



Winter 2016

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

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## Foreword

Friends,

December 31, 2015

As we get ready to welcome 2016, we take a minute to remember what was by many accounts a good year for the state's labor market in 2015. For the first time since 2000, the state's jobless rate matched the national rate. Payroll jobs continued to expand, passing levels last seen in 2008. And, online job postings and results from our Job Vacancy Survey suggest that employers continue looking for new talent. Despite these and other improvements, there is plenty of work to be done. Through a series of one-page reports, this publication is intended to provide our partners and customers with a look at several economic and workforce subjects, noting along the way both the positive and where there are opportunities for improvement.

In this edition of the Michigan Economic and Workforce Indicators and Insights publication, our team analyzes our regular slate of key indicators, including the unemployment rate, job trends, payroll jobs by industry, state gross domestic product, and real-time demand. In addition, we refresh periodic indicators focusing on patents, venture capital, educational attainment, and scientists and engineers. We also discuss the important topics of part-time employment, underemployment, women in the labor market, the aging workforce, and young talent in Michigan. Finally, we highlight two new sources of recently released information: our 2016 Job Vacancy Survey and our short-term employment projections.

Our mission is to provide partners and customers with accurate, objective, reliable, timely, accessible, and transparent information and insights. Please let us know what you think of this collection of reports and if there are any topics you would like to see covered in a future edition of this publication.

Regards,



Jason S. Palmer

Director,  
DTMB, Bureau of Labor Market Information & Strategic Initiatives

*In Loving Memory of Carole Sorenson,  
Our Dear Friend and Colleague*

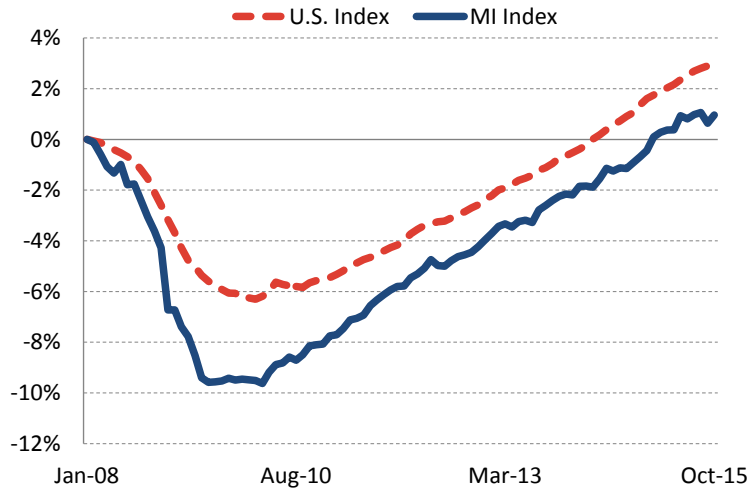
## Michigan Job Trends

David Cole

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.

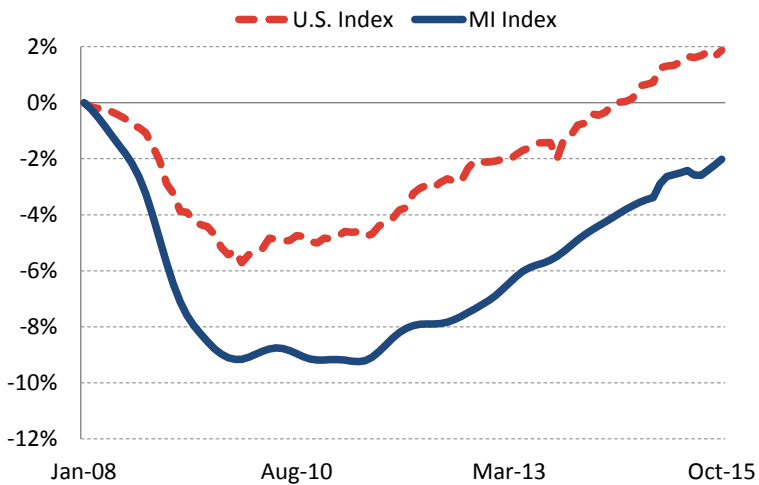
- Total nonfarm employment increased by 1.4 percent during the 10-month period ending in October, or by 59,300 jobs. This was similar to the 1.5 percent job growth nationally during this period.
- The 59,300 jobs Michigan added in the first ten months of 2015, was consistent with the gains in 2013 and 2014 over the same period, when Michigan added 66,300 jobs and 52,200 jobs respectively.
- Michigan's payroll job expansion over the first ten months of 2015 was aided in part by the *Education and health services* sector. This industry added 16,200 jobs so far this year compared with 4,500 jobs in 2013 and 5,300 jobs in 2014 over the same period.
- Michigan nonfarm payrolls have expanded by 448,400 jobs (+11.7 percent) since the recessionary low in March 2010. Job levels are now 40,700 (+1.0 percent) above the pre-recessionary level in January 2008.
- Total employment estimates from the household survey in Michigan advanced by 1.4 percent during the first ten months of 2015, or by 63,000. This was slightly above the 1.1 percent growth nationally during this period.

**Nonfarm Payroll Jobs, Percent Change Since January 2008**



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

**Household Employment, Percent Change Since January 2008**



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

- Unlike total employment in the United States which is up 1.9 percent since January 2008, total employment in Michigan remains -93,000 or -2.0 percent below its January 2008 pre-recessionary level.
- The University of Michigan, Research Seminar in Quantitative Economics (RSQE) predicts payroll job expansion in Michigan of 59,000 in 2016 and 65,000 in 2017.

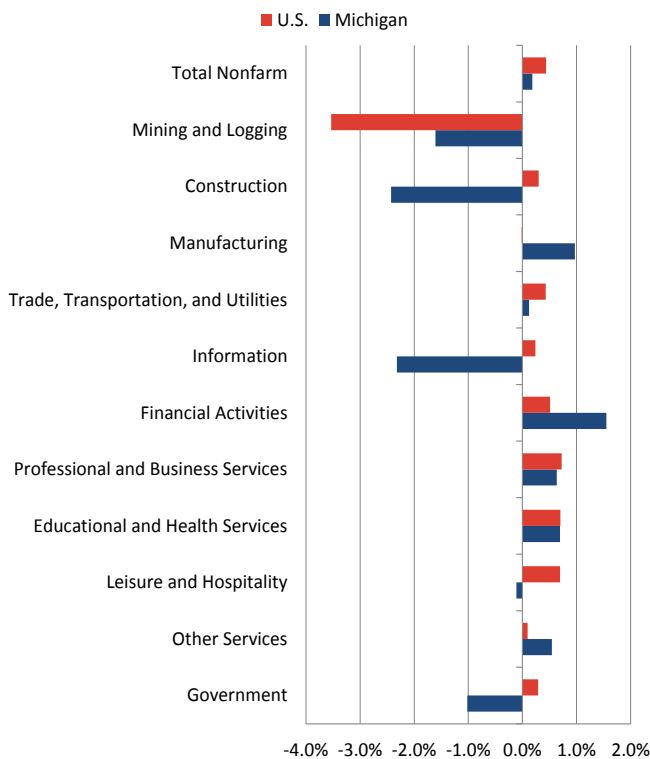
# Payroll Jobs by Industry

David Cole

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 produces monthly estimates of nonfarm jobs by detailed industry (except self-employed) for the nation, states, and metro areas.

- Payroll job growth in Michigan (+2.1 percent) has been on pace with the United States over the past year. The industry sectors in Michigan which have outperformed the nation include *Manufacturing, Construction, Financial activities, and Professional and business services*, with *Mining and logging* showing a much smaller job decline than nationally.
- The Michigan industries with employment reductions since the third quarter 2014 were *Information* (-4.9 percent), *Government* (-1.6 percent), and *Mining and logging* (-0.4 percent).
- On a quarterly basis, payroll employment in Michigan has grown for 22 consecutive quarters, up by 441,900 or 11.5 percent. This outpaced the 9.6 percent advance in jobs nationally during this period.

## Over the Quarter Percentage Job Change Second Quarter: 2015 - Third Quarter: 2015



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

## Over the Year Percentage Job Change Third Quarter: 2014 - Third Quarter: 2015

Industry Sectors	Michigan	U.S.
<b>Total Nonfarm</b>	<b>2.1%</b>	<b>2.1%</b>
Mining and Logging	-0.4%	-9.4%
Construction	5.6%	3.6%
Manufacturing	4.2%	1.0%
Trade, Transportation, and Utilities	1.0%	2.1%
Information	-4.9%	1.6%
Financial Activities	3.5%	1.9%
Professional and Business Services	3.9%	3.4%
Educational and Health Services	2.8%	2.7%
Leisure and Hospitality	2.0%	3.0%
Other Services	1.3%	1.1%
Government	-1.6%	0.5%

