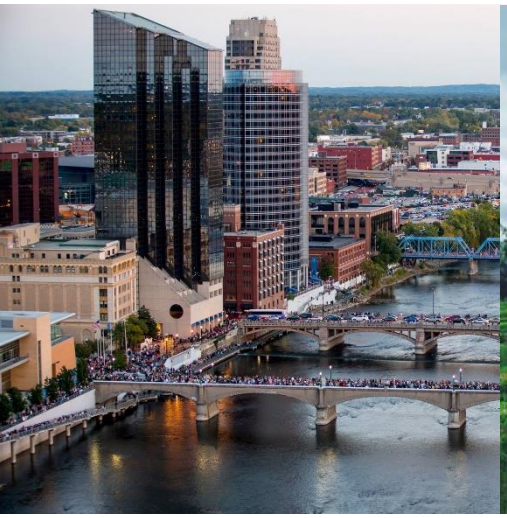
Talent Demand Working Group

TALENT 2025

SEPTEMBER 2016

West Michigan Talent Assessment and Outlook



Supply and demand analysis and insights

for West Michigan education, workforce, and business leaders

About Talent 2025

Talent 2025 is a catalyst for an integrated talent development system for West Michigan. Composed of 100 CEOs from the region's 13 counties, the organization strives to be a driving force for an ongoing supply of world-class talent by convening leaders and organizations who will help shape a thriving economy.

TABLE OF CONTENTS

This report would not have been possible without
the support and participation of our valued partners:

INTRODUCTION AND PURPOSE

Friends and colleagues,

This is the third annual West Michigan Talent Assessment and Outlook report, the result of an ongoing collaboration between employers, educators, economic and workforce development, the State of Michigan, and civic, community, and nonprofit organizations across the West Michigan region.

The economy has continued to expand since the recession at the end of the last decade, and this growth has been especially prominent in West Michigan. Yet with lower unemployment also comes a smaller pool of talent for employers to draw from, and it becomes vital for employers in the region to quantify and understand their current and future talent needs.

The two previous reports were embraced by stakeholders as a vital resource for investing in training and development programs and promoting in demand jobs. Since, then we have gathered feedback from educators, workforce leaders and employers on what they hoped for out of future reports. This report is the next step in our efforts to improve the talent system. By linking supply and demand in several key job families, we hope to advance the use of a common data set to inform talent planning and elevate West Michigan as a national leader in developing, attracting, and retaining talent.

We hope this report is of use to you and your organization, and we cannot thank our partners and stakeholders enough for their time and participation in creating this valuable resource for the community.

Regards,

Kevin Stotts, President
Talent 2025

EXECUTIVE SUMMARY

- Across the West Michigan region, there has been an unprecedented effort to align the talent system, from K-12 to Higher Education, workforce development, and employers. However, this alignment requires continued efforts to collect, analyze, and publish accurate and timely labor market information about the region in new ways that add value.
- The region continues to thrive on a macroeconomic and demographic level. From 2010 to 2015, the West Michigan population has grown by 3.4 percent to a level of just over 1,570,000 individuals. This means that nearly 1 in 6 Michigan residents now live in the 13-county West Michigan region. Moreover, the unemployment rate continued to drop since last summer, averaging 3.7 percent through the first half of 2016. This is more than a full percentage point lower than the Michigan unemployment rate.
- Although job growth has occurred over a broad range of industry sectors including *Health Care and Social Assistance*, *Administrative and Support and Waste Management Services*, and *Accommodation and Food Services*, *Manufacturing* continues to be the bread and butter of the region in many ways. West Michigan's largest industry employs over 1 in 5 workers, and has added over 33,000 jobs since the end of the recession in 2009. Several sub-industries within *Manufacturing* also continue to be highly concentrated in the region, including *Leather and Allied Product Manufacturing*, *Furniture and Related Manufacturing*, *Computer and Electronic Manufacturing*, and *Food Manufacturing*.
- The job outlook in West Michigan through 2022 continues to look promising, with over a fifth of jobs created in Michigan during the ten-year forecasting period expected to come from the region. Among the top expected growth job categories are *Healthcare Support* (with 23.0 percent growth over the period), *Healthcare Practitioners and Technical* (22.1 percent), and *Construction and Extraction* (19.1 percent). Across all occupations, the region expects to see a ten-year growth rate of 12.0 percent, and talent pipelines for these high demand occupations need to expand.
- Talent shortages in several industries have affected the sale of goods and services. This effect on sales impacts the total wages paid, state and local tax revenue, and the competitiveness and profitability of businesses in West Michigan.
- Of the job families that Talent 2025 was able to gather data for with an acceptable level of confidence, many show large shortages in the supply of talent from local training institutions. Although the gaps can partially be filled through internal hires and recruitment of talent from outside the region, employers have cited a lack of talent as a current or future constraint to business growth.

WHAT'S NEW IN 2016?

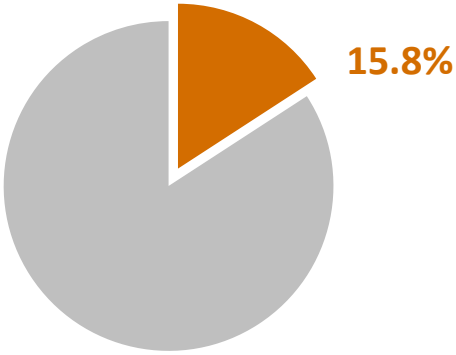
Talent 2025 strives to deliver the most accurate, timely, and actionable data and analysis about the West Michigan region and its talent needs. With this goal in mind, we have again attempted to improve the West Michigan Talent Assessment and Outlook based on feedback from our Talent Demand Working Group as well as other stakeholders throughout the region. This year, you'll notice several changes throughout the report:

- For the first time, Talent 2025 carried out supply-demand calculations across six industry sectors, within the framework of 36 job families. Talent 2025 utilized public information about completions from 2- and 4-year degree granting institutions, individually collected datasets about credentials and certificates awarded in the region, as well as job advertisement data provided by our partners at the State of Michigan. This analysis marks an important step in quantifying shortages and surpluses within West Michigan, and can be found in the Sector Focus section.
- Building on the insightful conversations from last year's sector focus groups, Talent 2025 conducted a total of nine focus groups (two more than last year), which attracted 46 attendees from 40 different employers from throughout the region. This qualitative component of the data from the nearly 14 hours of conversations is primarily found in the Sector Focus section of the report, but also inform many other areas of analysis, filling in remaining questions the quantitative data cannot address.
- New focus groups were carried out with employers in Professional Services and Staffing Services. Talent 2025 also partnered with Lakeshore Advantage to gather local Information Technology employers for a lakeshore-specific focus group in conjunction with the new SmartZone initiative.
- Like previous versions of this report, Talent 2025 strives to present accurate and transparent data to all stakeholders throughout the region. This report therefore has an extensive and detailed section at the end with notes, sources, and appendices to help give a thorough view of all the data used in this report. Separately, all data is available in Excel tables and charts.

POPULATION AND DEMOGRAPHICS

Total population can be vital to the success of the labor market in a region. Population changes are based on two factors: natural change (total births and total deaths), and migration (which includes international and domestic). Positive natural change can lead to more children making their way through the K-12 system, which is the long-term future labor force for a region. Positive net migration can signify a destination region, one where individuals choose to locate for economic, personal, or other reasons.

West Michigan Share of Michigan's Total Population, 2015



The population in West Michigan stood at 1,570,606 during the 2015 population estimates.

West Michigan Population

1,570,606[1]

(as of July 1, 2015)

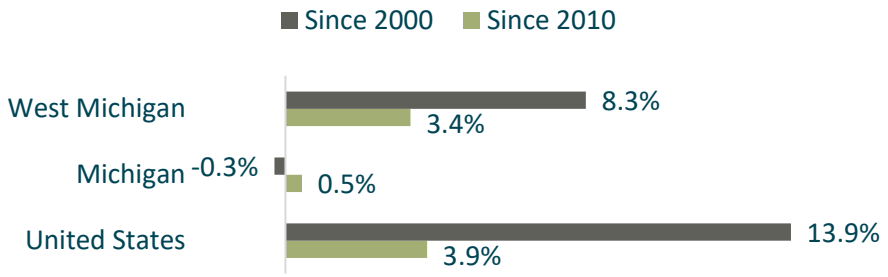
This accounts for 15.8 percent of the statewide population of 9,922,576, which means that nearly 1 in 6 Michigan residents can be found within the 13-county region of Talent 2025[1].

