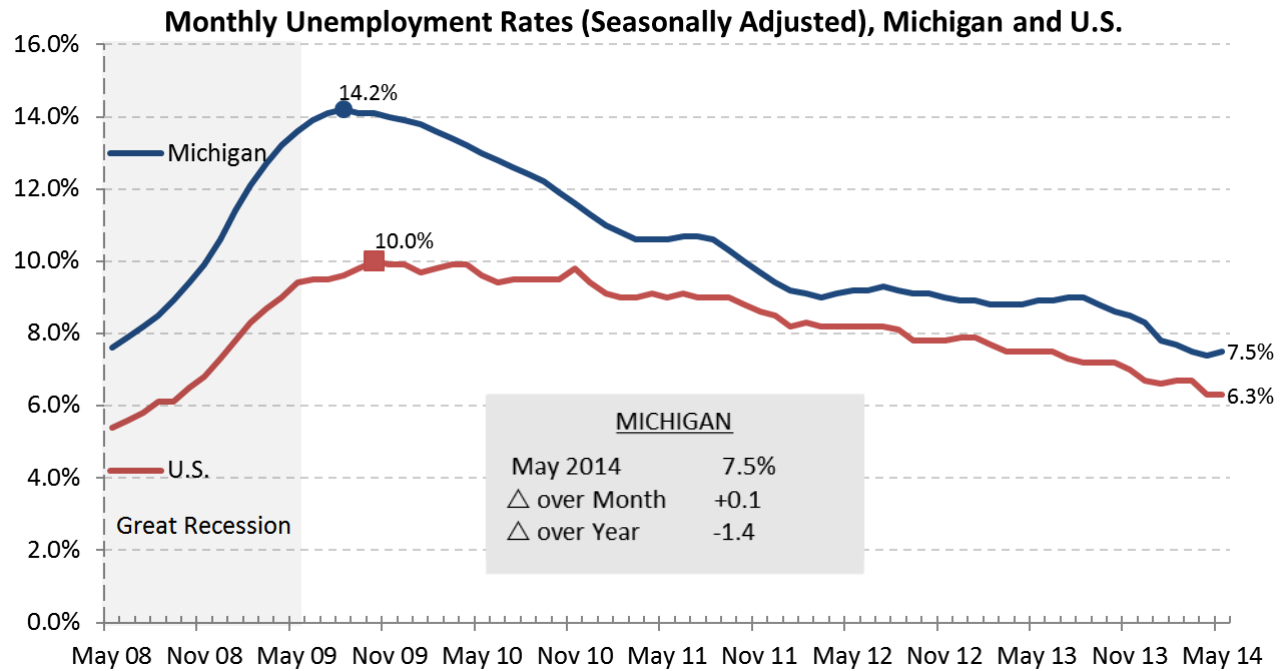
Source: U.S. Bureau of Labor Statistics / DTMB

- Michigan's *Manufacturing* sector has been the leading source of jobs since the end of the last recession, accounting for 41.9 percent of the growth in payroll jobs between June 2009 and May 2014. This expansion has significantly outpaced the increase nationally during this period, and has been primarily concentrated in the state's key *Transportation equipment manufacturing* industry. Job levels in the Michigan auto sector have grown by 47 percent since June 2009. During the 1st quarter of 2014, however, *Manufacturing* employment levels remained unchanged.
- The *Professional and business services* sector has also been a key component in Michigan's recovery since June 2009, advancing by 22.4 percent and adding 110,100 jobs through May 2014. During the 1st quarter of 2014, however, employment levels notched slightly lower by 0.5 percent. Other sectors with above average job growth since June 2009 include *Mining and logging* and *Construction*.
- Employment levels in *Government* and *Information* have trended lower since June 2009.

# Unemployment Rate

Bruce Weaver and Mark Reffitt

The unemployment rate is a key economic indicator and because it is a measure of the relative labor market success of the population, it is widely publicized and followed. It is defined as the ratio of the number of unemployed persons to all of those active in the workforce. To be considered unemployed, persons must have no earnings from work during the survey week in a given month, be actively seeking a job, and be able to accept a job if offered.



Source: U.S. Bureau of Labor Statistics / DTMB

- Michigan’s jobless rate fell for eight consecutive months since the fall of 2013, before edging up slightly to 7.5 percent in May 2014. Since August 2013, labor market conditions were strong as employment in the state rose by nearly 100,000 and the number of unemployed fell by 68,000. Over the past year, only 10 states have recorded a larger jobless rate drop than Michigan’s reduction of 1.4 percentage points.
- Michigan’s jobless rate declined significantly from 14.2 percent in August 2009 to 7.5 percent in May 2014. The pace of the unemployment rate reduction in Michigan was faster than the decrease nationally, resulting in a narrowing of the gap between the Michigan and U.S. rates. However, Michigan’s jobless rate remains high relative to other states, as only five states had a higher jobless rate than Michigan.
- In 2013, Michigan’s unemployment rate declined for the fourth consecutive year. In addition, the year 2013 was noteworthy as the state registered the first workforce increase since 2006.
- Despite these recent improvements, however, long-term unemployment continued to be an issue during 2013, as the average duration of unemployment in Michigan remained high at about 39 weeks.
- Michigan’s jobless rate has gradually begun to approach the pre-recessionary 2007 jobless rate of 7.1 percent. In fact, the University of Michigan’s RSQE released a forecast for the 2015 Michigan jobless rate of 7 percent.

Annual Jobless Rate - Michigan

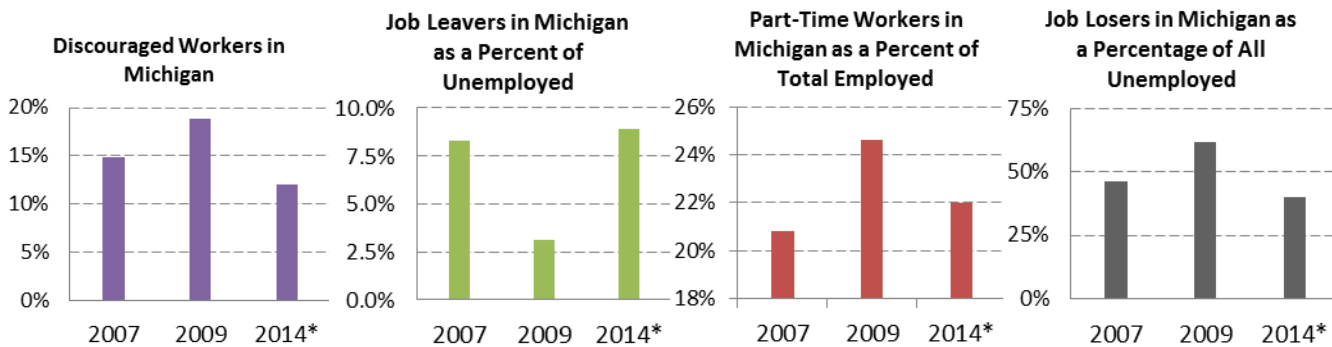
Year	Jobless Rate	Annual Trend
2014*	7.8%	▼
2013	8.8%	▼
2012	9.1%	▼
2011	10.4%	▼
2010	12.7%	▼
2009	13.5%	▲

\*year-to-date average

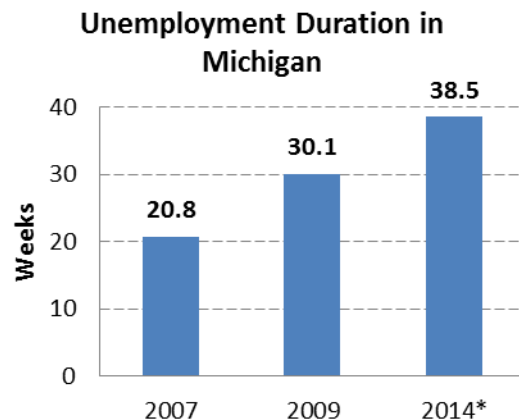
## Michigan's Labor Market Recovery Significant, But Incomplete

Jim Rhein

Michigan's seasonally adjusted unemployment rate has been falling steadily since 2009, and as of April 2014 was 7.4 percent. This is close to half the recession high of 14.2 reached in August 2009, while similar to the pre-recession level of 7.1 percent recorded in 2007. This indicates significant progress in recovery for the state's labor market. Additional labor market indicators for Michigan are approaching pre-recession levels, and thus point to recovery. However, other indicators identify continued weakness in the state labor market, and show that the state has not fully recovered from the "Great Recession." The charts below display several indicators from the Current Population Survey for 2007, 2009, and 2014 (2014\* represents the May 2013 through April 2014 average).