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

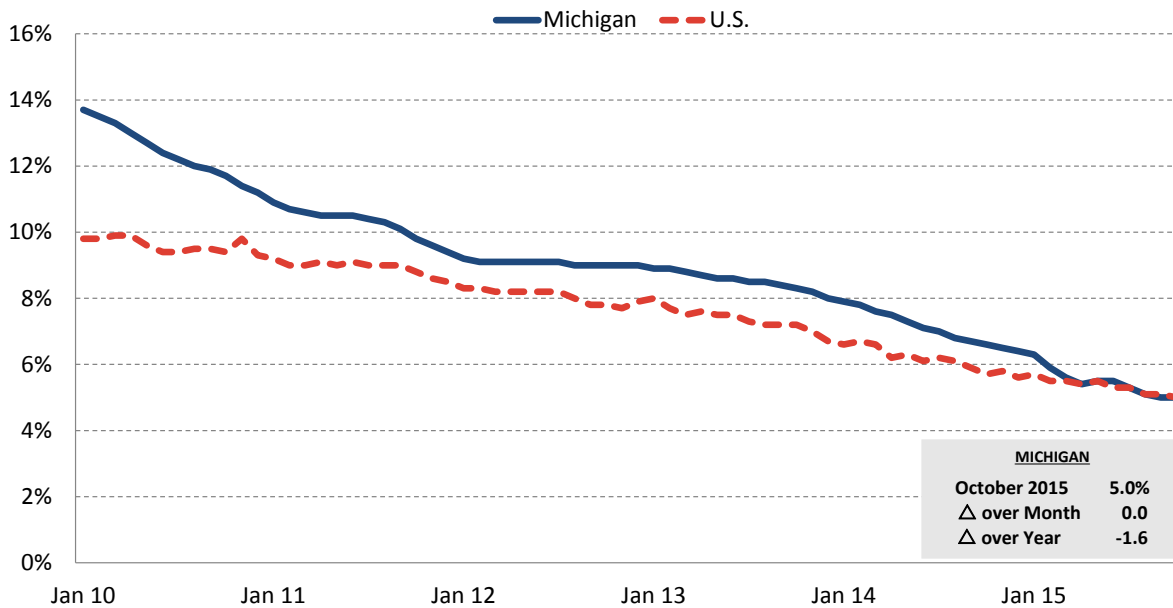
- Michigan’s *Financial activities* sector recorded the largest employment gain (+1.5 percent) during the third quarter. This compared to 0.5 percent growth nationally in this sector. The *Financial activities* sector has had job advances for seven straight quarters.
- The *Manufacturing* sector continues to lead job growth in Michigan. During third quarter 2015, payrolls grew by 1.0 percent (+5,800 jobs) compared to a lack of expansion nationwide. Advances in automotive related *Transportation equipment manufacturing*, (+3,500 jobs) accounted for over half the growth in the Michigan *Manufacturing* sector.
- Michigan’s *Other services* sector (nonprofits, repair and personal services, etc) edged up by 0.5 percent compared to 0.1 percent growth nationally. This sector in Michigan recorded four consecutive quarters of job expansion.
- *Construction* (-2.4 percent), *Information* (-2.3 percent), *Mining and logging* (-1.6 percent) and *Government* (-1.0 percent) were the sectors with job losses during the third quarter.

# Unemployment Rate

Jim Rhein

The unemployment rate is a key economic indicator for states and regions. As one measure of the relative labor market success of the population, the jobless rate is widely utilized. It is defined as the ratio of the number of unemployed persons to all of those active in the workforce. To be considered unemployed, individuals must have no earnings from work in a given month, be actively seeking a job, and be able to accept a position if offered.

**Monthly Unemployment Rates (Seasonally Adjusted), Michigan and U.S.**



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

- Michigan's jobless rate in 2015 has fallen to match the national rate. From December 2014 to April 2015, the state's unemployment rate fell by a full percentage point from 6.4 to 5.4 percent. Over that same period, the U.S. rate was little changed, edging downward by -0.2 of a percentage point. March through October 2015 marked the first period since 2001 that Michigan's jobless rate was essentially the same as the national rate.
- From October 2014 to October 2015, Michigan's jobless rate dropped by -1.6 percentage points, the second largest state rate reduction in the nation (Rhode Island -1.7). In October 2015, Michigan's unemployment rate was tied with Missouri as the 25<sup>th</sup> lowest state rate in the U.S.
- Since January 2010, Michigan's jobless rate dropped by a very significant -8.7 percentage points. The U.S. rate fell by -4.8 percentage points over the same period.
- Ten months into 2015, Michigan's average 2015 unemployment rate stood at 5.5 percent, which should be similar to the state's upcoming 2015 annual rate. That would place 2015 as the eighth lowest annual rate on record for the Michigan official series dating back to 1976.
- Although Michigan's unemployment rate (and the number of unemployed) has fallen to 2001 levels, the state's labor force and total employed in 2015 remain well below 2001 levels. Michigan's 2015 average (through October) labor force and total employed were -377,000 (-7.4 percent) and -371,000 (-7.6 percent) below 2001 levels, respectively. The Great Recession, restructuring of the auto industry, stagnating state population growth, and an aging workforce fundamentally changed Michigan's labor market since the early 2000s. However since 2010, Michigan has recovered about half of the total employment level that was lost from 2001 to 2009.

## Real-Time Job Demand

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 role of staffing and recruiting firms in online job demand. Knowing the characteristics of staffing and recruiting firms' labor demand gives valuable insight into what type of work their employees are performing, something difficult to parse out from typical employment data.

- Michigan's seasonally adjusted job advertisements rose to 185,200 in October, the latest month of data available, outpacing national October growth by 4.5 percentage points. This marks the tenth time the HWOL series has reached a new high in two years, and also represents a growth rate of 7.6 percent from the beginning of 2015. While October's count of job ads has risen from the beginning of this year, ads were down in the summer months, falling to a 2015 low of 170,900 in July.

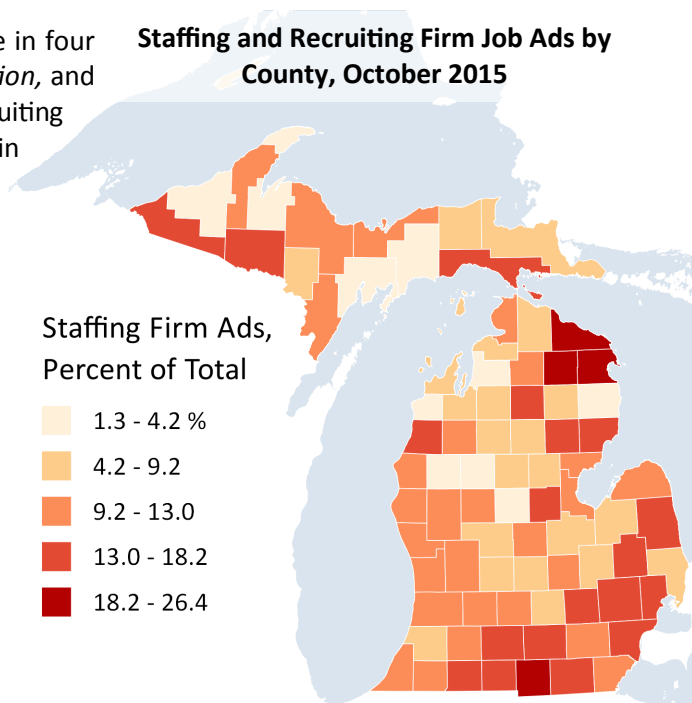
### Seasonally Adjusted Job Postings

	Oct 2014	Oct 2015	Change
<b>Michigan</b>	168,550	185,200	9.9%
<b>U.S.</b>	5,171,600	5,452,500	5.4%

Source: The Conference Board, Help Wanted Online

- The non-seasonally adjusted count of job ads shows that *Sales and related* occupations continued their monthly gains in October, up 2.0 percent. Growth in this group of occupations, however, has begun to level off, likely reaching the seasonal peak as employers begin their hiring for the holiday shopping season, an event which usually occurs near October.
- A relatively small percentage of total job ads for *Sales and related* occupations were posted by staffing or recruiting firms — just 4.0 percent of total *Sales* ads. For comparison, staffing firms posted 14.3 percent of Michigan's total job ads, totaling 26,570 ads across all occupations. Job ads posted by these types of firms are far more prevalent for *Computer and mathematical* and *Production* occupations than for *Sales*.
- On average over the past three months, over one in four jobs ads for *Computer and mathematical*, *Production*, and *Legal* occupations were posted by staffing or recruiting firms. *Computer and mathematical* occupations, in fact, led in both the numeric and percentage of total job ads posted by staffing or recruiting firms.
- Among the counties in Michigan with the highest proportion of job ads posted by staffing firms were Presque Isle, Montmorency, and Alpena where a small number of *Healthcare*-related job postings drove up the percentage.
- In Southeast Michigan, staffing firm ads posted for *Computer and mathematical* and *Architecture and engineering* occupations comprised about 4 of every 10 staffing firm ads in the area.

### Staffing and Recruiting Firm Job Ads by County, October 2015



Source: The Conference Board, Help Wanted Online

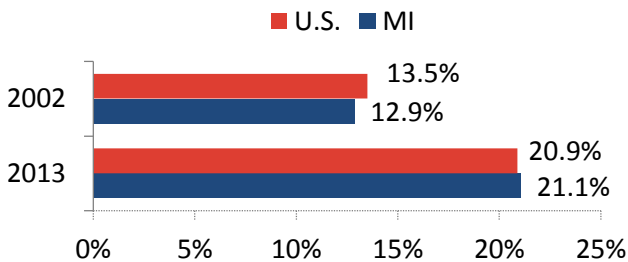


# Local Employment Dynamics: Michigan’s Aging Workforce

Aneesa Rashid, PhD

This report looks at the increase in concentration of workers 55 and older and identifies the top five industries with the highest concentration in this age group. This information has implications for the potential training needs for these industries as these workers retire. The Quarterly Workforce Indicators (QWI) data which is extracted from the Longitudinal Employer Household Dynamics Program (LEHD) is used for this report. The LEHD program is the result of a partnership between the Bureau of Labor Statistics and the U.S. Census Bureau and provides demographic data along with firm characteristics and employment measures.