From 2014 to 2015, West Michigan's population increased by 10,763 residents, or 0.7 percent. During this time, the combined population in Michigan's other 70 counties fell by 4,493 people, or -0.1 percent. West Michigan's growth rate was slightly behind that of the United States as a whole, which grew at a rate of 0.8 percent from 2014 to 2015. In West Michigan, this growth was due to both a natural increase (+7,848) and a positive net migration (+2,862). This migration number was largely driven by those moving to West Michigan from outside of the United States.

Over the past year, 8 of West Michigan's 13 counties saw population growth, led by the four largest counties in the region (Kent, Ottawa, Muskegon, and Allegan, respectively). Kent County grew by 6,144 from 2014 to 2015, which is a 1.0 percent increase. Also outpacing the region and the nation as a whole was Ottawa County, which added 3,357 residents (1.2 percent growth over the year). Ottawa and Kent Counties have also grown the fastest over the last five years, by 6.0 and 5.5 percent, respectively. Complete county population data can be found in **Appendix 1**.

Since 2000 (the beginning of the Population Estimates program), West Michigan has added 119,975 residents, an increase of 8.3 percent[2]. Michigan as a whole (inclusive of West Michigan) has lost nearly 30,000 residents in that time period, largely from a period of contraction seen from 2005 to 2010. For comparison sake, the United States has grown by 13.9 percent from 2000 to 2015.

Change in Total Population



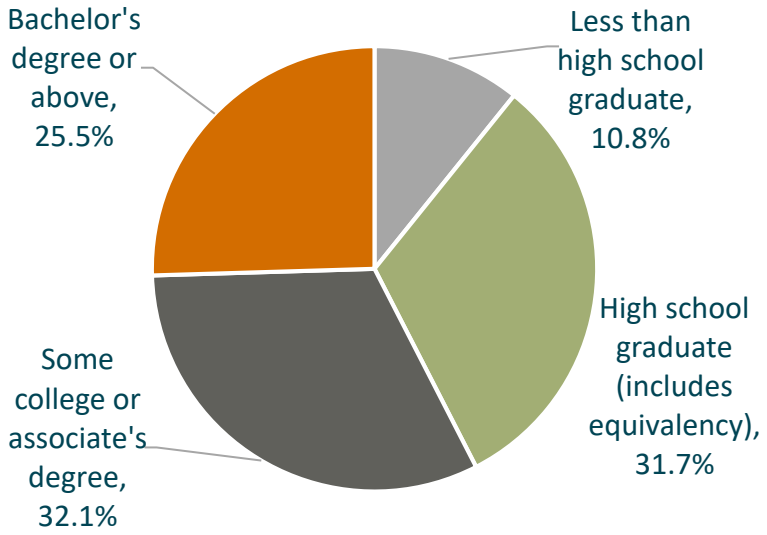
Like in 2014, West Michigan continues to be younger than the state of Michigan as a whole. Around 53.3 percent of the West Michigan population is under 40 years old, compared with 50.3 percent for the state as a whole. Additionally, 14.4 percent of the population in West Michigan is aged 65 or over, compared to 15.8 percent in Michigan (**Appendix 1**).

Educational Attainment

The educational attainment levels of the adult population in a given region can be a powerful indicator of the quality of talent within that region.

The W. E. Upjohn Institute estimates that 64 percent of the adult population in West Michigan needs education beyond a high school diploma in order to meet the region's employment needs in 2025. Talent 2025 now tracks this key metric. In 2014, West Michigan was at a rate of 57.6 percent. Furthermore, 25.5 percent of the adult population in West Michigan held a Bachelor's degree or above. Based on the trend established by the 2014 rate and the 2009 rate (54.7 percent), the region is narrowly on track to achieve its 2025 goal.

Educational Attainment in West Michigan (Ages 25+)



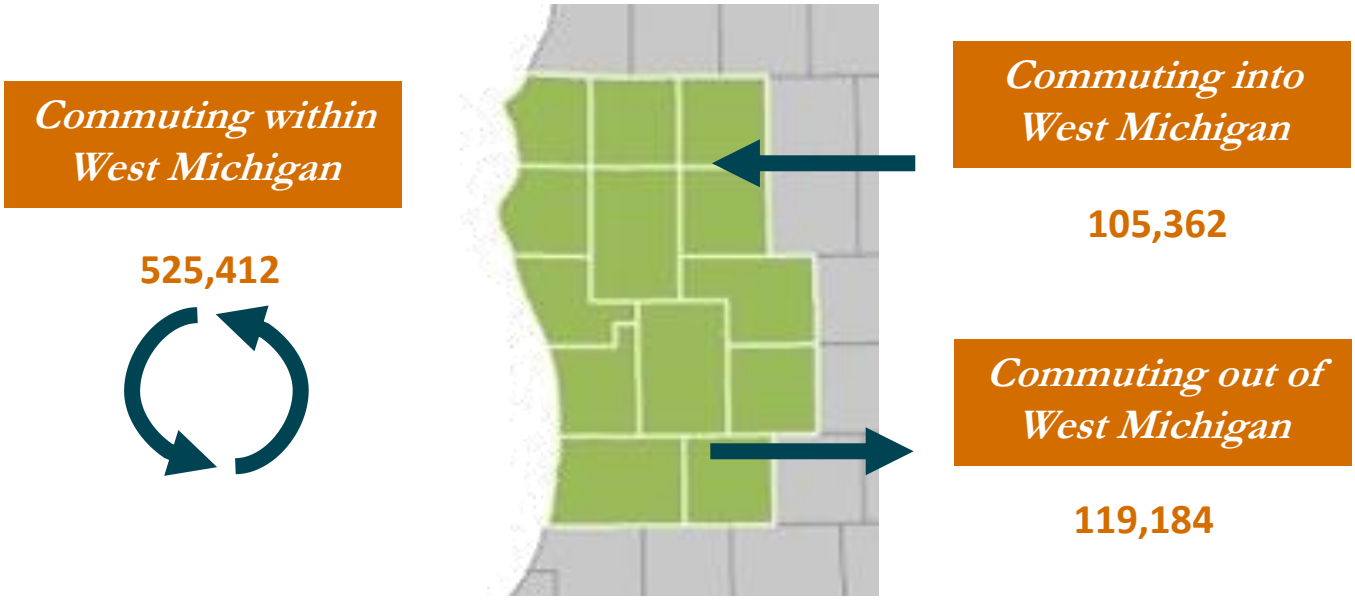
Like in previous years, West Michigan sees similar rates of high school diploma (or equivalent degree) attainment as the state (both at 89.3 percent) and the nation as a whole (86.3 percent). However, the region falls behind both comparisons with regards to those attaining a Bachelor's degree or higher; West Michigan is at 25.5 percent, compared with 26.4 percent statewide and 29.3 percent for the United States.

IDENTIFYING COMMUTING PATTERNS

In March 2016, the U.S. Census Bureau updated their OnTheMap online tool with commuting data from 2014. This data utilizes unemployment insurance-covered employers and Census data from individuals to determine commuting patterns at many geography levels. An analysis of this data can be utilized to identify labor sheds at the regional and sub-regional levels, which can help employers determine how wide to cast their local net for talent.

Commuting in and out of West Michigan

According to Census data, 630,774 individuals were employed in the West Michigan region in 2014, regardless of whether they lived in the region or not. Corollary to this, 644,596 individuals who live in West Michigan were employed in any location. This discrepancy is explained by the 105,362 individuals who commute into West Michigan for work each day (and live outside of West Michigan) and the 119,184 individuals who make the opposite trip out of West Michigan for work. Therefore, 525,412 individuals work and live in West Michigan, and have a commute that falls fully within the region[4]; this accounts for 81.5 percent of all those living in West Michigan who are employed.



Commuting Within West Michigan

Within the region, West Michigan continues to see strong ties between the major metropolitan areas with regards to workers traveling between counties. Between Ottawa and Kent County alone, nearly 53,000 individuals commute one direction or the other, with nearly 36,000 Ottawa residents commuting to Kent and almost 17,000 Kent residents traveling to Ottawa County. There is a similarly strong link between Ottawa and Muskegon Counties; there are 10,639 Muskegon residents who travel south to Ottawa County for their employment, while nearly 6,500 Ottawa residents make the opposite journey[4].

In the northern counties of the West Michigan region, there are a few commuter sheds which are important, despite the raw number being a bit smaller. There are 520 Mecosta County residents who commute to Montcalm County, with 439 Montcalm residents making the opposite journey. Additionally, 332 Lake County residents commute to neighboring Osceola County to the east, with 123 Osceola residents commuting to Lake County[4].

Full commuting data is available in Appendix 2.