- *Discouraged workers* say they want a job, but feel nothing is available for their skill sets and have stopped searching for work. The chart represents the percent of workers that are not in the state's labor force, want a job, but are discouraged over job prospects.
- Higher or lower percentages of *job leavers* typically denote the labor market health. Higher shares illustrate a stronger market, as individuals feel more confident about new job prospects, or the greater availability of jobs outside their current position.
- In times of labor market stress, the percentage of *part-time workers* tends to rise as some individuals, who want full-time work, may only be able to find part-time jobs.
- The *job loser* category reflects layoffs, either permanent or short-term. In a typical year, there is always layoff activity as some firms adjust their workforce relative to economic conditions. In recessionary years, the percentage of layoffs to total unemployed increases greatly.



Source: U.S. Bureau of Labor Statistics, CPS

- The final chart records the average number of weeks individuals remained unemployed in 2007, 2009, and 2014\*. Although the total number of unemployed has declined considerably since 2009 in Michigan, the average time spent unemployed actually continued to rise. However, the 39 weeks posted for 2014\* was down from the series high of 45 weeks registered in 2011.
- In 2014, many Michigan economic indicators show a significant degree of recovery from the last national recession, however other data show that additional improvements are needed to reach pre-recessionary levels. The data suggests that if a Michigan resident has a job in 2014, they are far less likely to be laid off than has recently been the case.

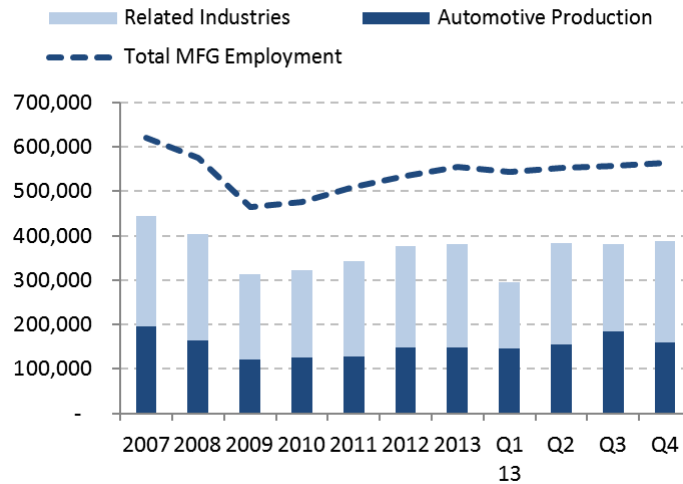
# Automotive and Related Employment

Leonidas Murembya, PhD and Aneesa Rashid, PhD

The automotive industry includes not only direct automotive production employment in *Motor vehicle manufacturing; Motor vehicle body and trailer manufacturing; and Motor vehicle parts manufacturing*, but also many support jobs, ranging from plastics, rubber products, primary and fabricated metals, to professional and business services such as engineering, temporary help, and research and development. ([Appendix 3](#))

- o *Manufacturing* employment in Michigan has declined sharply since it’s recent peak in 1999. Over the past ten years (2003-2013), the industry slashed 170,100 jobs, with a little over 90 percent of the loss (153,500 jobs) in the automotive production and related industries.
- o During the “Great Recession” (2007-2009), manufacturing jobs dropped by 156,300. Automotive production and related industries accounted for about 83 percent of the cuts (or 130,200). Auto production employment fell by 39 percent (or 76,200), and employment in related industries plunged by 22 percent (or 54,000).

**Automotive and Related Employment**



Source: DTMB, Quarterly Census of Employment and Wages

- o Since the official end of the recession in the third quarter of 2009, automotive production has recovered about 36.5 percent of the 76,200 jobs lost during the recession (or 27,800 jobs). Auto related industries have regained 75 percent of the 54,000 job reductions, and manufacturing as a whole recouped about 57 percent of the 156,300 jobs that were cut during the recession.
- o Over the year (2012 to 2013, annual averages), employment in automotive production inched down by 600, while jobs in auto related industries and in manufacturing overall continued to rise but at a slower pace than in previous post-recession years. During 2012, auto related industries added 14,400 positions, and employment in manufacturing as a whole was up by 25,600. In 2013, jobs in the two sectors rose by only 5,700 and 18,900, respectively.

Industry	2007-2009 Recession	2009-2013 Recovery	2012-2013 Year
Industrial Mold Manufacturing	-22.2%	29.5%	3.8%
Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	-22.4%	36.3%	3.0%
Automobile Manufacturing	-37.1%	13.3%	11.3%
Motor Vehicle Body Manufacturing	-30.0%	7.3%	3.4%
Motor Vehicle Seating and Interior Trim Manufacturing	-41.3%	61.1%	12.1%
Motor Vehicle Supplies and New Parts Merchant Wholesalers	-20.2%	22.4%	5.7%
Engineering Services	-14.6%	29.9%	4.9%
Testing Laboratories	-18.0%	41.2%	6.1%
Research and Development in the Physical, Engineering, and Life Sciences	-13.7%	24.0%	8.5%

Source: DTMB, Quarterly Census of Employment and Wages

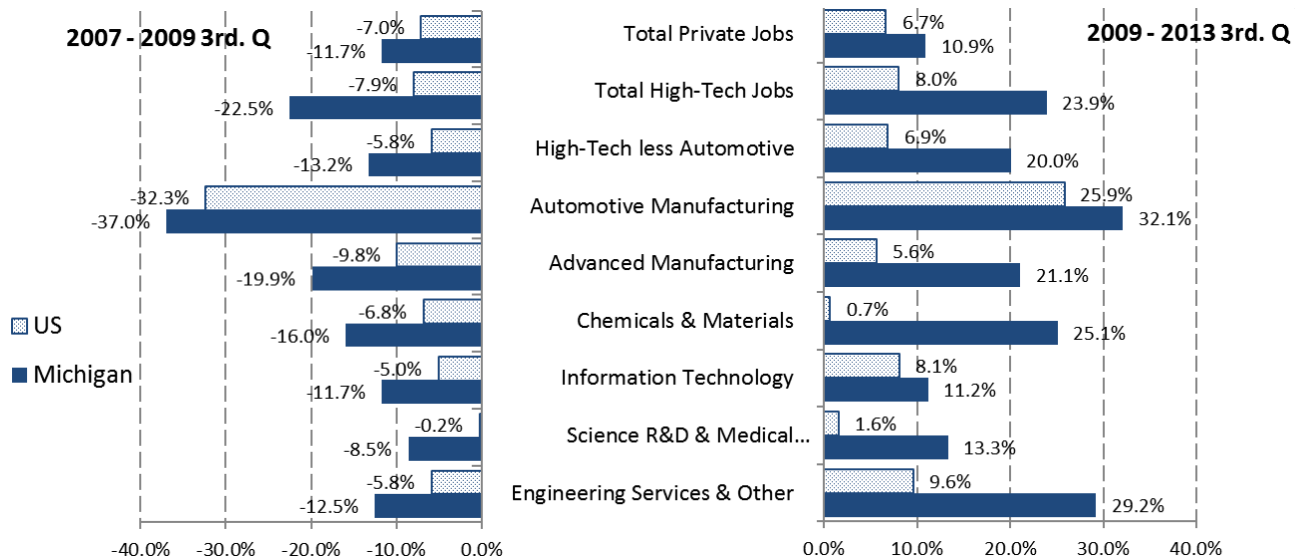


# Jobs in High-Tech Industries

Leonidas Murembya, PhD

Traits that are common to high-tech industries include an above average concentration of Science, Technology, Engineering and Math (STEM) workers, a high level of R&D expenditures, innovative processes, and the use of cutting-edge technologies. Michigan high-tech jobs have been categorized into sectors such as auto-related, advanced manufacturing, chemicals and materials, information technology, science R&D and medical equipment, and engineering services. ([Appendix 2](#))