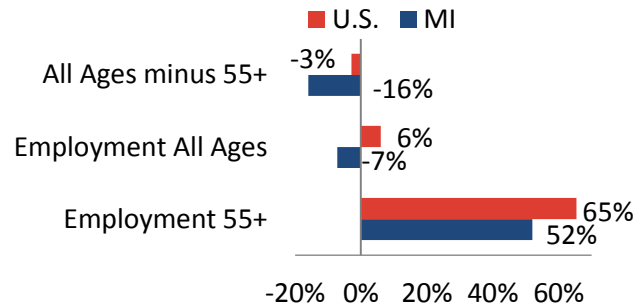
## Michiganders Who Continue Working After Age 55+ Percent of Total Employment



- Between 2002 and 2013, growth in employment of workers 55 and older well outpaced the all-age average. This group grew by 52 percent in Michigan and 65 percent nationally. Conversely, when looking at workers under the age of 55, there was a decline in employment in both Michigan and the US, although the reduction was greater in Michigan by 13 percentage points. Total employment for all ages decreased 7 percent in Michigan, but rose 6 percent nationally.

- The proportion of Michigan workers age 55 and over grew from one in eight to over one in five over the past decade (2002Q1 to 2013Q1 average), closely following the national trend. A number of factors could be responsible for the aging of the workforce, ranging from changing demographics to uncertainties relating to the Great Recession. Even as these workers retire, they may move into other jobs that are not preferred by younger workers.

## Percent Change in Employment by Age 2002-2013



## Michigan Industries with Highest Concentration of Workers 55 and Older (2014)

Rank	Industry	Concentration of 55+
1	Transit and Ground Passenger Transportation	38.4%
2	Administration of Housing Programs, Urban Planning, and Community Development	33.6%
3	Museums, Historical Sites, and Similar Institutions	32.2%
4	Religious, Grantmaking, Civic, Professional and Similar Organizations	31.5%
5	Oil and Gas Extraction	31.4%

Source: DTMB, Bureau of Labor Market Information and Strategic Initiatives, Quarterly Workforce Indicators, Local Employment Dynamics

- The highest concentration of older workers in Michigan remains in *Transit and ground passenger transportation*. This industry includes urban transit systems, chartered bus, school bus and interurban transportation activities.

- Top industries with the largest number of workers 55 and older are *Educational services, Ambulatory health care services, Professional, scientific and technical services and Hospitals*.

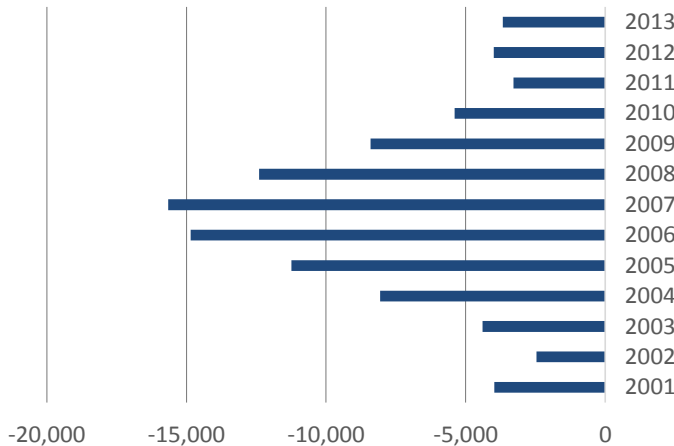
- Top industries with the largest employment for the under 55 age group are *Food services and drinking places, Motion picture and sound recording, Electronics and appliance stores, Beverage and tobacco product manufacturing and Telecommunications*.

# Job-to-Job Flows: Michigan Outflow Profile

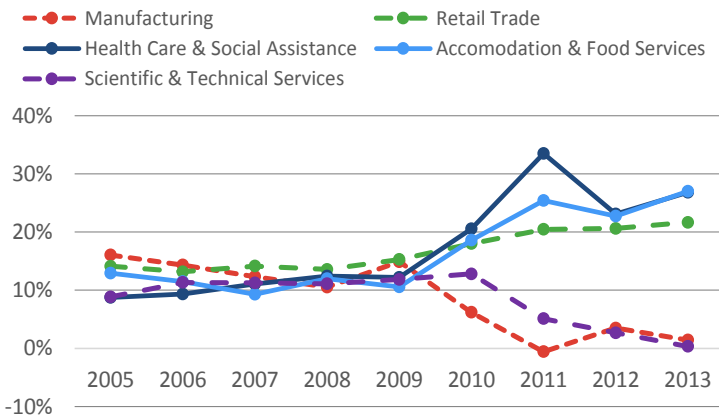
Aneesa Rashid, PhD

The job-to-job (J2J) flows data is a new data series released by the Census Bureau from the Longitudinal Employment and Household Dynamics (LEHD) employer-employee linked database. This data provides insights into the flow of workers across firms, states and industries. Research has shown that higher J2J flows occur when there are opportunities for workers to move up the job ladder for higher wages. This report looks at the top industry sectors that experienced the highest net J2J flows in Michigan and to which states Michigan lost jobs. Since 2001, it was the service sector that experienced the most net J2J outflows.

**Net Outflow of Jobs from Michigan (2001 Q1 to 2014 Q1)**



**Industries Contributing to Net Outflows of Jobs Percent Change (2005-2013)**



- The job-to-job outflow of workers from Michigan to the nation as a whole has been greater than the J2J inflow of workers to Michigan since the start of the data series in 2001. The total net job outflow was at its highest between 2005 to 2008 averaging 13,535 jobs per year. From 2009 to 2013 the net job outflow has decreased, averaging 4,945 jobs per year.
- From 2001 to 2013, the top five industries contributing to the total net job outflows were *Retail trade, Health care and social assistance, Accommodation and food services, Manufacturing and Scientific and technical services*. Relatively stable prior to 2009, the net outflow of jobs from *Manufacturing and Scientific and technical services* has shown a sharp decline.
- Between 2001 and 2013, total Michigan net job-to-job outflows were highest to Florida (-12,997), Texas (-8,815), Illinois (-7,948), California (-6,909) and North Carolina (-5,773).
- The highest net outflow of jobs from the service industries were to Florida. Texas, California and North Carolina ranked higher for net outflows of *Manufacturing and Professional and technical services* jobs.

**Industries and States Experiencing the Largest Net J2J Outflows from Michigan (2001-2013)**

Rank	Florida	Texas	Illinois	California	N. Carolina
Retail Trade	-1,907	-1,163	-1,383	-690	-828
Health Care and Social Assistance	-1,918	-1,280	-674	-1,242	-674
Accommodation and Food Services	-1,714	-808	-1,518	-754	-480
Manufacturing	-1,171	-1,240	-524	-846	-608
Scientific and Technical Services	-761	-842	-1,194	-1,117	-687

Source: DTMB, Bureau of Labor Market Information and Strategic Initiatives, U.S. Census: Local Employment Dynamics

# Educational Attainment

Eric Guthrie

The level of educational attainment of the population is a valuable metric when looking at how well the labor force will be able to meet the demands of an ever changing economy and world. The U.S. Census Bureau collects data on this topic through a variety of sources, with the American Community Survey (ACS) being the most comprehensive.

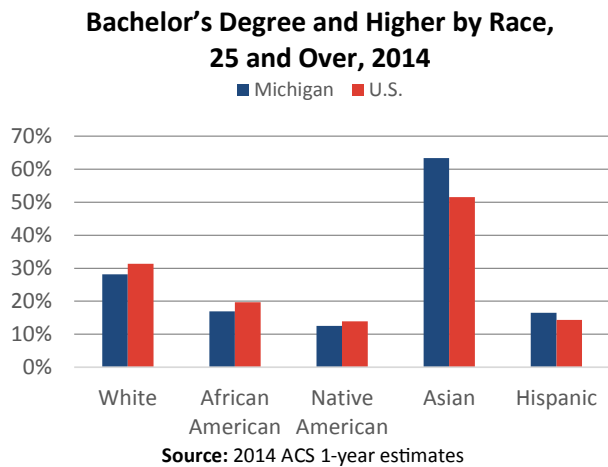
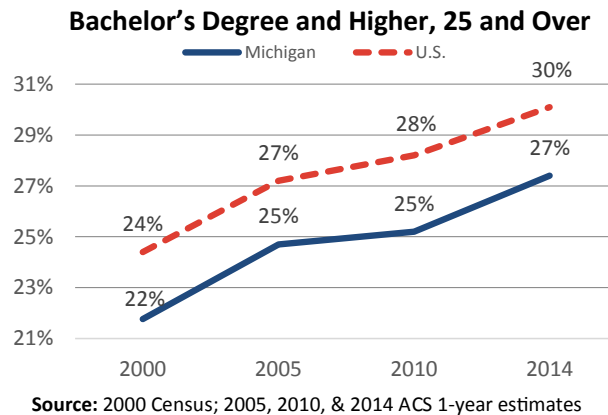
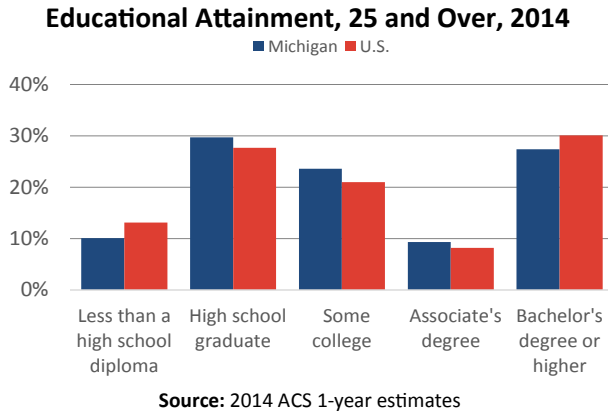
- When looking at the population 25 and over, Michigan lags behind the nation in the share of the adult population with bachelor’s degrees. As a result, the state has higher shares than the U.S. average in all other educational attainment categories except those with less than a high school diploma.