Top Areas of Commuting Within West Michigan, 2014

Place of Residence	Place of Employment	Volume of Commuters
Ottawa	Kent	35,934
Kent	Ottawa	16,824
Allegan	Kent	11,012
Muskegon	Ottawa	10,639
Allegan	Ottawa	10,078
Muskegon	Kent	9,247
Ionia	Kent	7,714
Montcalm	Kent	6,685

Percent of Working Population Employed in the Region, 2014

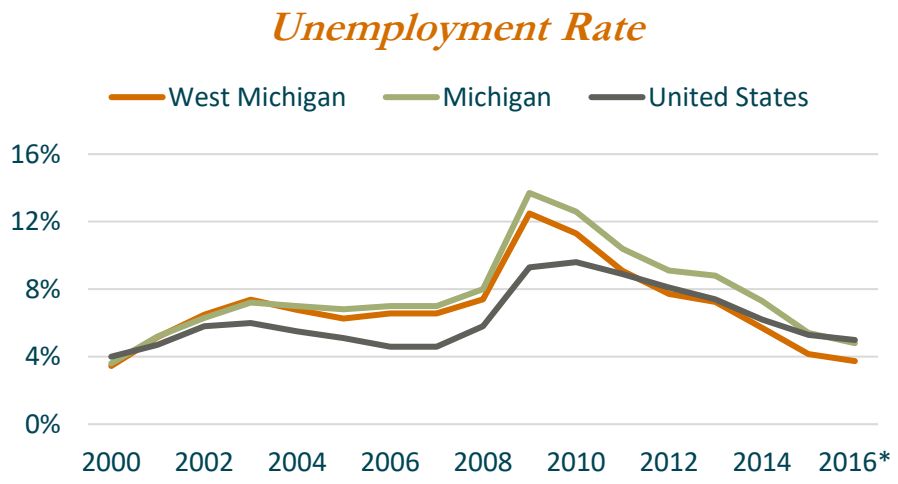
Location of Residence	Percent Employed in West Michigan
Kent	84.9%
Ottawa	87.7%
Muskegon	85.2%
Allegan	70.8%
Ionia	71.5%
Montcalm	69.2%
Barry	64.3%
Newaygo	83.1%
Mecosta	72.2%
Mason	75.6%
Oceana	80.8%
Osceola	61.2%
Lake	62.4%

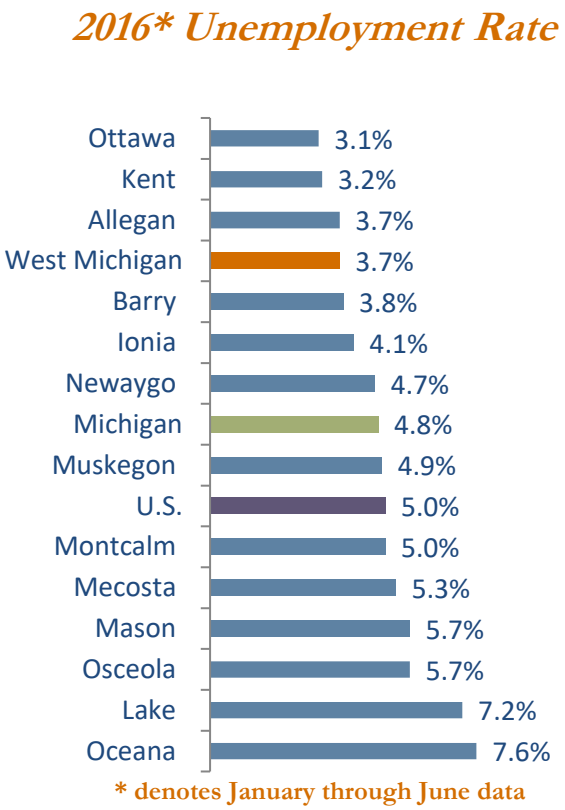
LABOR FORCE AND EMPLOYMENT

Over the past year, top-level indicators in the labor market have continued to improve to varying degrees. Now nearly six full years into the economic recovery from the 2008-2009 recession, several indicators are beginning to level off, while others continue to improve.

The unemployment rate in West Michigan for the first half of 2016 is 3.7 percent, the lowest level in the region since 2000. This is nearly 9 points lower than a recessionary high of 12.5 percent seen in 2009[5].

The regional rate is also over a full percentage point lower than the unemployment rate for Michigan as a whole (4.8 percent), and is far below that seen in the United States so far in 2016 (5.0 percent). The United States as a whole saw a recessionary high of 9.6 percent in 2010.



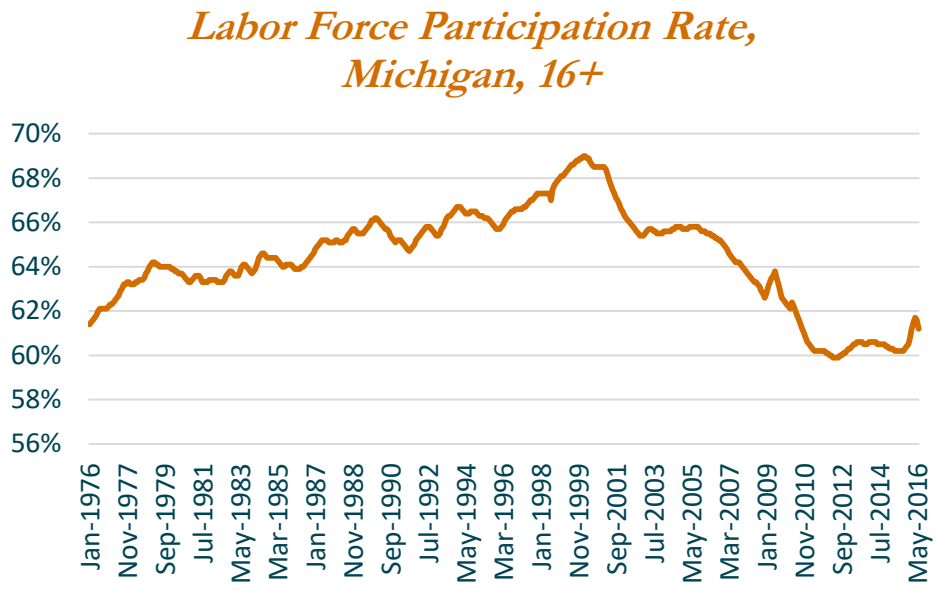


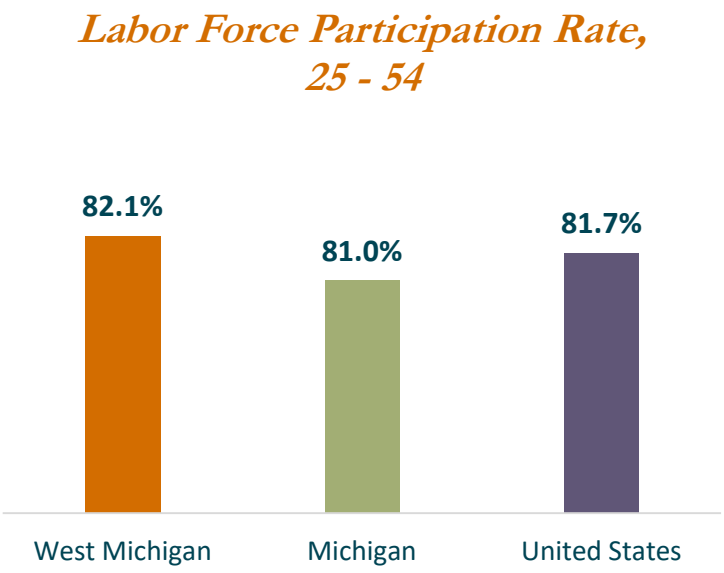
Within West Michigan, there are still pockets which are yet to see a full recovery from the recession. Although some large metro areas such as Grand Rapids and Holland present very low rates of unemployment (Kent County at 3.2 percent, Ottawa County at 3.1 percent), Oceana and Lake Counties have jobless rates which are more than double (7.6 and 7.2 percent, respectively). In fact, 11 of the 13 counties in West Michigan have unemployment rates at or above that of the region as a whole[5]. This presents an opportunity for the region to fill talent needs by accessing those who may be unemployed or underemployed in different parts of the region.

However, the total labor force level, a measure of those individuals either working or actively seeking employment, has continued to trend strongly upward. In the first six months of 2016, there were just over 820,000 individuals in the labor force in West Michigan, an increase of well over 13,000 individuals or 1.7 percent over the past year. The labor force in West Michigan has increased by just over 65,000 individuals over the past five years, or 8.6 percent[5].

Labor Force Participation Rate

Another important indicator relating to an area's labor force is the labor force participation rate, which is the number of individuals in the labor force (working or actively seeking work) divided by the non-institutional civilian population (adults who are not inmates in an institution and who are not on active duty in the Armed Forces). The labor force participation rate that is widely reported comes from the U.S. Bureau of Labor Statistics (BLS) and is for the adult (16+) population. In 2015, the labor force participation rate for Michigan was 60.3 percent, and 62.6 percent for the nation as a whole[6].