**Percent Change in Payroll Jobs During and After the “Great Recession”**



Source: DTMB, Quarterly Census of Employment and Wages

- During the “Great Recession” (2007-2009), high-tech jobs in Michigan dropped faster than the national rate of decline in every high-tech cluster. Total high-tech job counts fell nearly three times faster in Michigan than nationwide. In automotive manufacturing, high-tech jobs plunged almost at the same rate in both Michigan and the nation.

Industry Cluster	3rd Qtr 2012	3rd Qtr 2013	Change	Percent
<b>Total Private Jobs</b>	<b>3,419,400</b>	<b>3,510,000</b>	<b>90,600</b>	<b>2.7%</b>
<b>Total High-Tech Jobs</b>	<b>453,100</b>	<b>469,900</b>	<b>16,800</b>	<b>3.7%</b>
High-Tech less Automotive	301,900	310,700	8,800	2.9%
Automotive Manufacturing	151,200	159,200	8,000	5.3%
Advanced Manufacturing	49,800	50,600	800	1.5%
Chemicals & Materials	18,200	18,500	300	1.9%
Information Technology	84,100	85,900	1,800	2.1%
Science R&D & Medical	40,000	41,100	1,100	2.8%
Engineering Services & Other	109,800	114,700	4,900	4.4%

- Since the official end of the recession in the third quarter 2009, the situation has reversed for high-tech jobs, with Michigan recording a growth rate three times faster than the nation. However, Michigan’s high-tech jobs are still below the 2007 pre-recessionary levels by 19,600 or 4.0 percent. In contrast, current non-auto high-tech employment is 12,500 above 2007 levels or 4.2 percent.
- Over the year (2012-2013, 3rd quarter), Michigan’s high-tech employment continued to expand but at a slower pace than the prior year. With 8,000 new jobs, *Automotive manufacturing* was the largest contributor to growth in high-tech employment during 2013, as it has been every year since the end of the recession. *Engineering and other consulting services* ranked second in Michigan high-tech job creation during 2013, with a job gain of 4,900 or 4.4 percent, primarily from significant job expansion in *Architectural and engineering services* (3,000).

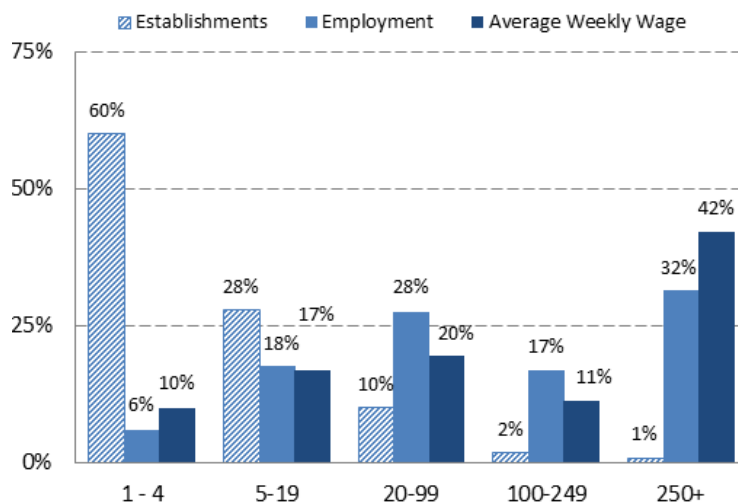
# Michigan Businesses by Size of Firm

Aneesa I. Rashid, PhD

This report provides a snapshot of Michigan private sector businesses by size of firm. The data relate to Michigan’s economy at a specific point of time, and do not describe dynamic processes such as economic growth or job creation. Size-of-firm data presented in this report come from the Quarterly Census of Employment and Wages (QCEW) program. This program collects information from quarterly tax reports filed by employers under Michigan Unemployment Insurance (UI) Laws. The Bureau of Labor Statistics methodology of using March employment figures from private sector employment to classify individual firm sizes is adopted. Firms with zero employment are omitted.

- While small businesses make up the majority of establishments in Michigan, they do not account for a large share of employment.
- Representing 88 percent of all firms, establishments with fewer than 20 workers employed nearly one in four workers and paid 27 percent of wages in Michigan's labor market.
- Conversely, the three percent of establishments with 100 or more employees were responsible for half of all employment and wages.
- These trends are not unique to Michigan, as the state follows similar patterns to the national labor market.
- Examining the distribution of employment by size class within various industry sectors, it can be seen that jobs are not concentrated in the same sized firms for all industries. The table below gives the concentration of establishments and employment at the two ends of the spectrum: the smallest, employing one to four workers and the larger firms employing 250 and more employees.

**Private Establishments, Employment and Wages by Size Class (Percent Share)**



Source: DTMB, Bureau of Labor Market Information and Strategic Initiatives

**Employment Shares and Wages for Small and Large Firms in Selected Industries**

Size Class (1-4)	Establishments	Employment	Avg. Weekly Wages
Other services	68%	21%	\$472
Construction	66%	17%	\$645
Real estate and rental	65%	16%	\$740
Professional Scientific and Tech Svs	66%	10%	\$1,111
Wholesale trade	60%	9%	\$1,494
Size class (250 +)			
Management of companies	7%	71%	\$2,797
Administrative support and waste	3%	49%	\$508
Health Care	3%	47%	\$870
Manufacturing	3%	46%	\$1,501

Source: DTMB, Bureau of Labor Market Information and Strategic Initiatives

- *Other services* which includes activities like personal care, automotive repair and nonprofits has one in five workers in small firms with less than five employees.
- Among businesses employing more than 250 workers, *Management of companies* ranks highest, employing seven out of 10 workers in just seven percent of the establishments.

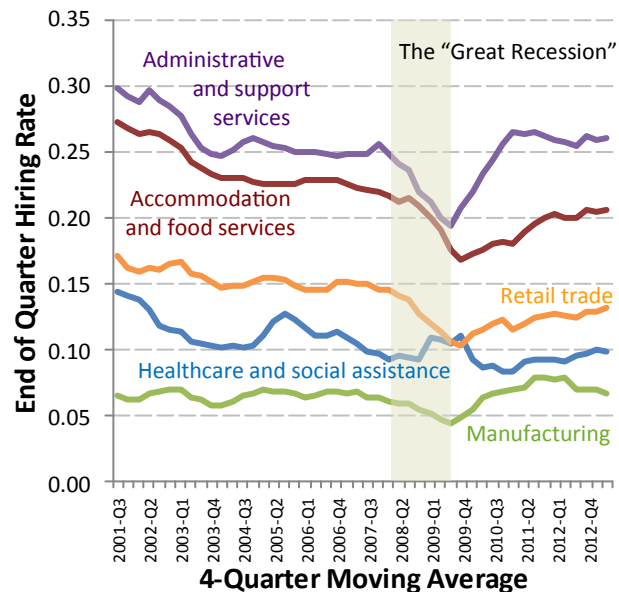
# Household Employment Dynamics—Hiring

Ryan Gimarc

Hiring is often cited as a strong indicator of economic recovery. It is a measure which bodes well for both individuals looking for a job as well as a sign of increased confidence on the part of firms. While some indicators bounce back to regular levels fairly quickly after an economic downturn, hiring is many times the latter, and sometimes one of the most important, measures of a full economic recovery. The Local Employment-Household Dynamics program from the U.S. Census Bureau allows users to look at hiring and employment numbers for all firms in Michigan.