- Michigan remains ranked 33rd in the nation in the proportion of the population 25 and older who have a bachelor’s degree or higher. This is the second year that Michigan ranked 33rd after moving from 36th place in 2012.

- While the share of Michiganders with a bachelor’s degree or higher lags behind the nation in all age cohorts, the difference is smaller in the younger age groups, those between 25 and 44 years of age. The difference in the 25 and older, summary category, will narrow over time as the trend of higher levels of educational attainment seen in younger cohorts replaces the trends of previous generations.

- Michigan lags behind the nation in most groups when the race or ethnicity of persons with a bachelor’s degree or higher is considered. The exceptions to this are the Asian and Hispanic groups. While just over half of the Asian population has a bachelor’s degree or higher nationally, that percentage is over 63 percent in Michigan. While the magnitude of the difference is smaller, the Michigan Hispanic 25 and over population with a bachelor’s degree also exceeds the national share by just over two percentage points.

- All racial groups other than Asians are lagging well behind the white group in the proportion of the population that has a bachelor’s degree or higher. While this is also true for the U.S., the educational attainment of persons belonging to these groups (except those who are Hispanic or Latino) is even lower in Michigan. African Americans earn a bachelor’s degree or higher at a much lower rate than their white counterparts in Michigan, 16.9 percent versus 28.1 percent respectively. Native Americans are earning bachelor’s degrees at the lowest rate (12.5 percent), less than one-half of the white rate.



## Part-Time Workers in Michigan

Jim Rhein

Part-time employment is an important labor market component, and currently comprises nearly 22 percent of Michigan's total employment. This reflects about one million part-time workers in Michigan, and over 27 million nationwide. Information on part-time employment, full-time employment, and a host of other labor market demographics for states and the nation are drawn from the Current Population Survey (CPS).

- Part-time work is defined as less than 35 hours per week. Involuntary part-time refers to individuals who have either had hours cut due to slack work or can't find full-time employment.
- Most workers are on part-time schedules voluntarily. However, difficult economic conditions can lead to an increase in involuntary part-time workers. Although Michigan's unemployment rate in 2015 has fallen to 2001 levels, involuntary part-time levels in 2015\* remain well above those recorded in the early 2000s. The 237,000 involuntary part-time workers in Michigan in 2015 were below the 2009 peak of 304,000, but remained well above the 116,000 registered in 2000. The two charts below depict part-time employment as a percentage of total employment along with the percentage of involuntary part-time workers relative to all part-time workers.

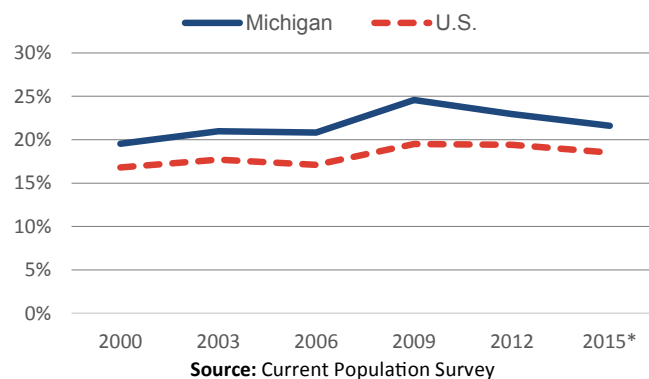
- The percentage of part-time workers relative to total employment in 2015 remains about two percentage points above the share recorded in 2000. From 2000 to 2015, the highest percentage was recorded in 2009, when nearly 25 percent of the state's workers were part-time.

- Over the 2000 to 2015 period, the percentage of part-time workers in Michigan exceeded the national share by an average of over three percentage points.

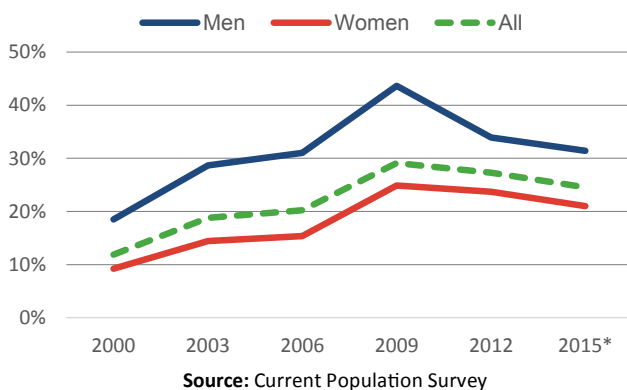
- Women comprise a large majority of part-time workers in Michigan. Women make up about two-thirds of Michigan's part-time employment. The female share of Michigan part-time workers edged down from nearly 70 percent in 2000 to 66 percent in 2015.

- Involuntary part-time employment in Michigan has receded since the Great Recession, but remains above pre-recessionary levels. In 2000, one of the state's optimum labor market years, involuntary part-time workers accounted for 11.8 percent of part-time work, and 2.3 percent of total employed.

**Part-time Employment as a Percent of Total Employment**



**Involuntary Part-time Employment as a Percentage of All Part-time Employment in Michigan**



- The chart to the left illustrates the percentage of male and female involuntary part-time work to total part-time employment. The male share has been consistently above the female share over the last 15 years. Since 2009, the male percentage recovered to pre-recession levels, while the female share remained elevated.

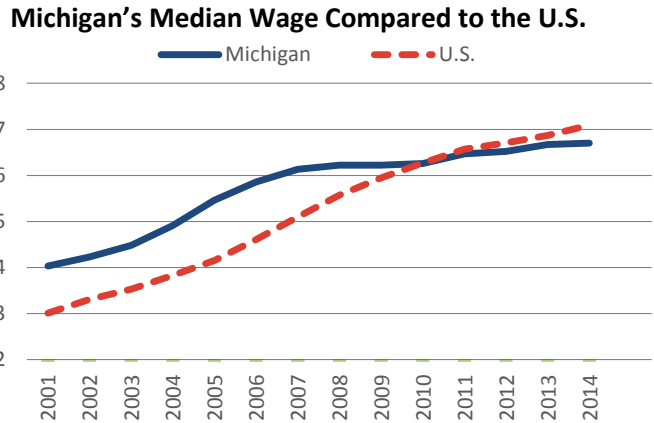
\*Data labeled "2015" reflects the average for October 2014–September 2015

# Occupational Wages

Robert Walkowicz and Michael Deburghraeve

Wages are a good measure of the health of a labor force. The unemployment and labor participation rates can track the health of the labor market, but tracking wages can measure the quality of the jobs being obtained. This analysis will examine how competitive Michigan’s wages have been compared to national wages, and will compare the wage changes at differing levels of educational attainment using data produced by the Occupational Employment Statistics program and the U.S. Census Bureau’s American Community Survey.

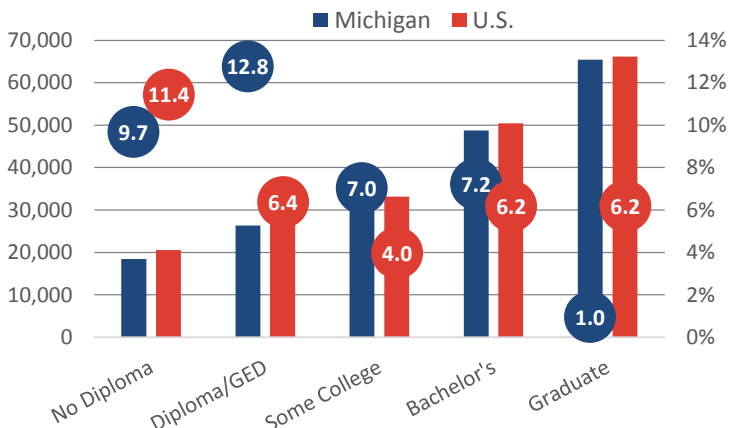
- Michigan’s median wage has typically been above the national average wage. It was 7.3 percent higher than the national median in 2001, peaked in 2005 at 8.5 percent, and was 1.7 percent higher as recently as 2009. But, Michigan’s economy was hit much harder than the national economy during the recession. In 2010 Michigan’s median wage dipped below the national level by 0.1 percent, and has not yet begun to recover, with the disparity growing every year. In 2014 Michigan’s average was 2.3 percent below the national median.



Source: DTMB, Occupational Employment Statistics

- Since 2001 Michigan’s median wage has grown only 19 percent compared to the 31 percent advance the U.S. has recorded.
- A look at nominal wage growth by educational attainment for Michiganders 25 and older shows how wage growth has not impacted everyone equally. Michiganders with different levels of education have fared differently from one another and, in some cases, from their counterparts across the nation.
- Michiganders with no high school diploma and those with a Bachelor’s degree saw wage growth similar to their national counterparts: the former had a gain of 9.7 percent; the latter saw 7.2 percent. Michiganders with some college outpaced their national counterparts with a wage increase of 7 percent.
- The biggest differences were seen by those with a high school diploma and those with graduate or professional degrees. Diploma-holders saw gains double the national rate (+12.8 percent), while those with graduate degrees saw only 1 percent wage growth across the period compared to 6.2 percent nationwide.