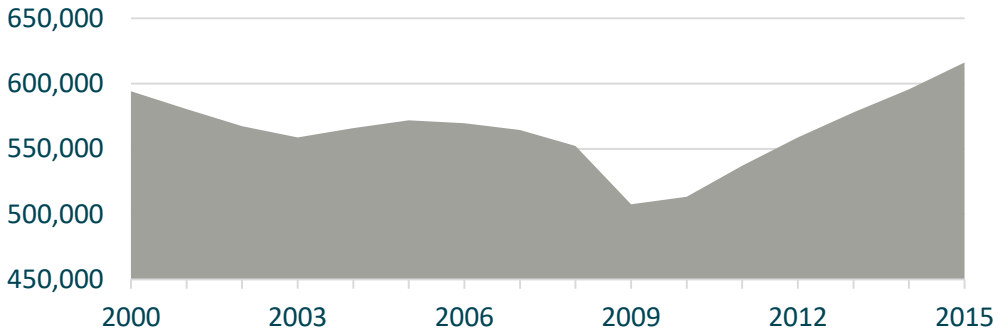
Because this BLS data is not available on a sub-state level, the Workforce Development Working Group of Talent 2025 has adopted the labor force participation rate for adults ages 25-54 (the "working age" population) from the U.S. Census Bureau's American Community Survey as our working measure for the region. In 2014 (the most recent data available), the labor force participation rate among working age adults in West Michigan stood at 82.1 percent[6]. To rank among the top 20 combined statistical areas in the nation, the working group hopes to elevate this rate of participation to 85.8 percent by removing barriers for those outside of the labor force such as childcare and transportation issues.

INDUSTRY JOBS

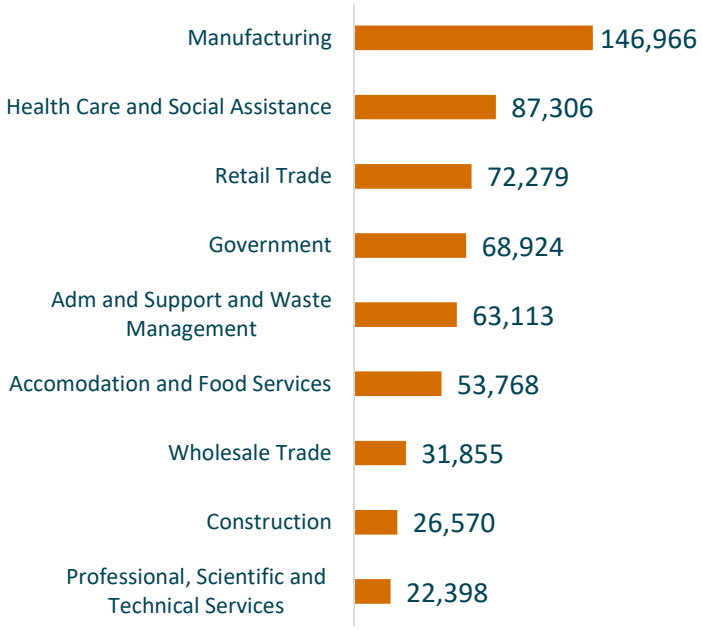
Private-sector payroll jobs in West Michigan have continued to rise at a similar rate to the past three years. From 2014 to 2015, private employers in West Michigan added 20,523 jobs for a new level of 616,104 jobs. This represents an over-the-year increase of 3.4 percent, which bettered the 3.1 percent growth seen the year before.

In the post-recessionary period of 2009 to 2015, private sector payroll jobs in West Michigan have increased by 21.4 percent, making back many more than the 10.1 percent of jobs lost in the region from 2007 to 2009[8]. In fact, private sector jobs in West Michigan outnumber the level seen in 2000, the first year of the data series.

Private Sector Payroll Jobs in West Michigan, 2000 - 2015



West Michigan Employment by Industry, 2015



In 2015, the largest industry in West Michigan remains *Manufacturing*, which accounts for 146,966 jobs, or 21.5 percent. This means that more than 1 in 5 jobs in West Michigan is with a manufacturer. Importantly, the 2016 Business Intelligence Report from Lakeshore Advantage states that "four spin-off jobs are created locally for every one manufacturing job." The second largest industry in West Michigan, which is about 60 percent of the size of *Manufacturing*, is *Health Care and Social Assistance*. Employers in this industry count for 87,306 jobs in the region, or 12.7 percent of all jobs. The final two industries with over ten percent of total jobs in the region are *Retail Trade* (72,279 jobs, 10.6 percent of total employment) and *Government* (68,924 jobs, 10.1 percent). These four industries, alongside *Administration and Support and Waste Management* (63,113 jobs, 9.2 percent) and *Accommodation and Food Services* (53,768 jobs, 7.8 percent) account for just under 72 percent of all jobs in the region[8]. The remaining 28.1 percent of jobs (nearly 200,000 jobs) are split between 14 very important industries, including some which will be highlighted in our Sector Focus section.

Insights from the 2008 – 2009 Recession

The 2008-2009 Recession was a pivotal point across the country, and in West Michigan. All but two of the region's 21 industries saw a decline in employment from 2007 to 2009, and the same number of industries have seen varying degrees of growth since that time. As a whole, employment dropped 56,868 from 2007 to 2009, and has recovered all of those jobs nearly twice over (108,533) from 2009 to 2015. The largest gainers from 2009 to 2015 were *Manufacturing* (which added 33,431 jobs), *Administrative and Support and Waste Management* (23,350), *Health Care and Social Assistance* (12,757), and *Accommodation and Food Services* (8,279). Industries which have not recovered all the jobs lost in the recession include *Construction* (5,362 jobs lost from 2007 to 2009; 4,171 jobs gained from 2009 to 2015), *Finance and Insurance* (2,502 lost, 1,902 gained), *Arts, Entertainment, and Recreation* (566 lost, 553 gained), as well as small changes seen in *Real Estate and Rental and Leasing*, *Mining*, and *Utilities*. Two industries, *Information* and *Government* have seen employment decrease from 2007 to 2009 and from 2009 to 2015[8].

Jobs Lost During and Gained Since the 2008-2009 Recession

	2007 – 2009	2009 – 2015
Manufacturing	-27,749	33,431
Admin. and Support and Waste Management	-7,810	23,350
Health Care and Social Assistance	2,644	12,757
Accommodation and Food Services	-2,919	8,279
Retail Trade	-4,932	6,171
Wholesale Trade	-1,753	5,910
Construction	-5,362	4,171
Transportation and Warehousing	-1,355	3,361

Concentration of Employment in Industries

A Location Quotient (LQ) measures the relative concentration of employment in a local industry as compared to a larger area (in this case, Michigan as a whole). An LQ which is greater than 1.0 means that there is a higher concentration locally, and vice versa (while an LQ of 1.0 signifies that the two areas have the same employment concentration).

In West Michigan, four of the top five sub-industries in terms of employment concentration are in the broad *Manufacturing* sector. This includes the smaller *Leather and Allied Product Manufacturing* (766 jobs, 5.1 LQ), the much larger *Furniture and Related Product Manufacturing* which West Michigan is widely known for (15,534 jobs, 4.3 LQ), *Computer and Electronic Product Manufacturing* (8,852 jobs, 2.7 LQ), and *Food Manufacturing* (15,339 jobs, 2.6 LQ). Also in the top five highly-concentrated industries is *Animal Production and Aquaculture* with 3,871 jobs and an LQ value of 2.6[8].

Full industry jobs data can be found in Appendix 4.

Sector Focus

Introducing Job Families and Supply-Demand Analysis

Industry Sectors have emerged as the most effective way to organize employers across a region to catalyze alignment between employers, training institutions, and job seekers. Focus on industry sectors is also key to the organization suggested in the new Workforce Innovation and Opportunities Act (for more information, see **Note 5**). For the third year in a row, Talent 2025 has analyzed data from various sources to gain a greater understanding of the labor market within the six industry clusters currently in use by various stakeholders throughout the region as well as the state of Michigan. For each of the sections below, you will see:

1. Labor market data on the broad sector level, courtesy of our partners at the State of Michigan;
2. Labor market data within the job family framework;
3. Insights from employer focus groups throughout the region; and
4. The first attempt at a regional supply-demand analysis using data from various sources.