- The end-of-quarter hiring rate, which is the number of hires as a percent of average employment, has fluctuated significantly since 2001. Declining from the beginning of the data series in 2001 when the rate stood at 0.15, the 4-quarter rolling average fell to a trough of 0.10 in the four quarters leading up to the 3rd quarter 2009. Since then, the overall hiring rate has recovered marginally to 0.13.
- Four of the largest five industries by private-sector employment in Michigan experienced a similar trajectory, with the exception of *Health care and social assistance*. The *Administrative and support services* industry saw one of the sharpest declines, with its four-quarter average hiring rate dropping from 0.26 to 0.19 over just an eight quarter period.
- *Health care and social assistance* did not see as much of a hiring drop during the “Great Recession,” but has still experienced a decrease in the hiring rate since the early part of the last decade.

**Hiring Rates for Largest Private Industries in Michigan**



Source: U.S. Census Bureau, LEHD

**Proportion of All Hires that are New Hires (Q4-2012 through Q3-2013)**

All NAICS Sectors		79.9%
Highest	Finance and Insurance	87.7%
	Retail Trade	87.2%
	Accommodation and Food Services	86.0%
	Health Care and Social Assistance	82.5%
	Administrative and Support and Waste Management and Remediation Services	82.1%
	Wholesale Trade	80.3%
	Real Estate and Rental and Leasing	79.9%
	Agriculture, Forestry, Fishing and Hunting	70.4%
Lowest	Manufacturing	69.9%
	Management of Companies and Enterprises	69.5%
	Educational Services	69.4%
	Public Administration	69.2%
	Mining, Quarrying, and Oil and Gas Extraction	69.0%
	Arts, Entertainment, and Recreation	61.4%

Source: U.S. Census Bureau, LEHD

- The makeup of the total hiring number, which is the sum of new hires and recall hires (employees who worked for that specific firm in the previous year), can be a strong indicator of the volatility of an industry from a turnover standpoint.
- Among all industries, just under 80 percent of hires in the most recent four quarters are new hires. Seven industries have a higher proportion of new hires than average, led by *Finance and insurance*, *Retail trade*, and *Accommodation and food services*.
- The latter two industries, while seasonal, feature high proportions of new hires likely because many workers exit those industries as they age. Indeed, these two industries are among the highest in employment of those aged 14-18 years.

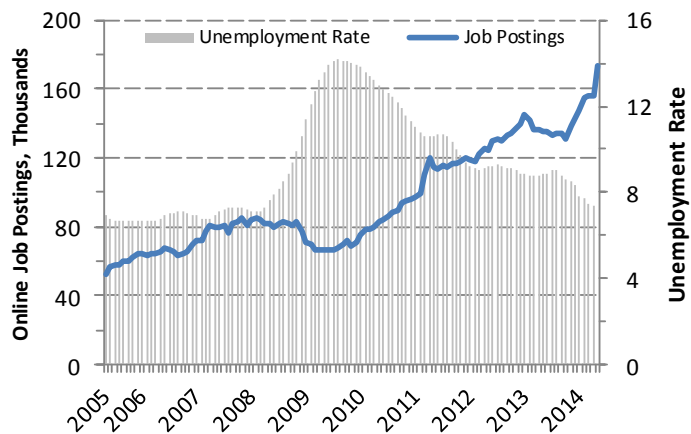
# Real-Time Demand: Online Advertised Job Vacancies

Kevin Doyle

The Conference Board’s Help Wanted Online (HWOL) data series provides a key measure of real-time labor demand in the state’s job market. The Bureau of Labor Market Information and Strategic Initiatives, through a partnership with The Conference Board, uses the HWOL data series to supplement traditional labor market information, providing insights into the characteristics of real-time labor demand. This indicator highlights the nature of online job demand today, as well as the change in occupational makeup of Michigan job ads since the start of the HWOL data series.

- May 2014 data shows that job advertisements have been trending upwards for the past seven months since a recent trough in October 2013. Job postings are up by 38,970, or 29 percent since May 2013.
- Since the end of the most recent recession, even greater changes have occurred. Job ads in Michigan have risen by over 107,000, more than doubling since July 2009. Most of this change is due to rising popularity of online job boards, but economic recovery has also contributed.
- Structural changes have occurred in the occupational makeup of Michigan’s job ads from 2006 through 2013. As seen in the table below, occupations typically requiring lower levels of education have garnered a greater share of overall job ads over time, while occupations requiring higher levels of education have lost out in share of total ads.
- This change in makeup of Michigan’s job ads suggests that while job boards were primarily used for advertising for vacancies in high-education, more professional occupations in the past, today’s online job ads have become more representative of the labor market as a whole.

**Online Advertised Job Vacancies and Unemployment Rates (2007 - Present)**



Source: The Conference Board, Help Wanted Online (HWOL) / DTMB

**Top and Bottom Five Occupational Groups by Change in Share of Total Ads, 2006-2013**

Occupational Group		Change
Top 5	Transportation and Material Moving	2.6%
	Food Preparation and Serving Related	1.7%
	Production	1.6%
	Building and Grounds Maintenance	1.1%
	Construction and Extraction	1.1%
Bottom 5	Office and Administrative Support	-0.5%
	Management	-2.2%
	Business and Financial Operations	-2.6%
	Healthcare Practitioners and Technical	-2.6%
	Computer and Mathematical	-2.7%

Source: The Conference Board, Help Wanted Online (HWOL) / DTMB

- While *Health practitioners* and *Computer and mathematical* occupations have comprised a smaller share of total ads over time, these each still represent about 10 percent of all real-time labor demand for the state.
- *Transportation and material moving*, *Food preparation*, and *Production* occupations gained the most in share of total ads since 2006. Together, these occupations make up about 17 percent of total labor demand for the state of Michigan.

## Export Related Employment and Metro Area Exports

Aneesa I. Rashid, PhD and Kevin Doyle

Exports are an important driver of employment and are viewed as a cornerstone of economic expansion. The Census Bureau estimates jobs related to manufactured exports at the national and state level. The estimates rely upon three major sources: the U.S. Census Bureau’s 2011 Annual Survey of Manufactures; the Census Bureau’s 2011 edition of U.S. International Trade in Goods and Services; and the Bureau of Economic Analysis’ Input-Output (I/O) Accounts of the U.S. Economy for 2010. This indicator also highlights value of exports from Michigan’s metro areas using data from the International Trade Administration.