## Median Wage and Wage Growth (2009-2014) by Education



Source: U.S. Census Bureau American Community Survey 2009-14

- Despite wage growth rates exceeding those at the national level (12.3 compared to 9.2 percent), Michiganders lag in median wages at all five levels. In 2009, graduate degree holders in Michigan out-earned their national counterparts, but by 2011 they had fallen behind.
- The data continues to show a positive trend between education and wages, and emphasizes the need for some minimum level of education. Michiganders with no high school diploma were earning only \$18,457 a year.

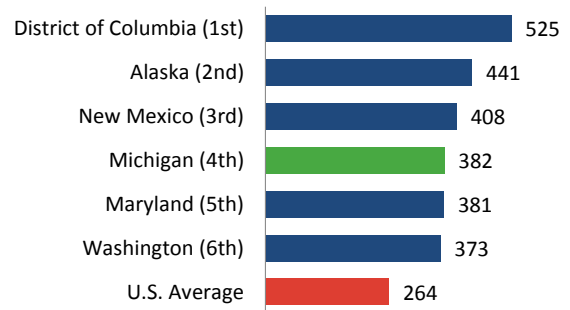
## Scientists and Engineers

Leonidas Murembya, PhD and Robert Walkowicz

In this analysis, engineers are broadly defined to include not only engineers and engineering technicians of all types, but also architects, drafters and cartographers, as well as surveyors. Scientists are professionals engaged in life, physical, and social science research. Examples include microbiologists, chemists, economists, and statisticians. The number and trends of jobs in this category serves as one barometer of the skills of the Michigan workforce, and provides clues to the potential for innovation and technological development.

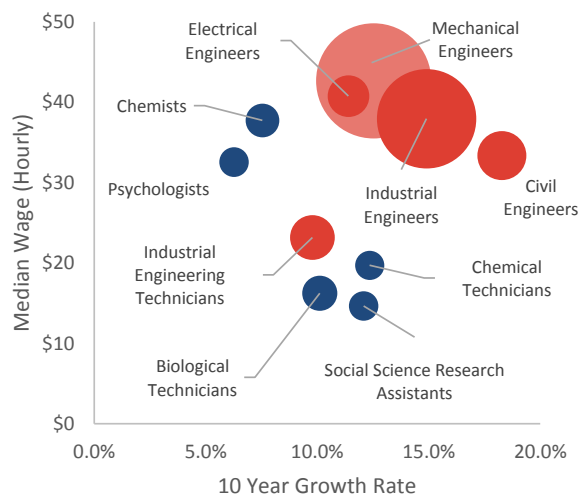
- In 2014, Michigan added 7,500 Scientific and Engineering (S&E) positions for a total of 155,600, a growth rate of about 5.1 percent from 2013. The state remained 4<sup>th</sup> largest in terms of the number of S&E occupations in the U.S., behind California, Texas, and New York.
- Michigan's number of S&E jobs per 10,000 positions rose by 12 points to 382, moving the state up two spaces to a rank of 4<sup>th</sup> out of the 50 states and the District of Columbia.
- In Michigan, Engineering makes up a little over 80 percent of all S&E jobs. *Mechanical* and *Industrial engineers, Industrial technicians, and Civil engineers* are the most prominent occupations in this category.
- Two industries, *Manufacturing* and *Professional, scientific, and technical services*, employ over 75 percent of all engineering occupations. Scientific occupations are more spread out across industries, with *Education* recording the largest share of about a quarter of all scientific jobs.
- About 9 in 10 of all S&E occupations offer wages that are above the statewide average. Over the next 10 years, jobs among S&E occupations are also expected to grow faster than the all-occupation rate of 8.7 percent: *Engineering* (+11.9 percent) and *Scientific* (+9.5 percent).
- According to data from the American Community Survey (2014, 1-year estimates), *Architecture and Engineering* is a male-dominated field (87 percent), while *Scientific* jobs are almost equally distributed between men (56 percent) and women. Women in *Engineering* earn about 98 cents for every dollar earned by men. The ratio is 80 cents to a dollar for *Scientists*.
- Whites accounted for 79 percent of Michigan's total population in 2014 and held about 82 percent of all *Engineering* and 77 percent of all *Scientific* occupations. While Asians represent about three percent of Michigan's population, they comprised about 10 percent of S&E jobs in 2014. On the other hand, Blacks add up to 14 percent of the population but hold only 4 percent of *Engineering* and 6 percent of *Scientific* occupations.

### Scientists and Engineers Per 10,000 Positions, May 2014



Source: DTMB, Occupational Employment Statistics, May 2013 Panel

### Wage, Job Growth, Annual Openings for S&E Occupations



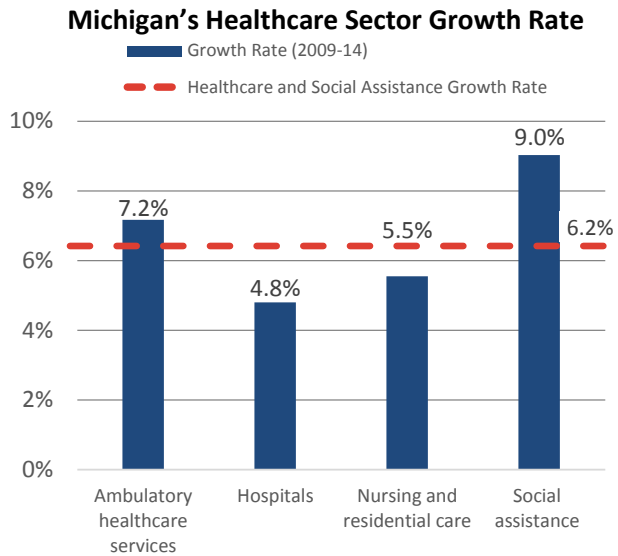
Source: DTMB, Occupational Employment Statistics

# Industry Highlight—Healthcare

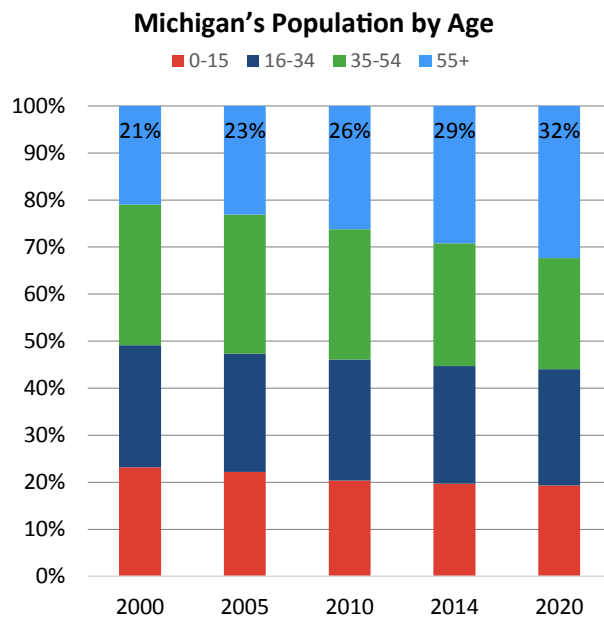
Alonzia Stephens

The *Healthcare and social assistance* sector is comprised of establishments providing healthcare and social assistance for individuals. These services are delivered by trained professionals. The subsectors are *Ambulatory healthcare services, Hospitals, Nursing and residential care facilities, and Social assistance*. This analysis is on these subsectors, the *Home healthcare services* industry, as well as leading *Home healthcare services* occupations. The data is from the Quarterly Census of Employment and Wages (QCEW) program, through the Bureau of Labor Statistics, and originates from the states’ unemployment insurance records.

- In 2014, the *Healthcare and social assistance* sector totaled 616,100 jobs, representing 15.1 percent of total employment in Michigan and making it the largest employing sector in the state.
- The *Ambulatory healthcare services* and *Hospitals* subsectors combined for 433,400 jobs in 2014, slightly more than 70 percent of total healthcare sector employment, and grew by 7.2 percent and 4.8 percent, respectively, since 2009. *Nursing and residential care facilities* registered 112,000 jobs or 18.2 percent of total healthcare employment in 2014, rising 5.5 percent over five years. *Social assistance* comprised the remaining 70,700 jobs in the sector and experienced growth of 9.0 percent.
- Of great importance to the *Healthcare and social assistance* sector, Michigan’s population 55 years and older has increased roughly 8 percentage points since 2000 and is projected to comprise over 30 percent of the total population by 2020. Trained professionals in the *Home health care services* industry can be an option for older adults seeking to remain at home as an alternative to skilled nursing home care.
- *Home healthcare services* primarily provides in-home skilled nursing services vital to the growing 55 year and older population. In 2014, this industry recorded 38,500 jobs, an increase of 19.1 percent since 2009, well above the healthcare sector average of 6.2 percent.
- According to the Occupational Employment Statistics (OES) data from 2014, the top five highest ranking occupations from *Home healthcare services* are *Home health aids* (29.1 percent), *Registered nurses* (16.8 percent), *Personal care aids* (9.4 percent), *Nursing assistants* (5.8 percent), and *Licensed practical nurses and licensed vocational nurses* (4.4 percent).



Source: DTMB, Quarterly Census of Employment and Wages



Source: U.S. Census Bureau, 2010 State Intercensal Estimates & 2014 Population Estimates; MDOT & U-M/IRLEE, 2040 REMI Population Projections.

## Underemployment in Michigan

Luke Bunge

In addition to the official and most widely cited unemployment rate, the Current Population Survey (CPS) also produces five other “alternative measures of labor underutilization.” The broadest and most inclusive is the U-6 measure, which counts all those officially unemployed in addition to marginally attached workers and those employed part-time for economic reasons.