Job families, or groupings of several job titles and codes, are useful to support:

- Calculations of talent supply-demand;
- Organizing jobs into logical groups for job analysis;
- Organizing jobs into logical groups for validation studies; and
- Organizing data for conversations with education and training providers.[9]

The 36 job families used for the six sectors in this report were created using a methodology developed by local subject matter experts (see **Note 1** for details, **Appendix 5** for the job families) and use data from 2014 to assure chronological alignment. Two industry sectors, *Healthcare* and *Manufacturing*, have efforts underway in West Michigan to work through a process of greater alignment between employers, educators, and service providers, and the job families in this report closely align with those efforts.

Although Talent 2025 has gone through a process this spring and summer to conduct a supply-demand analysis in all 36 job families, data issues persist. Connecting supply and demand within industry clusters requires extensive graduation and certification data that has been vetted and externally provided, demand data which accurately reflects employer needs, and a crosswalk to calculate the flow between program completers and the intake of talent. As this was the first major effort to conduct these calculations in the region (and in some ways, across the nation), only a handful of job families seemed to show the full picture of the talent landscape, and therefore are the only ones published in this report. (For more info, see **Note 2**)

Nevertheless, this is another important step in aligning stakeholders around accurate and actionable data, and is a strong foundation upon which future efforts of supply-demand analysis can be built.

Manufacturing

Photo courtesy of DeWys Manufacturing

Employment in *Manufacturing* saw a 4.2 percent increase from 2014 to 2015, as well as an increase in the average annual wage ($57,350 in 2015). Total wages paid by *Manufacturing* employers in West Michigan was nearly $8.5 billion.[10]

Metric	2014	2015	Change
Sector Employment	141,088	146,966	↑
Business Establishments	2,461	2,496	↑
Average Annual Wage	$55,950	$57,350	↑
Total Wages Paid	$7.89 Billion	$8.42 Billion	↑

Manufacturing *Job Families*[11]

Job Family	Employment	Average Hourly Wage	Hourly Wage Range
Builders and Assemblers	20,120	$15.16	$9.98 - $22.41
Machine Operators	15,430	$15.54	$9.76 - $23.29
Labor	11,840	$13.94	$9.46 - $19.47
Managers and Supervisors	11,470	$40.42	$18.91 - $67.49
Machine Repair, Set-up, and Maintenance	11,430	$20.93	$12.75 - $29.57
Engineers and Designers	7,640	$35.78	$22.09 - $50.07
Quality	5,050	$16.65	$10.54 - $24.26

Supply/Demand Analysis[12]

Engineers and Designers

Demand	Supply
1,316	523

The demand for *Engineers and Designers* within *Manufacturing* outstrips supply by at least double. This is largely due to shortages in the number of graduates needed to fill vacancies for *Industrial* and *Electrical Engineers*. Currently, importing talent from outside the region seems to be the only method of filling those spots.

Managers and Supervisors

Demand	Supply
1,490	1,382

Supply and demand for *Managers and Supervisors* within *Manufacturing* companies in West Michigan appear relatively aligned. Supply is about 93 percent of the demand within the region. Given the leadership roles captured in the job family, many other spots on the demand side of the equation would be expected to be filled by internal means.

Focus Group Insights

- According to participants, staffing firms are no longer primarily used as a source of temporary workers. Instead, these firms help their business clients identify and hire talent into full-time roles.
- Being an employer of choice and establishing a cultural fit with employees is essential to maximizing engagement and retention, says Mike Sheridan from JSJ Corporation in Grand Haven.
- Manufacturers large and small are beginning to experiment with different methods of talent attraction, whether those efforts are considered “old” (lawn signs and radio) or “new” (social media).

Health Care

Photo courtesy of Mercy Health

In the *Healthcare* industry sector, employment rose from 85,163 to 87,644, while also seeing a slight uptick in employer locations. Additionally, from 2014 to 2015, the average annual wage for a worker in *Healthcare* rose from $47,450 to $49,400.[10]

Metric	2014	2015	Change
Sector Employment	85,163	87,644	↑
Business Establishments	2,449	2,465	↑
Average Annual Wage	$47,450	$49,400	↑
Total Wages Paid	$4.04 Billion	$4.33 Billion	↑

Health Care *Job Families*[11]

Job Family	Employment	Average Hourly Wage	Hourly Wage Range
Registered Nurses	12,810	$29.30	$22.61 - $37.30
Patient Care Assistants	11,370	$12.82	$9.79 - $15.94
Technologists and Technicians	2,710	$24.67	$16.41 - $33.87
Physicians	2,580	$108.84	$42.52 - n/a*
Medical Assistants	2,480	$15.46	$11.82 - $19.50
Managers	1,600	$50.33	$28.37 - $80.01
Advanced Practitioners	1,290	$52.40	$35.57 - $76.57
Care Social Workers	1,230	$24.45	$16.12 - $33.54
Laboratory Technologists and Technicians	1,020	$15.68	$12.41 - $20.27

*n/a denotes suppressed information; see **Note 6**

Supply/Demand Analysis[12]

Patient Care Assistants

Demand	Supply
395	196

Patient Care Assistants includes three large occupations, and shows a significant lack of local supply (largely coming from Nursing Assistant/Aide and Patient Care Assistant/Aide programs, CIP 51.3902) versus a very high demand. While some of this gap can be filled by talent who do not have industry certifications, employers are still in need of much more qualified talent.

Registered Nurses

Demand	Supply
1,010	926

Demand for *Registered Nurses*, consistently among the most in-demand occupations regionally (and on a national basis), was over 1,000. While supply accounts for almost 92 percent of openings, the nearly 100-candidate gap is a significant hurdle for such a high skill job family. Graduates of Registered Nursing/Registered Nurse programs (CIP 51.3801) are the primary source of the supply.

Focus Group Insights

- It is already difficult to gain an adequate supply of talent. This difficultly is not expected to lessen. While media coverage focuses on increasing outpatient needs, census levels for inpatient care also remain high, and talent shortages continue to be an issue.
- Attracting and retaining talent to the company, and importantly to West Michigan, is more than convincing the employee, said one local human resources director. Employers have to find ways to reach out and be welcoming to the whole family.

Agriculture and Food Processing

Photo courtesy of Arbre Farms

Employment in *Agriculture and Food Processing* increased by 4.2 percent over the year, amid a slight rise in *Agriculture and Food Processing* employers. The average annual wage increased from $38,525 in 2013 to $39,625 the year after.[10]

Metric	2014	2015	Change
Sector Employment	31,730	33,076	↑
Business Establishments	1,129	1,142	↑
Average Annual Wage	$38,525	$39,625	↑
Total Wages Paid	$1.22 Billion	$1.31 Billion	↑

Agriculture *Job Families*[11]

Job Family	Employment	Average Hourly Wage	Hourly Wage Range
Laborers and Helpers	440	$11.18	$8.88 - $14.39
Skilled Labor	260	$12.82	$8.80 - $18.59
Installation and Repair	210	$18.05	$11.60 - $24.39
Managers and Supervisors	n/a*	$25.82	$15.42 - $46.62
Scientists and Technicians	n/a*	$20.68	$12.09 - $28.44

*n/a denotes suppressed information; see **Note 6**

Supply/Demand Analysis

No methodologically acceptable results. See **Note 3** for more details.

Focus Group Insights

- *Agriculture and Food Processing* employers who participated in the Talent 2025 focus group say that, for a few seasons now, the talent shortage has directly hampered their ability to produce and process the amount of goods they have the capacity for.
- Employers have a difficult time attracting talent into roles that run un-traditional hours. A Monday to Friday, 8am to 5pm schedule isn't realistic in an industry which often has second and third shifts, as well as weekend work (particularly during busy seasons) and during summer holidays.
- In order to help remove barriers to consistent employment, employers like Arbre Farms in Walkerville have taken steps such as investigating opening a daycare in their facility, and also adding bus routes to help with transportation issues, says Director of Human Resources Cindi Romanowski.

Construction

Photo courtesy of Erhardt Construction

Construction **is a nearly-$1.5 billion industry in terms of wages paid in 2015, and employs 26,570 workers in West Michigan. This is an employment increase of 4.6 percent, the largest percentage growth in the six industry sectors called out in this section.[10]**

Metric	2014	2015	Change
Sector Employment	25,407	26,570	↑
Business Establishments	3,113	3,160	↑
Average Annual Wage	$51,925	$54,250	↑
Total Wages Paid	$1.32 Billion	$1.44 Billion	↑

Construction *Job Families*[11]

Job Family	Employment	Average Hourly Wage	Hourly Wage Range
Skilled Trades	7,570	$22.13	$13.70 - $30.91
Installation and Repair	4,430	$21.28	$12.82 - $32.88
Helpers and General Labor	4,020	$16.18	$9.44 - $24.26
Managers	2,180	$35.67	$20.97 - $59.11
Professionals	1,720	$24.75	$14.14 - $38.56

Supply/Demand Analysis[12]

Managers and Supervisors

Demand	Supply
180	141

The *Managers and Supervisors* job family for the *Construction* industry sector includes both *Construction Managers* and *First-Line Supervisors of Construction Trades and Extraction Workers*. In the job family, we see relative balance, with nearly 80 percent of demand accounted for with supply, with the supply largely coming from general *Construction Trades* education programs (CIP 46.0000). Additionally, these occupations are often filled with internal promotions, which are not included in the supply side of the equation.