### Export Related Manufacturing Employment (XRE) 2009—2011(p) Industry Breakdown

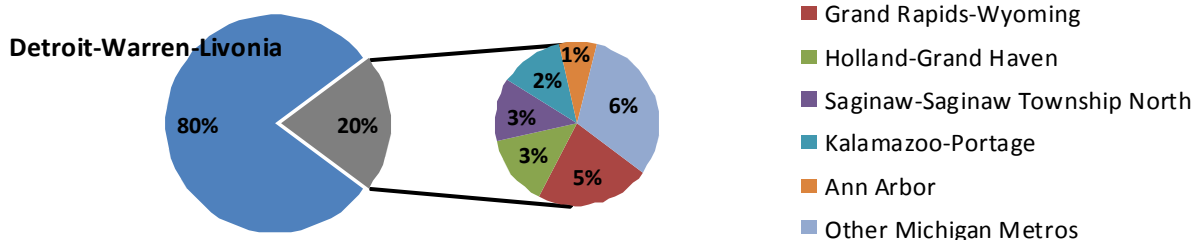
2009- 2011(p)		Michigan's Top 10 Manufacturing Industries (XRE as percent of Industry Employment)	2011(p)	
% change in			XRE as a % of Industry Emp.	
All Mfg. Emp.	XRE		MI	U.S.
5.4	20.1	<b>Total Manufacturing</b>	30.7	23.8
14.2	11.9	Primary metals	69.6	45.5
0.0	33.3	Nonmetallic mineral products	45.3	14.3
-5.0	57.1	Computers and electronic products	43.4	39.5
13.0	33.9	Fabricated metal products	38.7	23.7
1.5	21.3	Chemicals	34.1	30.3
17.1	40.0	Elec. equip, appliances, and components	31.5	29.9
8.7	16.6	Transportation equipment	31.3	32.4
-5.3	29.2	Paper	28.7	19.5
10.1	15.4	Plastics and rubber products	28.2	20.1
7.1	11.6	Machinery	27.2	33.8

Source: International Trade Association

- Michigan’s exports of manufactured goods rebounded by 58 percent from 2009-2011, after a recessionary decline of 27 percent (2007-2009).
- Michigan ranked first for *Transportation equipment* export related employment (XRE) and fifth in total manufacturing among all states.
- In 2011, over one third of all Michigan manufacturing jobs were export related. XRE grew at a faster rate than total employment in the top ten manufacturing industries since the recession (2009-2011).

- In 2012, 86 percent of the 15,107 companies that exported were small or medium-sized firms (< 500 jobs) and generated one-fifth (19.9 percent) of Michigan's total exports of merchandise.
- As seen in the chart below, the majority of Michigan exports originate from the Detroit-Warren-Livonia Metropolitan Statistical Area (MSA). In 2012, the latest year of data available for MSAs, the Detroit MSA exported \$55.39 billion in goods, 80 percent of the state’s total metro area exports.
- As expected, the Transportation equipment industry exported the greatest value of goods from the Detroit MSA, at 66 percent of the metro area’s total exports. *Transportation equipment manufacturers* also export the greatest value of goods in the Saginaw and Ann Arbor MSAs.

### Value of Exports by Michigan Metro Area, in Billions

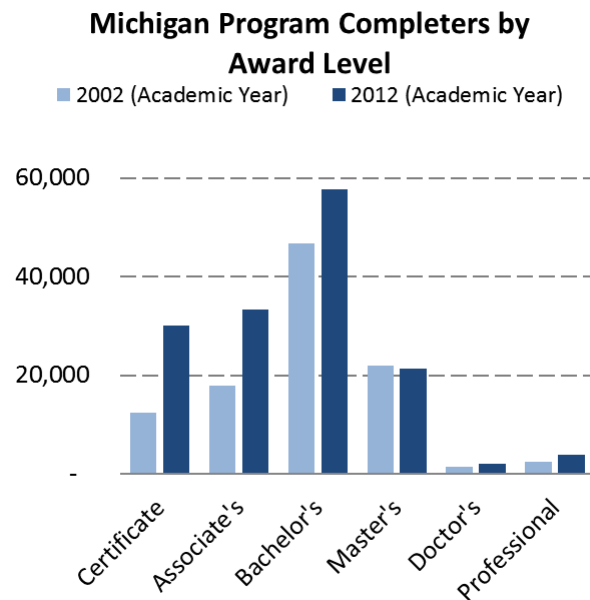


## Education Program Completers

Abbey Babb and Myles Fowler-Quick

Identifying the number and type of degrees / certificates granted can offer insights into the supply of job candidates in the labor market. In addition, identifying leading program types can shed light on potential mismatches between training and employer needs. This analysis looks at trends in program completers in Michigan between 2002 and 2012.

- During academic year 2012, Michigan institutions conferred 148,600 degrees and certificates. Since academic year 2002, total program completers have surged by 45,500 or 44 percent.
- About 40 percent of all program completers earned a bachelor's degree. Associate's degrees and certificates each accounted for roughly 20 percent of completers, while master's, doctor's, and professional degrees comprised the remaining 18 percent.
- Since academic year 2002, the largest growth in completers has been seen among certificates and associate's degrees, highlighting the increased emphasis on job training and applied education which these training programs often provide.
- Because these numbers reflect completers and not enrollees, it is important to note that economic conditions at the time of enrollment may have influenced program and degree choice.



Source: National Center for Education Statistics

- During the 2012 academic year, 31,175 postsecondary certificates were granted. Reflecting demand for health care workers, the majority of these certificates were granted for *Health professions and related programs*. Other programs granting a large number of postsecondary awards were, in order, *Mechanic and repair technologies / technicians*, *Liberal arts and sciences*, *Personal and culinary services*, *Engineering technologies and engineering-related fields*, and *Business, management, and support services*.
- Similarly, there were 33,325 associate's degrees granted during the same period. The largest share of these degrees was in *Liberal arts and sciences*, due in part to program alignment with transfer requirements at many four-year institutions. Again evidencing demand for health care workers, *Health professions and related programs* registered the second most completers, awarding 6,150 associate's degrees.
- Michigan institutions granted 57,815 bachelor's degrees in academic year 2012. As expected, these degrees were seen across a diverse range of programs. Leading all bachelor's degree awards with 12,100 completers was *Business, management, marketing, and related*. The next largest program was *Health professions and related*, granting less than half the awards as the largest category. Rounding out the top five bachelor's degree programs were: *Social sciences*, *Education*, and *Engineering*.
- Of the 3,875 professional degrees granted in academic year 2012, over half were in *Legal professions and studies*. The remaining 1,700 were in *Health professions and related programs*. Professional degrees granted in the *Health professions* were concentrated in *Medicine* (586), *Pharmacy* (297), *Dentistry* (213), *Osteopathic medicine* (208), and *Physical therapy* (206).

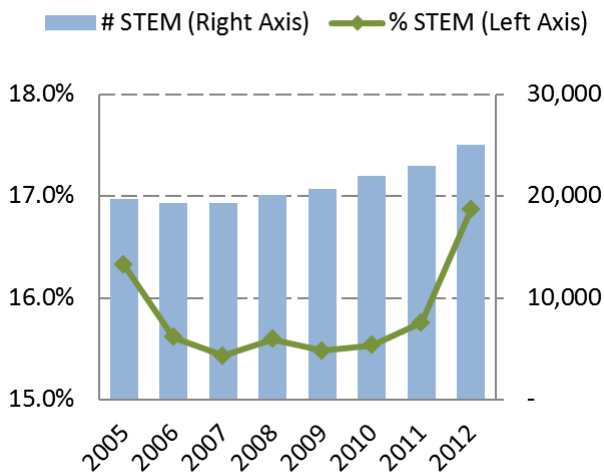
# Science, Technology, Engineering, and Math (STEM) Degrees

Abbey Babb, Myles Fowler-Quick, and Geoffrey Okorom

Graduates from Science, Technology, Engineering, and Math (STEM) programs are an important indicator of labor supply. The Department of Homeland Security (DHS) maintains the STEM-Designated Degree Program List, which includes nearly 420 degree programs. ([Appendix 1](#)) This analysis tracks the number of completions from STEM programs from Michigan’s universities, colleges, and other training providers.