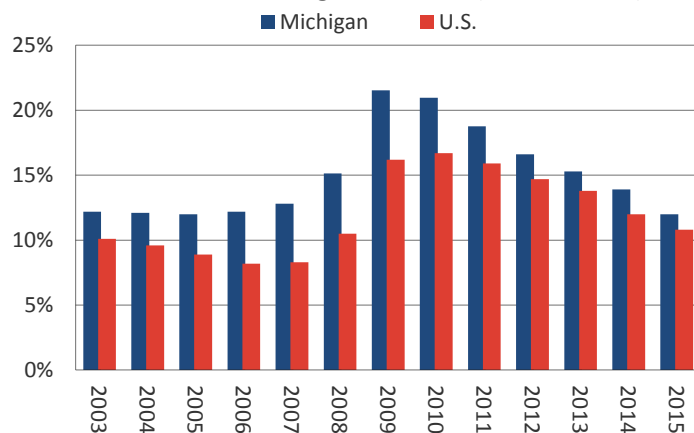
- The current U-6 rate was 12.0 percent in Michigan (fourth quarter 2014 to third quarter 2015 moving average). This represents a six-tenths of a percentage point reduction over the previous four-quarter moving average, and more than eleven percentage points under the peak following the Great Recession (23.4 percent).

- Compared to the U.S., the U-6 in Michigan has been significantly higher dating back to before the Great Recession. The 1.2 percentage point difference that exists today is the smallest difference since the start of the series in 2003. The pronounced gap between the two may be attributed to the Michigan economy failing to recover as much as the U.S. following the brief, but intense, 2001 recession.

- Since the peak in June 2009, the composition of Michigan’s U-6 components has changed. Following the Great Recession, 60 percent of the U-6 were the official unemployed, while marginally attached workers (9.0 percent) and involuntary part-time workers (31.0 percent) composed the remaining 40 percent. Today, the number of officially unemployed comprising the U-6 has fallen 13 percentage points to 47 percent. Involuntary part-time work was behind the majority of this change, increasing from 31 percent of the U-6 to 41 percent, while marginally attached workers moved to 12 percent.

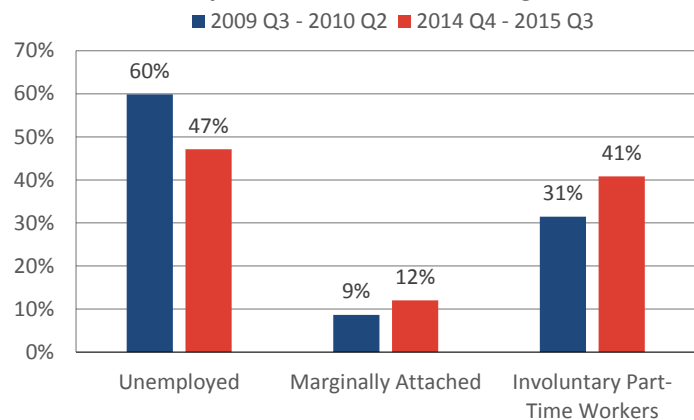
- Although it is not particularly informative to simply compare the official unemployment rate and the U-6, it can be illuminating to look at how each metric ranks among the 50 states. While both have been improving over the last few years, for the most recent time period, Michigan’s jobless rate ranks 32nd highest out of the 50 states while the U-6 ranks 42nd. The difference in the two may reflect the increased share that marginally attached and involuntary part-time workers make up in the Michigan U-6 as compared to the U.S. This suggests more slack in the Michigan labor market than the country as a whole.

**U-6 Rate in Michigan and U.S. (Annual Data)**



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

**Components of the U-6, Michigan**



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

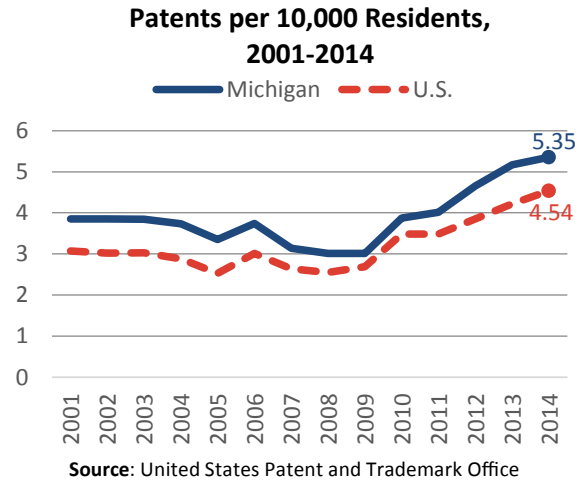


## Patents

Kevin Doyle

The number of patents issued is an important indicator of innovation and economic vitality. Through data made available by the U.S. Patent and Trademark Office (USPTO), this indicator provides an overview of patents issued in Michigan in 2014.

- Between January 1, 2014 and December 31, 2014, Michigan companies and individuals were granted 5,300 utility patents (sometimes called “patents for invention,” rather than patents for design). This is an increase of about 190 from 2013, a gain of 3.7 percent. Michigan ranked 7<sup>th</sup> in patents granted among all states in 2014, down from 6<sup>th</sup> place in 2013.
- An important measure of relative concentration of patents is the number of patents granted per 10,000 state residents. Michigan was granted 5.35 patents per 10,000 residents in 2014, ranking 12<sup>th</sup> in the nation, unchanged from 2013.
- There were 316 Michigan companies that were granted patents in 2014. The top three companies by number granted were General Motors, Ford, and Toyota.
- Vehicle data processing and navigation patents were the most-granted in 2014 with 579 patents, 355 greater than the second-most-frequent class, internal combustion engines.



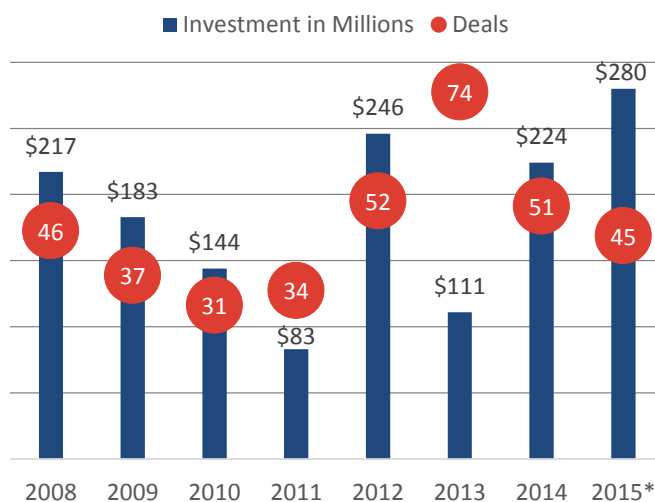
## Venture Capital

Luke Bunge

Venture Capital (VC) is money invested into early stage companies or products in which there is risk. In return for the investment, the venture capitalists receive a percentage of future profits and often a seat on the company’s board of directors. Information on these investments provides researchers an idea of which industries in the state are receiving capital investments. This metric tends to vary quarter to quarter and year to year.

- Through three quarters in 2015, denoted by an asterisk in the chart, Michigan has attracted 45 venture capital investments totaling over \$280 million dollars, which is the most amount of money since 2000. The total amount of deals and money invested into Michigan ranked 15th and 16th, respectively for this time period.
- Approximately 45 percent of the amount invested in Michigan was in the *Software* industry, or \$126 million. This was almost five times more than this time last year in this industry, and has come through 16 separate investments.

**Amount and Number of Investment Deals, Michigan**



Source: Pricewaterhouse Coopers (PWC)

\*\*PWC Industry Classification: <http://www.pwcmoneytree.com/>

# Michigan’s Real Gross Domestic Product (GDP)

Michael Deburghraeve

Real Gross Domestic Product (GDP) is an inflation-adjusted measure of a state’s production, and is a useful gauge of the overall health of the state’s economy. This analysis compares Michigan’s GDP (both overall and per capita) to the other states and the nation as a whole, and examines Michigan’s continuing dependence on the auto industry as a driver of state output.