Focus Group Insights

- Many *Construction* employers are working to stage extra winter work, or encouraging clients to pursue builds during the non-summer months. This is seen in a large way as a talent attraction strategy, since many potential candidates are looking for a steady paycheck throughout the year.
- Talent stealing within and between industries has had a large influence on *Construction* employers. They are no longer just competing for talent with other *Construction* shops, but rather with sub-contractors (in and out of the area) as well as manufacturers.
- Hiring those in supervisory roles is often not as difficult (given that there are plenty of individuals who have been on sites for 8-10 years); rather, hiring for experienced individuals in highly-skilled positions (many of the trades specifically) is a foremost pain point.

Energy

Photo courtesy of Consumers Energy

From 2014 to 2015, the *Energy* industry saw a slight increase in overall employment to a new level of 16,137. Wages continue to rise in this lucrative industry sector, with annual average wages rising to nearly $61,000 per year in 2015.[10]

Metric	2014	2015	Change
Sector Employment	15,559	16,137	↑
Business Establishments	13,580	13,800	↑
Average Annual Wage	$59,700	$60,875	↑
Total Wages Paid	$929 Million	$982 Million	↑

Energy *Job Families*[11]

Job Family	Employment	Average Hourly Wage	Hourly Wage Range
Installation and Repair	1,100	$32.81	$22.51 - $43.59
Plant Operators	460	$33.71	$25.23 - $41.03
Engineering and Design	80	$35.04	$15.10 - $49.01
Meter Readers/Customer Service	n/a*	n/a*	n/a*

*n/a denotes suppressed information; see **Note 6**

Supply/Demand Analysis

No methodologically acceptable results. See **Note 3** for more details.

Thoughts on the Industry

Energy continues to stand as a vital industry sector for the West Michigan economy, both as a provider of necessary goods and services and also as a set of employers providing jobs for the workforce. Year after year, the *Energy* sector continues to have highly-paid positions at a variety of skill levels, from jobs requiring a one-year certificate or credential to engineering positions requiring a Bachelor's degree or above.

As Talent 2025 continues to engage with different industry sectors in collaboration with employers, West Michigan Works!, and other regional stakeholders, *Energy* will be a key area of necessary organization. Having met with several of the area employers in this sector, Talent 2025 recognizes the importance of engaging with *Energy* employers, from the statewide utility providers to the local public works employers.

Information Technology

Photo courtesy of Grand Rapids Community College

While the smallest of the six current industry sectors in West Michigan with a 2015 employment level of just over 7,500, *Information Technology* remains a lucrative industry with a range of entry points based on training level. The average annual wage across the industry in 2015 was $72,825.[10]

Metric	2014	2015	Change
Sector Employment	7,281	7,537	↑
Business Establishments	879	841	↓
Average Annual Wage	$68,100	$72,825	↑
Total Wages Paid	$496 Million	$549 Million	↑

Information Technology *Job Families*[11]

Job Family	Employment	Average Hourly Wage	Hourly Wage Range
Programmers and Developers	1,730	$37.34	$21.10 - $55.34
Technicians	1,060	$27.56	$12.64 - $46.86
Managers	440	$51.50	$25.61 - $80.76
Analysts	420	$35.32	$17.39 - $58.00
Other	n/a*	$13.65	$9.20 - $20.50
Architects and Designers	n/a*	n/a*	n/a*

*n/a denotes suppressed information; see **Note 6**

Supply/Demand Analysis[12]

Architects and Designers

Demand	Supply
10	63

The *Architects and Designers* job family for *Information Technology* employers includes *Computer Network Architects*. Here we see supply outweighing demand in the West Michigan region.

Programmers and Developers

Demand	Supply
519	119

With substantial demand from employers throughout the region, the *Programmers and Developers* job family sees a stark talent shortage, particularly in *Web Developers*, *Software Developers*, and *Computer Programmers.*

Technicians

Demand	Supply
398	303

The broad *Technicians* job family sees supply account for over three-quarters of regional demand, with computer support specialists accounting for much of the supply and demand.

Analysts

Demand	Supply
424	149

Analysts, which includes five occupation (four of which are *Computer and Mathematical Occupations*) shows a stark lack of supply within the region, primarily due to high demand seen for *Computer Systems Analysts*.

Focus Group Insights

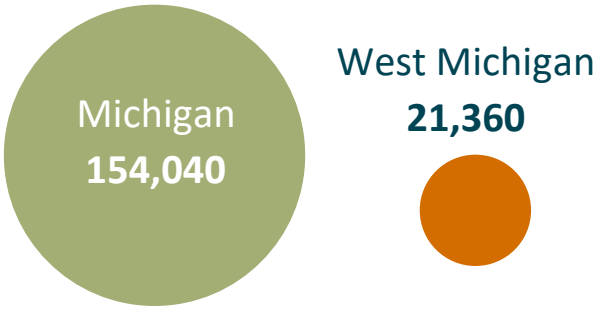
- Diversity within the *Information Technology* industry is a struggle when it comes to recruiting and retention, a priority cited by employers large and small.
- Smaller firms in the industry, such as Collective Idea, tend to take innovative approaches to the recruiting process, including using mostly word-of-mouth and referrals (as opposed to posting jobs) as well as completing the hiring process with more emphasis on LinkedIn profiles and portfolios instead of just resumes, says Vice President Brian Ryckbost.

MEASURING REAL-TIME DEMAND

Job advertisements from across the internet can give an estimation as to the level of demand for occupations within a region.

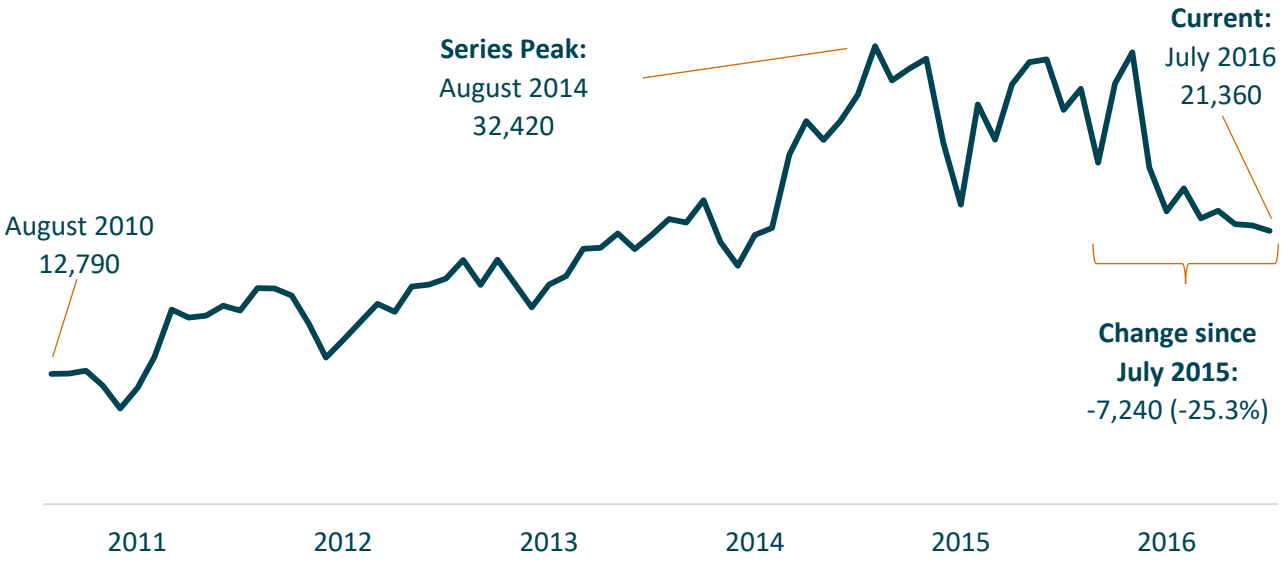
According to The Conference Board's Help Wanted Online © data series, the West Michigan region had a demand of 21,360 in July 2016. Employers with the most postings include Spectrum Health, Meijer, and Manpower. Comparatively, Michigan as a whole saw 154,040 job advertisements during the same month (meaning job ads in West Michigan accounted for 13.9 percent of all ads in Michigan)[13].