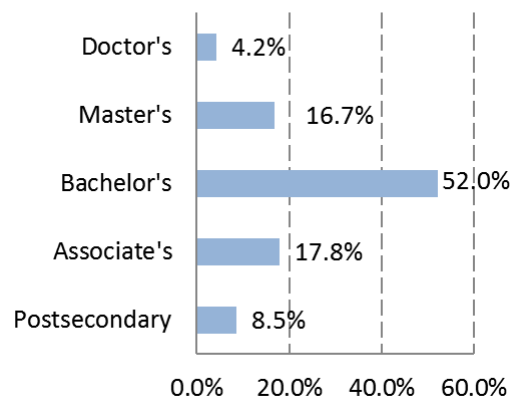
- During the 2011-2012 academic year, there were over 25,000 completions in STEM degree programs in Michigan. The number of STEM completions continued to trend upward as did STEM completions as a share of total degrees granted, which inched up from 15.8 percent in 2010-2011 to 16.9 percent in 2011-2012.
- More completions in STEM programs reflects increased overall enrollment, which has climbed each year since the beginning of the economic downturn. However, with STEM completions growing at a faster rate than overall completions, it is likely that increased attention and focus on the importance of STEM fields can share some credit for more enrollments and completion in the STEM category.
- In 2012, Michigan ranked 8th out of the 50 states in terms of STEM completions and 9th in terms of total completions. Since 2005, the state’s rank for STEM completions has been in a tight band from 6th to 8th.

**STEM Completers in Michigan**



Source: National Center for Education Statistics (NCES)

**STEM Completers by Award Level**



Source: National Center for Education Statistics (NCES)

- The majority of STEM completions were for bachelor’s degrees (52 percent). Roughly equal shares of STEM completions were for associate’s and master’s degrees, while 8 percent of completions were in postsecondary certificates. The smallest share of completions (4 percent) were for doctoral degrees.
- Males continue to be overrepresented in STEM programs, earning over two thirds of STEM degrees but only about 40 percent of all degrees (women earn just over 30 percent of STEM degrees but 60 percent of total degrees). Nonresident aliens continue to take a disproportionate share of STEM degrees, as nonresident aliens earned only 4.5 percent of total degrees but were awarded 11.1 percent of STEM degrees.
- In 2012, nearly 11 percent of employment in Michigan was in STEM occupations. According to long-term occupational projections, that number is expected to reach 13 percent by 2020. Meeting this future demand will require Michigan to have an adequate supply of workers trained in these critical areas.

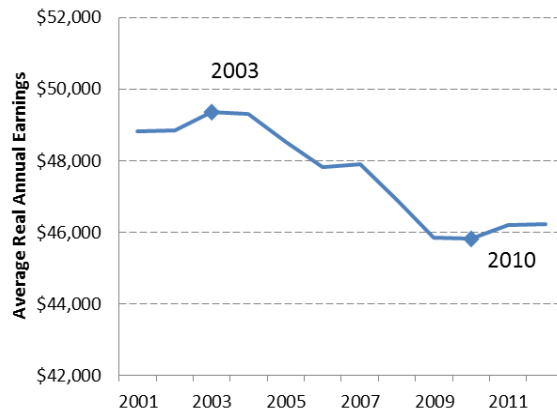
# Wages by Industry from 2001 to Present

Kevin Doyle and Ryan Gimarc

Wages\* have been a topic of important discussions in news and social media in recent years. Using information from the Quarterly Census of Employment and Wages (QCEW) data series, earnings trends can be tracked over time for privately-owned firms. This indicator displays changes in real wages by industry from 2001 to 2012. Wages in this article are expressed in 2012 dollars by adjusting for inflation using the consumer price index (CPI), to control for changes in the buying power of wages over time.

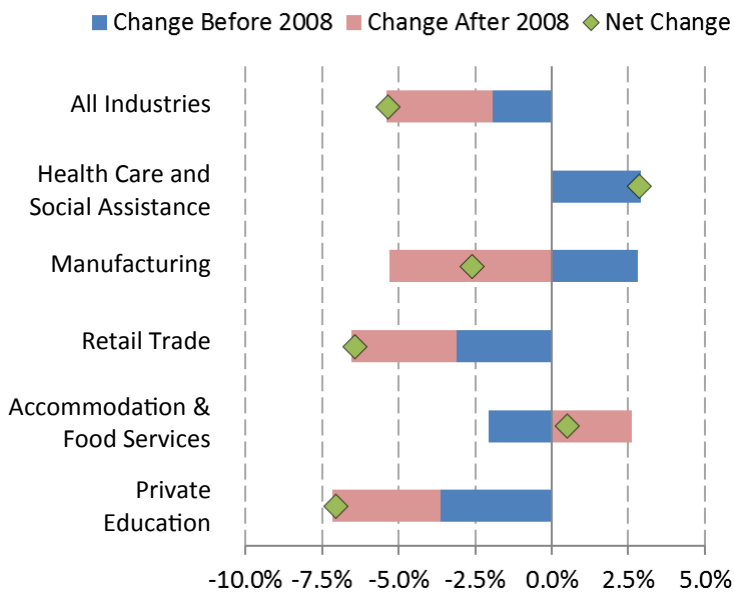
- Average real annual wages in Michigan stood at \$46,217 in 2012 (expressed in 2012 dollars). This all-industries wages measure dropped by \$2,606, or 5.3 percent, since 2001.
- This topline measure has served as a strong indicator of the state’s financial health over the last decade. Following many other metrics, wages dropped steadily from 2001 to 2006 before experiencing a sharp decline from 2007 to 2009. Since 2010, wages have inched back upwards.
- Although all-industry average yearly wages increased by a net \$404 from the recessionary trough in 2010 through 2012, wages remain well below 2001 levels.

**All Industry Average Real Annual Wage, 2001-2012, Michigan**



Source: DTMB, Quarterly Census of Employment and Wages

**Change in Wages from 2001 to 2012 for Top 5 Industries by Employment**



Source: DTMB, Quarterly Census of Employment and Wages

\*Wages do not include income from investments, retirement benefits, public assistance, or unearned income.

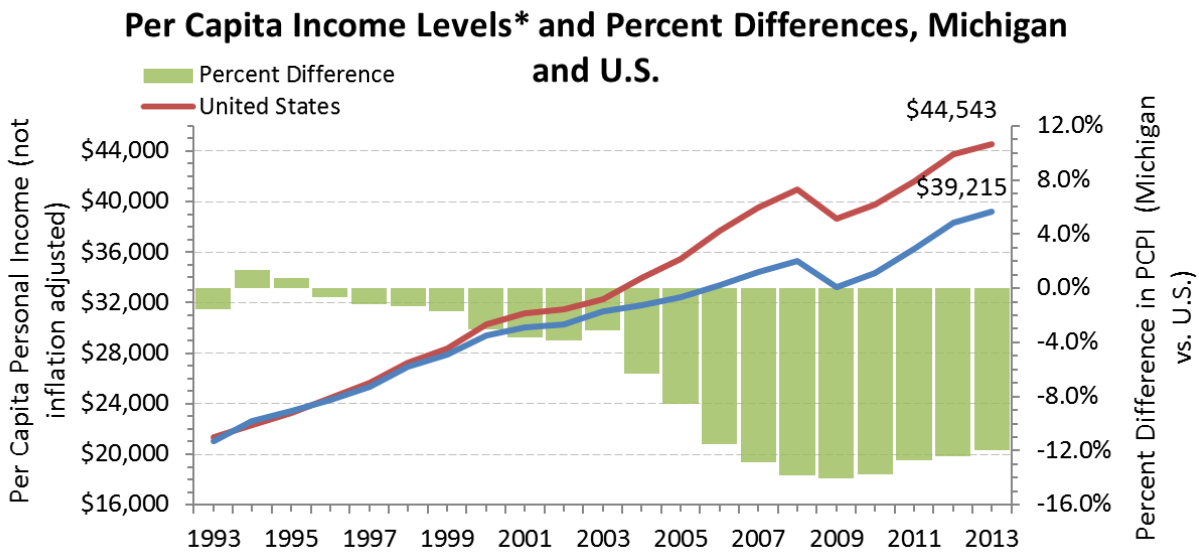
- Of the 19 major sectors, 10 recorded increases in real wages from 2001 to 2012, and nine had decreases in real wages. The *Mining* and *Utilities* sectors, the two smallest in the state, posted the largest increases in real wages over the time period, at +27.5 and +16.8 percent, respectively.
- The *Health care and social assistance* industry had the largest increase in real wages among the largest industries from 2001 through 2012. Wages rose by a real \$1,258, or 2.9 percent.
- The *Retail* industry experienced the highest drop in real wages from 2001 to 2012 among the largest industries. Average wages in the industry fell by \$1,810 or 6.4 percent.
- Another industry experiencing large wage drops from 2001 to 2012 was *Private education*, which recorded a real wage decrease of \$2,562 or 7.0 percent.