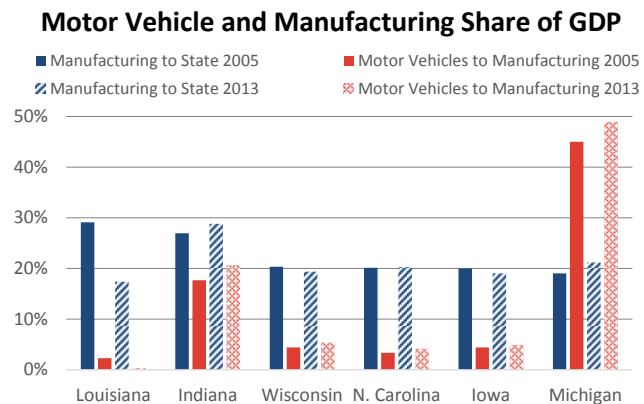
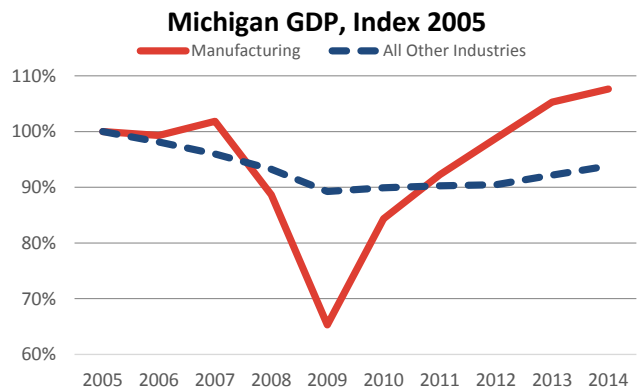
- Measured in chained 2009 dollars, Michigan’s GDP grew 1.6 percent in 2014. This represents a substantial slowdown in growth from 2013, when GDP rose 2.5 percent. As a result, Michigan dropped back below the national average of 2.2 percent growth. In terms of absolute size, Michigan remained 13th in GDP among the states. In growth, however, the state dropped significantly: from 4th (behind only Utah, Idaho, and Texas) to 27th.
- In terms of per capita GDP, Michigan grew 1.5 percent; down from +2.3 percent the previous year. It was equal to the national advance of 1.5 percent. This growth rate ranked 17th among the states, but Michigan’s per capita GDP remained well below average at 37th nationally.
- At the industry level, Michigan’s recession experience appears to be one of broad manufacturing downturn; indeed, nearly 58 percent of GDP lost in 2009 came from this sector alone. However, a closer look at *Manufacturing* reveals Michigan’s reliance on the auto industry. In 2005, *Motor vehicle manufacturing* accounted for 45 percent of Michigan’s *Manufacturing* GDP (and 8.9 percent of total GDP). This subsector alone accounted for 56 percent of Michigan’s total GDP loss during the Great Recession.
- While five states exceeded Michigan’s 2005 concentration of GDP in *Manufacturing*, only Indiana came close in terms of concentration of *Manufacturing* in *Motor vehicle manufacturing*, where it produced 18 percent of *Manufacturing* GDP. Of these six states, Michigan and Indiana fared the worst during 2008 and 2009, shedding 12.8 percent and 6.9 percent of their statewide GDP, respectively.
- The post-recession auto industry surge has driven Michigan’s recovery, with the auto share of Michigan GDP up since 2005. During 2013, *Motor vehicle manufacturing* was 49 percent of *Manufacturing* GDP (and 10 percent of total GDP).

Total GDP in Millions of USD			
	2013	2014	Change
Michigan	407,495	414,113	+1.6%
United States	15,317,517	15,659,221	+2.2%

Michigan Rank (GDP): 13 / 50  
Michigan Rank (GDP Growth): 27 / 50

Per Capita GDP			
	2013	2014	Change
Michigan	41,169	41,788	+1.5%
United States	48,397	49,110	+1.5%

Michigan Rank (Per Capita GDP): 37 / 50  
Michigan Rank (Per Capita GDP Growth): 17 / 50



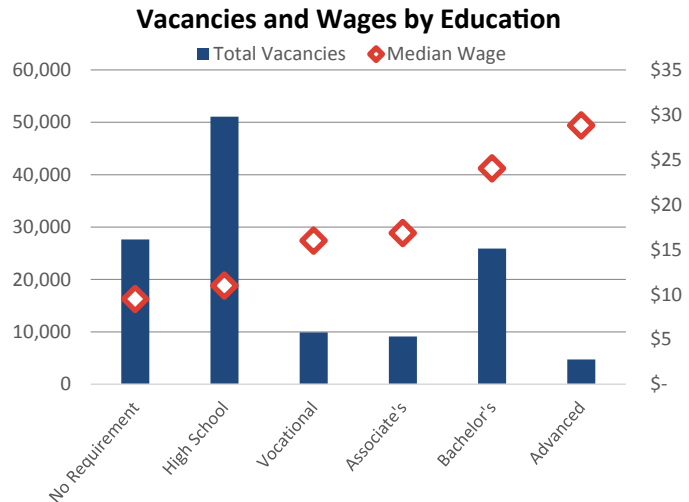
Source: U.S. Bureau of Economic Analysis

# Job Vacancy Survey

Monica Johnson and Dylan Schafer

The 2015 Michigan Job Vacancy Survey was conducted through a partnership with the Bureau of Labor Market Information and Strategic Initiatives and the Workforce Development Agency, with a goal to analyze the state’s labor market demand by finding an accurate estimate of the number and characteristics of current vacancies. The survey was conducted in the second quarter of 2015.

- o Michigan had an estimated 145,000 job vacancies in over 500 different detailed occupations during the second quarter of 2015. The state had at least two unemployed persons per job vacancy representing a potential pool of individuals that could fill these positions if qualified.
- o Similar to existing jobs in the Michigan labor market, nearly two thirds of all vacancies had no educational requirement or required only a high school diploma. Over 8 in 10 vacancies required less than 4 years experience.
- o The median wage offered for vacancies in Michigan was \$14.00 per hour in the second quarter of 2015. Wages correlated with the experience and education employers required.
- o One of every four vacancies had been posted for longer than 90 days. This could indicate that an employer had difficulty finding applicants with the proper qualifications or may not have been offering what jobseekers were demanding.
- o Seventy percent of employers expected employment at their firm to remain the same, 14 percent were uncertain, 13 percent anticipated staffing levels to increase, and only three percent predicted a decrease.
- o An estimated 1,500 vacancies, representing just one percent of the total, required or offered an apprenticeship. There was an estimated 27,500 vacancies, or nearly 1 in 5 total vacancies, that required a license.
- o The top ten occupations made up nearly 30 percent of the total number of reported vacancies throughout Michigan. The occupation that had the greatest number of openings was *Combined food preparation and serving workers*, which comprised about 7,400 of the estimated vacancies.



Source: DTMB/LMISI, Michigan Job Vacancy Survey 2015

### Top 10 Detailed Occupations with the Most Vacancies

Occupation	Total Vacancies	Less than Bachelor's Required
Combined Food Prep. and Serving Workers	7,400	100%
Retail Salespersons	6,100	100%
Registered Nurses	5,400	56%
Nursing Assistants	4,100	98%
Customer Service Representatives	3,900	90%
Waiters and Waitresses	3,800	100%
Cashiers	3,300	100%
Mechanical Engineers	2,700	23%
Landscaping and Grounds Keeping Workers	2,700	100%
Heavy and Tractor-Trailer Truck Drivers	2,600	99%

Source: DTMB/LMISI, Michigan Job Vacancy Survey 2015

- o The majority of vacancies (63 percent) were for full-time positions, and 9 out of 10 were permanent positions.
- o Estimates showed that of all vacancies, 67 percent offered health insurance, 63 percent offered retirement savings and 61 percent offered paid time off.
- o View the full report at: [www.michigan.gov/LMI](http://www.michigan.gov/LMI).

## Workers with Possible Barriers to Employment

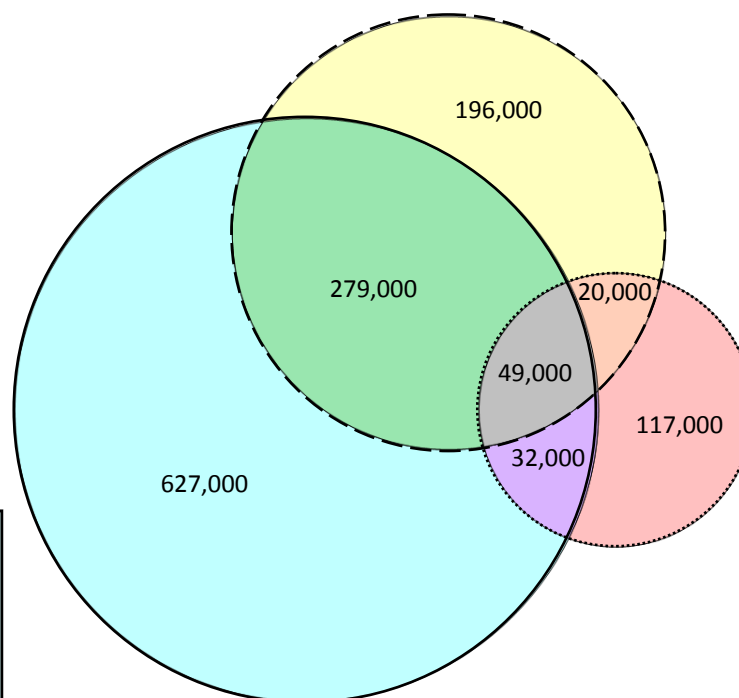
Eric Guthrie

As Michigan moves towards a more technology centered economy, there are several groups that are at risk of being left behind in that transition. Among those at greatest risk are those with low levels of education, especially those without a high school diploma or alternate credential, and those with limited English proficiency. The diagram below looks at how Michiganders between 18 and 64 fit into these groups and how those groups overlap. There is little doubt that our current labor market increasingly requires successful workers to have education beyond a high school diploma or equivalent credential.

- Nearly a million people are earning less than 200 percent of poverty and have no postsecondary education, and of those over a quarter lack a high school diploma or alternate credential.
- Over 200,000 Michiganders speak a language other than English and have limited English abilities, and of those, nearly 70,000 also lack a high school diploma. Additionally, over 80,000 of those persons with limited English proficiency are earning wages that put them at or below 200 percent of poverty.
- Almost 50,000 people in Michigan are at the center of the diagram below meaning they have no high school diploma, have limited English skills, and are earning a low wage.
- People sharing two or more of the characteristics below, which total almost 380,000 or over six percent of the adult, working-age population, are at the biggest disadvantage.
- There are some in the groupings below that are doing better than others. Over 300,000 of the people in the diagram below are earning wages that exceed 200 percent of poverty. However, given their limited educational attainment and/or English proficiency, they would be more likely to experience difficulty were they to lose their current position. Persons with these barriers may also be least able to take advantage of an evolving economy where job and even career changes may be more common.

About 1.3 million people fit into one or more of these categories which is 22% of the 18-64 population.