Job Advertisements, July 2016



Online job postings have seen a general upward trend since 2010, although the number of postings has decreased and flattened out through the first half of this year[13]. The increase in job advertisements over the years is partially a function of the job ad aggregating software itself, while also reflecting the tighter labor market regionally and nationwide. However, the recent drop-off in job ads may represent a return to sustainable recovery levels, whereas 2014 and 2015 represent elevated hiring due to the economic recovery hitting local peaks. The full time series for West Michigan job ads can be found in **Appendix 6**.

Online Advertisements Trend, West Michigan



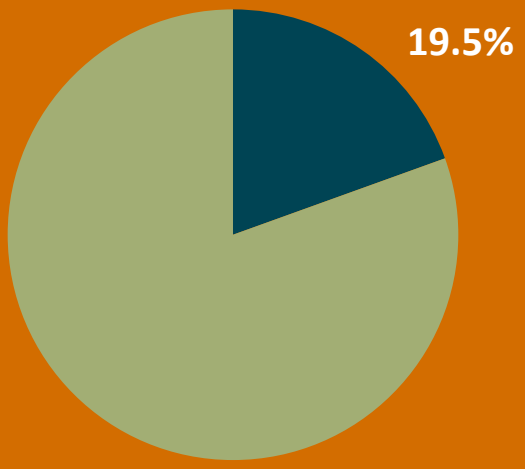
Top occupation groups within West Michigan that showed high levels of openings in July 2016 include *Healthcare Practitioners* (with 2,500 job postings), *Sales and Related* (2,350 jobs), and *Office and Administrative Support* (2,260 jobs). More specifically, individual occupations with large levels of demand are *Registered Nurses* with 997 jobs postings, *Truck Drivers* with 881, and *Retail Salespersons* with 587. These three occupations all have a wide range of wages, as do many of the other occupations filling out the top of the in-demand list, from entry-level occupations (*Customer Service Representatives*, 400 jobs ads) to high-education vacancies (*Industrial Engineers*, 400 ads)[13].

Top Occupational Categories by Job Ads July 2016

	Volume
Total	**21,360**
Healthcare Practitioners	2,500
Sales and Related Occupations	2,350
Office and Administrative Support	2,260
Transportation and Material Moving	1,770
Production	1,650

For job openings as a whole, less than 1 in 5 do not ask for a high school diploma, with 36 percent requiring a diploma or GED equivalent. Furthermore, 47 percent of openings require some education beyond high school, and 26 percent require at least a Bachelor's degree[14].

Percentage of Jobs Unfilled after 90 Days



Hard-to-Fill Job Advertisements

Another helpful measure of demand by job postings are those occupations considered "hard to fill", which means that the posting has been unfilled for at least 90 days. The top hard to fill jobs in West Michigan in July 2016 are *Registered Nurses* with 248 postings up for longer than 90 days, *Retail Salespersons* with 175 postings, and *Truck Drivers* with 164 postings. In West Michigan, there were 4,164 job postings considered hard to fill in July 2016. Of those, 30 percent require a Bachelor's degree or higher education.

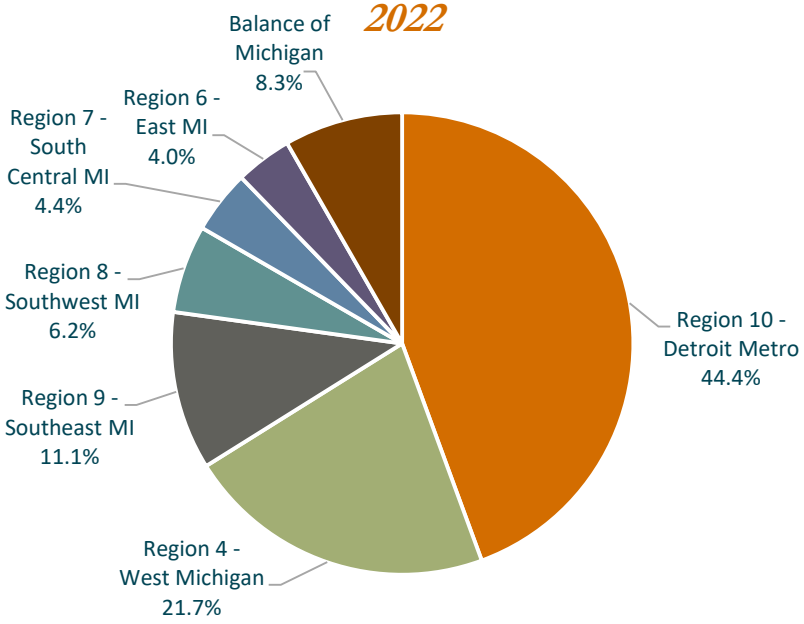
OCCUPATIONAL OUTLOOK THROUGH 2022

The State of Michigan's Bureau of Labor Market Information and Strategic Initiatives creates Long-Term Occupational Outlook forecasts for regions throughout the state every two years. For the first time, this information is available for Michigan's ten Prosperity Regions for the period 2012 to 2022. For more information on the methodology behind these projections, please see Note 4.

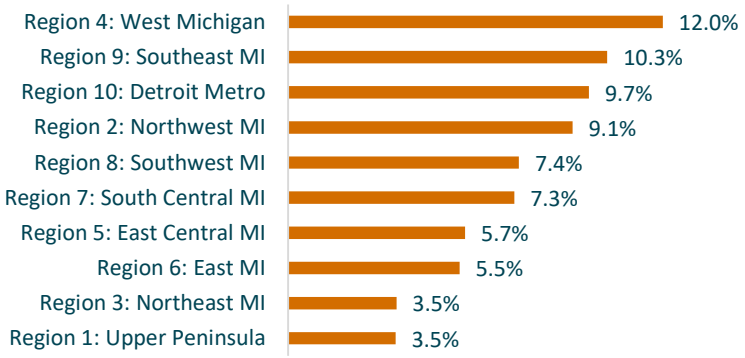
Over the forecasting period, occupational employment in West Michigan is expected to grow by 12.0 percent, expanding by 83,945 jobs. Over the same time period, the state as a whole is expected to grow by 8.7 percent. The 12.0 percent job growth expected in West Michigan compares favorably to the state, as well as the other ten Prosperity Regions, with the fastest proportional growth rate over the period. After West Michigan sits Southeast Michigan (Region 9), which is expecting 10.3 percent growth during the forecasting period[15].

In terms of the actual jobs added, West Michigan accounts for 21.7 percent of the total number of expected new jobs in the state. This means that of the nearly 387,000 jobs expected to be created during the forecasting period, over 1 in 5 will be for job sites in West Michigan. Due to demographic trends related to the aging of West Michigan's (and the country's) population, talent will be difficult to find to fill these new positions.

Distribution of New Jobs through 2022



Job Growth by Prosperity Region through 2022



These jobs are split into the 22 occupation groups as defined by the U.S. Bureau of Labor Statistics, and topping that list is *Production*, which will account for 11,480 new jobs, an increase of 11.8 percent for the occupation group. Next, as we see in many regions, is *Healthcare Practitioners and Technical* occupations with 8,510 new jobs over the period (22.1 percent growth). Rounding out the top five occupation groups by jobs added through 2022 are *Office and Administrative Support* adding 6,685 jobs (7.0 percent growth), *Sales and Related* (5,695 jobs, 8.5 percent), and *Food Preparation and Serving Related* (5,075 jobs, 9.5 percent). In West Michigan, every occupation group is expected to see growth through 2022[15].

Job Openings

Another way to look at growth is through the metric of openings, which is a combination of openings due to growth (job expansion) and openings due to replacements. Through 2022, *Production* occupations lead other occupation groups with 3,002 expected total openings every year, followed by *Office and Administrative Support* (2,946 annual openings), *Sales and Related* (2,548), *Food Preparation and Serving Related* (2,515), and *Healthcare Practitioners and Technical* (1,627). Those top five occupational groups will account for over half of the 24,745 expected annual openings in the region each year[15].