# Per Capita Personal Income

Mark Reffitt

Personal income is a widely-used measure of the economic health of a particular geographic region. Per capita income data from the Bureau of Economic Analysis standardizes county and regional income statistics and allows for comparisons across states of different sizes. While per capita income does not address certain important issues such as overall income distribution or the demographic differences in income growth, it remains a key tool for tracking an area’s ability to maintain income growth patterns over time.



Source: U.S. Bureau of Economic Analysis / DTMB

- Michigan’s per capita personal income (PCPI) measured just over \$39,200 in 2013. This marked a 2.4 percent increase over recently revised 2012 data, outpacing the state’s 0.8 percent inflation rate during the same period. Michigan’s PCPI growth rate was also higher than the national increase of 1.8 percent during 2013, despite remaining below the national level of \$44,500 in 2013. (Total Michigan non-population-adjusted 2013 personal income grew at the same rate as the U.S.).

- Michigan’s per capita income was 12 percent lower than the U.S. average in 2013, but continued on a path to close this gap. Since the low point in 2009, the income gap between the U.S. and Michigan improved by two full percentage points. Michigan’s annual growth in manufacturing GDP of 5 percent in 2013 more than doubled the national gain of 2.2 percent and was a likely driving force behind the state’s personal income growth. Like many economic indicators in Michigan, PCPI is dependent upon the health of the state’s manufacturing sector.

YEAR	PCPI RANK	TREND
2003	21	NO CHANGE
2004	26	▼ 5
2005	30	▼ 4
2006	35	▼ 5
2007	37	▼ 2
2008	39	▼ 2
2009	40	▼ 1
2010	39	▲ 1
2011	36	▲ 3
2012	37	▼ 1
2013	36	▲ 1

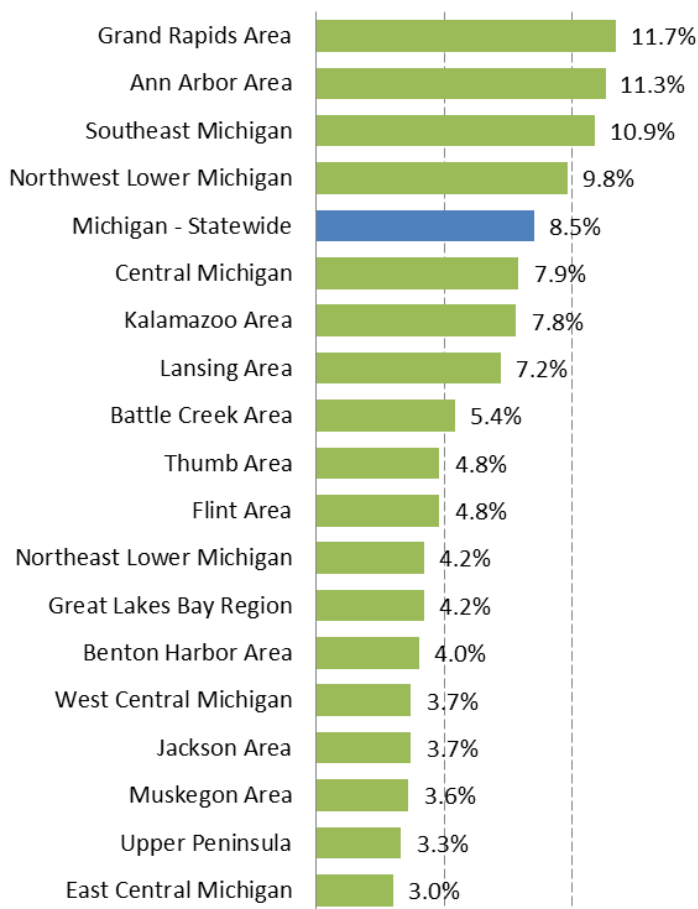
- Revisions to 2012 data slightly dropped the state’s 2012 PCPI rank since the previous summer edition of this publication. Preliminary ranking data for Michigan, however, indicates an uptick back to 36th place. The state’s standing relative to the U.S. improved slightly from a low in 2009 and has remained largely stable since 2011.

## Regional Industry and Occupational Outlook 2010-2020

Mark Reffitt

The Bureau of Labor Market Information and Strategic Initiatives produces long-term industry forecasts and occupational outlook for Michigan regions every two years. These projections serve as important tools in the decision-making process for educators, workforce and economic developers, jobseekers and policy makers and are one of LMISI's most popular types of information. Such organizations use these data to help effectively plan curriculum for education and training programs, educate students and jobseekers on potential career paths, help ensure that taxpayer dollars are used efficiently in government-funded training programs, and as supporting documentation to apply for Federal grants, among numerous other purposes.

### Occupational Outlook for Michigan's Regions 2010-2020



Source: DTMB, Bureau of Labor Market Information and Strategic Initiatives

- The Grand Rapids and Ann Arbor areas are expected to be among Michigan's top regions in terms of overall job growth through 2020. Building on recent economic strength, these regions should post job growth due to continued economic expansion, most notably in *Private education and health services*, *Professional and business services*, and *Construction*. Both areas should also see solid growth in *Manufacturing*, an industry with a less optimistic outlook statewide.
- The largest number of new jobs will be seen in Southeast Michigan, where approximately 198,000 new positions are forecasted by 2020. Occupational categories expected to generate many new jobs include *Production*, *Healthcare*, *Office and administrative support*, and *Service* occupations.
- While all Michigan regions are expected to post some job gains through 2020, some areas will record below average growth. In these areas jobseekers should nevertheless expect opportunities as new workers will be needed to replace existing workers due to turnover, retirement, or other factors. These opportunities will be in a mix of occupations requiring a variety of education and training backgrounds.
- Though many of Michigan's non-urban regions are expected to be on the low end of the job growth spectrum, there are still some common occupational groups expected to add new jobs including *Healthcare*, and *Computer and mathematical* occupations. And despite relatively lower growth rates, *Production*, *Sales and related*, and *Office and administrative support* occupations are projected to offer a number of job opportunities due to demand for replacement workers.

## What's New from LMISI?

The *Michigan Economic and Workforce Indicators and Insights* report is just one of the many publications by the Bureau of Labor Market Information and Strategic Initiatives. Serving a diverse group of customers, our products range from workforce data to customized products and publications. Highlighted below are some of our more recent products. These and more can be found on our website at: [www.michigan.gov/lmi](http://www.michigan.gov/lmi).