Earn less than 200% of poverty and have no postsecondary education  
987,000



Lack a high school diploma or alternate credential  
544,000

Speak a language other than English and speak English "less than very well"  
218,000

Source: U.S. Census Bureau, 2014 American Community Survey 1-year PUMS data

## Women in the Workforce: The Pay Gap

Michelle Wein

The pay gap is the difference in men's and women's median earnings, usually reported as the earnings ratio between men and women. At the national level, women earn just under 80 percent of what men earn when examining full-time, year round work. Data and analysis on the pay gap for the state of Michigan, and other states in the Midwest, come from the American Community Survey (ACS) through the Census Bureau, and are based on annual median earnings for full-time, year round workers ages 16 and over.

- Among states in the Midwest in 2014, Michigan scores the lowest in a ranking of female-to-male earnings ratios. Compared to each of the 50 states and the District of Columbia, Michigan ranks 42<sup>nd</sup> on female-to-male earnings ratios in 2014. The Michigan female median annual salary was \$37,419, while men earned \$50,157.

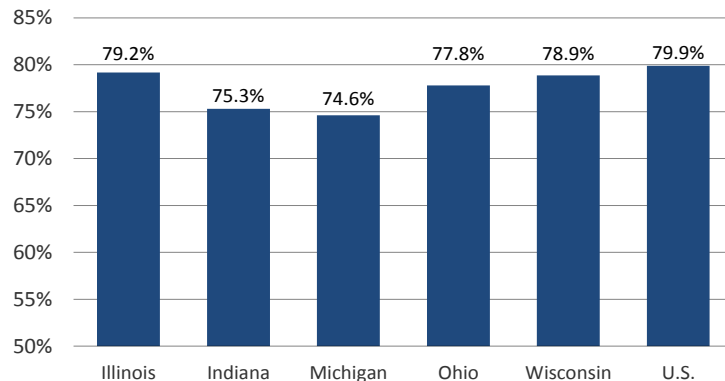
- The pay gap varies significantly when considering race. Compared to the salary information for male workers overall in Michigan, African American women experience a pay gap of 61.1 percent, while White and Asian women exhibit pay gaps of 76.5 and 97.3 percent, respectively.

- One factor explaining why the pay gap is larger in Michigan than its Midwestern counterparts may be Michigan's dependence on manufacturing. Compared to other Midwestern states, Michigan's economy has the second highest proportion of manufacturing workers with 23.9 percent (only Wisconsin is higher with 24.3 percent).

- In addition, Michigan has the highest proportion of males employed in the manufacturing industry (75.2 percent), with an accompanying industry pay gap (71.5 percent) that is the largest among the five state region. These positions are often more highly paid – Michigan's median manufacturing wage outpaces the five state region by around 11 percent – and the combination of both more male manufacturing workers and higher wages in those positions could contribute to the larger overall Michigan pay gap.

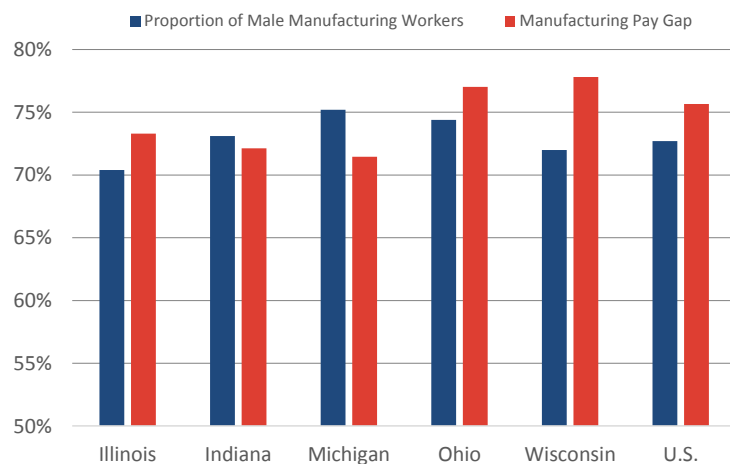
- Research has shown that the pay gap is partially explained by men and women populating different occupations with different earning potentials. However, even when women and men are working in comparable positions with similar expectations, the pay gap does not disappear. While estimates vary of how big the earnings ratio is among similarly employed men and women, the White House Council of Economic Advisors finds, using data from the Current Population Survey, that about two-thirds of the gap is not explained by potential experience, age, race, education, industry or occupation.

**Women's Earnings as a Percentage of Men's**



Source: U.S. Census Bureau, ACS 1-Year Estimates, 2014

**Manufacturing Industry in the Midwest**



Source: U.S. Census Bureau, ACS 1-Year Estimates, 2014

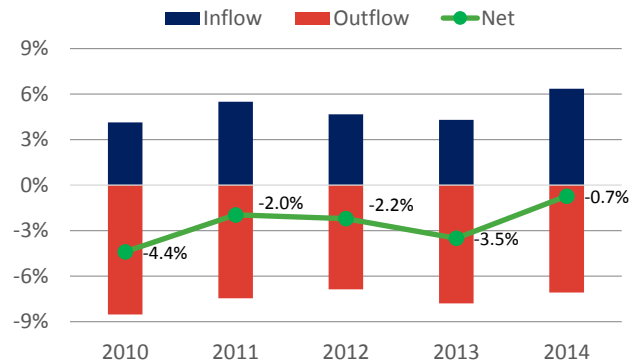
## Youth Talent Migration

Eric Guthrie

Migration of young persons with a bachelor's degree or higher has been a concern for Michigan for a number of years given the difficult economic times that have been part of Michigan's recent history. This is an important group to watch as they will form the basis of the next generation of workers that will fill the high tech jobs that are part of the new knowledge economy.

- The net migration of this group out of Michigan has dropped to a level that is a fifth of what it was in the previous year and is approaching zero.
- There is still significant out-migration seen in this group, which should not be surprising considering how many graduates Michigan's top tier educational institutions produce.
- The driver in the reduction of net out-migration is the higher than usual in-migration among this group.
- This group participates in the labor force at a very high rate, in excess of 87 percent.

### Migration of Population Between 22 and 34 with a Bachelor's Degree or Higher



Source: 2010, 2011, 2012, 2013 and 2014 American Community Survey 1-year PUMS data

## Michigan Industry and Occupational Job Outlook 2016

Mark Reffitt

Michigan's Short-term Industry and Occupational Job Outlook was released earlier this fall, covering the 2nd quarter 2014 to 2nd quarter 2016. During this period of time, total employment statewide is projected to grow at an annual rate of just over 1.4 percent, adding nearly 130,000 new jobs over the two-year period.

- Total employment is expected to increase from a little under 4.47 million to about 4.59 million by 2nd quarter 2016, reflecting a gain of about 130,000 new jobs or an overall advance of 2.9 percent for this period.
- Both blue-collar and white-collar jobs are expected to contribute to these gains, as Michigan's auto sector and *Construction* industries are anticipated to continue to recover notably alongside jobs in *Educational and health services*, *Trade*, and *Professional and business services*.
- The state's *Construction* sector was expected to outpace other broad industries, with job expansion of 4.6 percent through the 2nd quarter of 2016, driven largely by anticipated gains in *Specialty trades* and *Building construction*. *Construction and Extraction* was expected to be the fastest growing occupational group with a 3.4 percent change.
- When replacement openings are figured into the mix, the state is expected to provide almost 350,000 total job opportunities over this two-year period. The bulk of replacement openings were concentrated in the largest and lowest-paying occupational groups, such as *Food Preparation and Serving* and *Office and Administrative Support*.

### Top Growing Industry SuperSectors

#### By Percent Change

Construction	4.6%
Professional and Business Services	2.5%
Leisure and Hospitality	1.9%

#### By Numeric Change

Professional and Business Services	31,050
Manufacturing	20,760
Educational and Health Services	17,860

### Top Growing Occupational Groups

#### By Percent Change

Construction and Extraction	3.4%
Architecture and Engineering	2.7%
Installation, Maintenance, and Repair	2.1%

#### By Numeric Change

Production Occupations	16,770
Food Preparation and Serving Related	13,240
Office and Administrative Support	10,320

# What's New from LMISI?

The *Michigan Economic and Workforce Indicators and Insights* report is just one of 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).

What's New from LMISI?



## Michigan's Long-Term Unemployed Study

The Michigan's Long-Term Unemployed study analyzes this particular portion of the state's labor market today and over the past 15 years. This study also sheds light on which occupational categories are more associated with long-term unemployment, as well as highlighting job opportunities both today and in the future for these individuals.



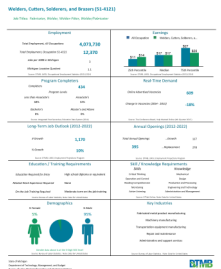
## 2015 Michigan Job Vacancy Survey

The 2015 Michigan Job Vacancy Survey analyzes the demand side of the state's labor market by looking at the number and characteristics of current job vacancies offered in the second quarter of 2015. Information collected in this report could improve the workforce knowledge and decision-making of employers, policymakers, educators, and job seekers.



## Michigan's Hot 50 Jobs

Michigan's Hot 50 Jobs highlights Michigan occupations that show a favorable mix of long-term job growth, projected annual job openings, and median wages through 2022. The publication is intended to provide valuable career information to students in high school, vocational and community colleges as well as jobseekers.



## LMI Fast Facts

The LMI Fast Facts website is designed to provide quick access to many sources of labor market information all in one place. The reports are designed to be easy-to-use and printer-friendly so users may reduce their time collecting and preparing LMI for presentation to customers and colleagues.

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