### Youth and Young Adults and the Michigan Labor Market



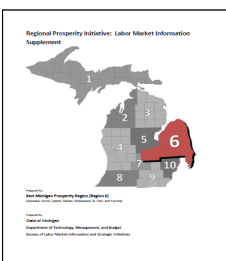
This study examines the important topic of teens and young adults in the labor market. This report provides workforce development professionals with timely, relevant, and accurate information on subjects including: demographics, labor force, and unemployment; industry and occupational employment; educational attainment and job market success; migration of youth; and employment and skill outlook.

### Regional Long Term Occupational Projections (2010-2020)



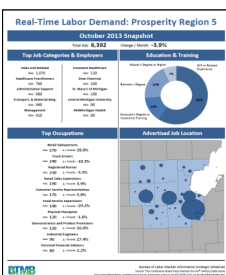
Published for Michigan's 18 Economic Forecast Regions (EFRs), these long term occupational employment forecasts show actual and expected employment levels, rates of change, and the expected average number of job openings per year for a wide variety of occupations. The projections are used in our key products, including the Michigan's Hot 50 and the Career Outlook Brochures.

### Regional Prosperity Initiative: Labor Market Information Supplement



These profiles provide labor market information to support the Regional Prosperity Initiative. Included is information and analysis on the topics of population and demographics, labor force, employment, and unemployment, commuting patterns, industry employment and job trends, occupational employment and wages, and occupational demand, both real-time and forecasted.

### Regional Prosperity Initiative: Real-Time Labor Demand Snapshots



Published for the State's 10 Prosperity Regions, these monthly reports use The Conference Board Help Wanted OnLine® (HWOL) Data Series to provide a high-level overview of in-demand occupations, top advertising employers, education and training requirements, and the location of advertised vacancies for each of Michigan's 10 Prosperity Regions.

What's New from LMISI?

## Appendix 1: STEM Programs, Defined

### Classification of Instruction Program (CIP) Codes for Science, Technology, Engineering, and Math (STEM) Degrees

CIP Code	CIP Title
1	Agriculture, Agriculture Operations, and Related Sciences*
3	Natural Resources and Conservation*
4	Architecture and Related Programs*
9	Communication, Journalism, and Related*
10	Communications Technologies / Technicians and Support Services*
11	Computer and Information Sciences and Support Services
13	Education*
14	Engineering
15	Engineering Technologies / Technicians
26	Biological and Biomedical Sciences
27	Mathematics and Statistics
28	Reserve Officer Training Corps (JROTC, ROTC)*
29	Military Sciences*
30	Multi/Interdisciplinary Studies*
40	Physical Sciences
41	Science Technologies / Technicians
42	Psychology*
43	Security and Protective Services*
45	Social Science*
49	Transportation and Materials Moving*
51	Health Professions and Related Clinical Sciences
52	Business, Management, Marketing, and Related Support Services*

**Source:** The Department of Homeland Security (DHS)

**Notes:** \*Select Programs

Full list of STEM Programs available at: <http://www.ice.gov/doclib/sevis/pdf/stem-list.pdf>

## Appendix 2: High-Tech Industries, Defined

### High-Tech Industries

NAICS Code	2007 NAICS U.S. Title
<b><i>Automotive Manufacturing Cluster</i></b>	
3361	Motor Vehicle Manufacturing
3362	Motor Vehicle Body and Trailer Manufacturing
3363	Motor Vehicle Parts Manufacturing
<b><i>Advanced Manufacturing Cluster</i></b>	
3329	Other Fabricated Metal Manufacturing
3331	Agriculture, Construction and Mining Machinery Manufacturing
3333	Commercial and Service Industry Machine Manufacturing
3336	Engine, Turbine and Power Transmission Equipment Manufacturing
3339	Other General Purpose Machinery Manufacturing
3345	Navigational, Measuring, Electromedical, Control Instrument Manufacturing
3353	Electrical Equipment Manufacturing
3359	Other Electrical Equipment and Compound Manufacturing
3364	Aerospace Product and Parts Manufacturing
3369	Other Transportation Equipment Manufacturing
<b><i>Chemicals &amp; Materials Cluster</i></b>	
3241	Petroleum and Coal Products Manufacturing
3251	Basic Chemical Manufacturing
3253	Pesticide, Fertilizer and Other Ag Chemical Manufacturing
3255	Paint, Coating and Adhesive Manufacturing
3256	Soap, Cleaners and Toilet Preparation Manufacturing
3259	Other Chemical Product and Preparation Manufacturing
<b><i>Information Technology Cluster</i></b>	
3341	Computer and Peripheral Equipment Manufacturing
3342	Communications Equipment Manufacturing
3343	Audio and Video Equipment Manufacturing
3344	Semiconductor and Other Electronic Component Manufacturing
3346	Manufacturing and Reproducing Magnetic and Optical Media
5112	Software Publishers
5171	Wired Telecommunication Carriers
5172	Wireless Telecommunication Carriers (Except Satellite)
5174	Satellite Telecommunications
5179	Other Telecommunications
5182	Data Processing, Hosting, and Related Services
51913	Internet Publishing and Broadcasting and Web Search Portals
5415	Computer Systems Design and Related Services
<b><i>Science R&amp;D &amp; Medical Manufacturing Cluster</i></b>	
3254	Pharmaceutical and Medicine Manufacturing
3391	Medical Equipment and Supplies Manufacturing
5417	Science R & D Services
<b><i>Engineering Services &amp; Other Cluster</i></b>	
4234	Professional and Commercial Equipment & Supplies Merchant Wholesalers
5413	Architectural, Engineering and Related Services
5416	Management, Scientific, and Technical Consulting Services

## Appendix 3: Automotive and Related Employment, Defined

### Automotive Manufacturing and Related Industries

NAICS Code	2012 NAICS U.S. Title
<b>Automobile Production</b>	
3361	Motor Vehicle Manufacturing
3362	Motor Vehicle Body and Trailer Manufacturing
3363	Motor Vehicle Parts Manufacturing
336992	Military Armored Vehicle, Tank, and Tank Component Manufacturing
<b>Automobile Related Industries</b>	
326121	Unlaminated Plastics Profile Shape Manufacturing
326199	All Other Plastics Product Manufacturing
326211	Tire Manufacturing (except Retreading)
326220	Rubber and Plastics Hoses and Belting Manufacturing*
326291	Rubber Product Manufacturing for Mechanical Use
327211	Flat Glass Manufacturing
331111	Iron and Steel Mills
331511	Iron Foundries
332510	Hardware Manufacturing*
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing
333511	Industrial Mold Manufacturing
333514	Special Die and Tool, Die Set, Jig, and Fixture Manufacturing
333515	Cutting Tool and Machine Tool Accessory Manufacturing
333618	Other Engine Equipment Manufacturing
334514	Totalizing Fluid Meter & Counting Device Manufacturing*
335110	Electric Lamp Bulb and Part Manufacturing*
335911	Storage Battery Manufacturing*
423110	Automobile and Other Motor Vehicle Merchant Wholesalers
423120	Motor Vehicle Supplies and New Parts Merchant Wholesalers
423130	Tire and Tube Merchant Wholesalers
423830	Industrial Machinery and Equipment Merchant Wholesalers
425110	Business to Business Electronic Markets*
425120	Wholesale Trade Agents and Brokers*
541330	Engineering Services
541380	Testing Laboratories
541712	Research & Development in Physical, Engineering, and Life Sciences (except Biotech)**
55111	Management of Companies and Enterprises*

**Source:** DTMB / with assistance from the Center for Automotive Research (CAR)

**Notes:** \* Partial employment

\*\* Estimated

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