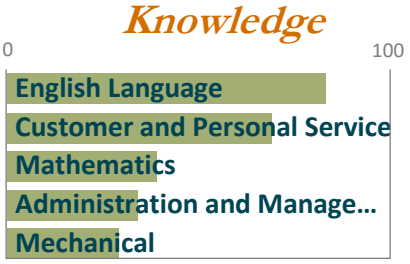
	Job Growth	Percent Growth	Total Annual Openings
Total, All Occupations	**83,945**	**12.0%**	**24,745**
Production	11,480	11.8%	3,002
Office and Administrative Support	6,685	7.0%	2,946
Sales and Related	5,695	8.5%	2,548
Food Preparation and Serving Related	5,075	9.5%	2,515
Healthcare Practitioners and Technical	8,510	22.1%	1,627

To highlight just a few specific occupations which expect to see large percent growth, it is fitting that a medical profession, *Diagnostic Medical Sonographers,* tops the list. With 25 annual average openings, this occupation will expand 46.3 percent during the projection period. *Physical Therapist Assistants* (36.5 percent), *Surgical Technologists* (35.7 percent), *Occupational Therapy Aides* (35.4 percent), *Home Health Aides* (36.1 percent) and *Cardiovascular Technologists and Technicians* (35.1 percent) are also in the top ten occupations expecting to see growth. However, the occupation expecting the second largest rate of growth in West Michigan falls in *Manufacturing*, *Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic*, which will grow by 44.1 percent and generate 25 annual average openings[15].

SOC Code	Occupation	Growth Rate	Typical Education Required for Entry
29-2032	Diagnostic Medical Sonographers	46.3%	Associate's degree
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	44.1%	High school diploma or equivalent
27-3091	Interpreters and Translators	37.5%	Bachelor's degree
31-2021	Physical Therapist Assistants	36.5%	Associate's degree
29-2055	Surgical Technologists	35.7%	Postsecondary non-degree award
31-2012	Occupational Therapy Aides	35.4%	High school diploma or equivalent
31-1011	Home Health Aides	35.1%	High school diploma or equivalent
29-2031	Cardiovascular Technologists and Technicians	35.1%	Associate's degree
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	34.7%	High school diploma or equivalent
49-9062	Medical Equipment Repairers	34.5%	Associate's degree

FORECASTING COMPETENCIES

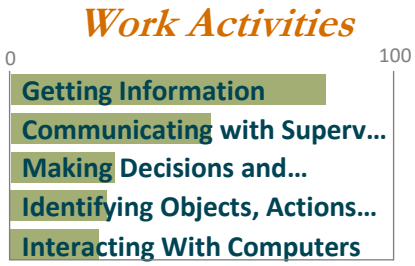
Using the Long-Term Occupational Forecasts from the Bureau of Labor Market Information and Strategic Initiatives, we are able to cross core competencies from the Department of Labor's O*Net Online tool with job projections to gain an understanding of the knowledge, skills, abilities, and work activities that will be in demand through 2022. While the competencies identified in the Sector Focus section apply to specific job families, these areas of importance apply to all jobs within West Michigan, and how important they are in occupations which are expecting the most openings due to growth through 2022.



Knowledge areas are "Organized sets of principles and facts applying in general domains." Among the top Knowledge areas needed in growth openings through 2022 are English Language (needed in 83 percent of growth openings), Customer and Personal Service (69 percent), Mathematics (39 percent), Administration and Management (34 percent), and Mechanical (29 percent)[16].

"Skills" are sometimes ill-defined and vague in the worlds of training, workforce development, and employment. Using the O*Net definition and categorization, Skills are defined as "Developed capacities that facilitate learning or the more rapid acquisition of knowledge." All five of the top Skills needed in growth jobs through 2022 are defined as "Basic Skills", and include Active Listening (required in 77 percent of growth jobs), Speaking (73 percent), Critical Thinking (47 percent), Monitoring (37 percent), and Reading Comprehension (37 percent)[16].

Finally, Abilities are "Enduring attributes of the individual that influence performance." Four of the top five Abilities which will be necessary in growth openings through 2022 are Cognitive Abilities, including Oral Comprehension (found in 69 percent of growth openings), Oral Expression (60 percent), Problem Sensitivity (43 percent), and Written Comprehension (33 percent). The Ability found in the fourth most number of projected growth openings is Near Vision (41 percent), which is a Sensory Ability[16].



Work Activities are "General types of job behaviors occurring on multiple jobs," and can be further split into several categories. Topping the list is an "Information Input" Work Activity, Getting Information (which will be necessary in 82 percent of growth openings through 2022). Also on the list is Communicating with Supervisors, Peers, or Subordinates (an Interacting With Others Work Activity, found in 52 percent of job openings), Making Decisions and Solving Problems (a Mental Process; 27 percent), Identifying Objects, Actions, and Events (another Information Input; 25 percent), and Interacting With Computers (a Work Output; 23 percent)[16].

Sources

1 U.S. Census Bureau, Population Estimates, 2014 Population Estimates

2 U.S. Census Bureau, Population Estimates, 2010 Intercensal Estimates and 2014 Population Estimates

3 U.S. Census Bureau, American Community Survey, 2010 – 2014 5-Year Estimates

4 U.S. Census Bureau, OnTheMap Application, Longitudinal-Employer Household Dynamics, 2014 data

5 DTMB, Bureau of Labor Market Information and Strategic Initiatives, Local Area Unemployment Statistics

6 U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics

7 U.S. Census Bureau, American Community Survey, 2010 – 2014 5-Year Estimates

8 DTMB, Bureau of Labor Market Information and Strategic Initiatives, Quarterly Census of Employment and Wages

9 Text from the *Talent Excellence System Guidebook* by the National Career Pathways Technical Assistance Center with permission

10 DTMB, Bureau of Labor Market Information and Strategic Initiatives, Quarterly Census of Employment and Wages

11 DTMB, Bureau of Labor Market Information and Strategic Initiatives, Occupational Employment Statistics (2015 data, customized data for West Michigan)

12 **Demand Data:** The Conference Board, Help Wanted Online© Data Series, 2015 Annual Data

Supply Data: Associate's and Bachelor's completers provided by Economic Modeling Specialists, Inc. thanks to a partnership with West Michigan Works! Certificate and credential data provided directly by Grand Rapids Community College, Montcalm Community College, Muskegon Community College, and West Shore Community College.

Matching Data: CIP to SOC ratios (explained in **Note 2**) established by employment data from DTMB, Bureau of Labor Market Information and Strategic Initiatives, Occupational Employment Statistics, 2014 data

13 The Conference Board, Help Wanted Online© Data Series

14 The Conference Board, Help Wanted Online© Data Series crossed with education requirements provided by the U.S. Bureau of Labor Statistics, Employment Projections, Table 1.12

15 DTMB, Bureau of Labor Market Information and Strategic Initiatives, Occupational Long-Term Projections, 2012-2022 (data for the West Michigan region)

16 DTMB, Bureau of Labor Market Information and Strategic Initiatives, Occupational Long-Term Projections, 2012-2022 (data for the West Michigan region) crossed with occupational competencies from O*NET Online

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Jazmin San Juan Garcia, *Mercy Health Saint Mary's*
Jazmin San Juan Garcia is a Human Resource Data Analyst with Mercy Health Saint Mary's where she is in charge of reporting workforce metrics. She graduated from Universidad de las Americas Puebla with a degree in Finance and Accounting, and studied her Master's Degree in Public Administration with a concentration in Health Care Administration. Her interest and passion is on studying large and diverse amounts of data and creating valuable information out of it. She has worked with Metrics Reporting in job analysis and has a vast understanding of O*NET occupational data.

Ryan Gimarc, *Talent 2025*
Ryan Gimarc joined Talent 2025 as Research Manager in early 2015, and has since worked to establish the organization as a leader in labor market research and data analysis in the region and throughout the state. Before joining Talent 2025, Ryan was an Economic Analyst for the State of Michigan in the Bureau of Labor Market Information and Strategic Initiatives where he focused on dashboard reporting, geographic data representation, and studying the economies of West and Northwest Michigan.

Bill Guest, *Metrics Reporting, Inc.*
Bill Guest is the president and chief solutions architect at Metrics Reporting, a Michigan based workforce development and talent management consulting firm. He is an international consultant, conference speaker, and practitioner in the areas of workforce development, innovation, and metrics. His consulting practice is currently focusing on human capital supply-chain challenges at all levels.

Bureau of Labor Market Information and Strategic Initiatives
The Bureau of Labor Market Information and Strategic Initiatives is the official source for high quality demographic and labor market information for the state of Michigan and its regions. We administer the state's federal-state cooperative programs with the Bureau of Labor Statistics (BLS) and the Census Bureau and produce high-quality information and analysis through grants from the U.S. Department of Labor and from partner agencies in the state of Michigan.

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Lisa Stich, Ph.D	West Shore Community College
Therese Thill	The Right Place
Michelle Wein	Bureau of Labor Market Information & Strategic Initiatives

NOTES AND APPENDICES

Notes

Note 1

Supply-Demand Process

The process of creating Job Families consisted reviewing the list of occupations by industry in the O*NET database. For each industry, we selected those occupations that showed a minimum 10 percent employment nationwide within the industry. Then, from the filtered list by industry, we reviewed the job descriptions of each occupation and grouped them into similar clusters that we called Job Families. To confirm similarity between the jobs included in each family we used the tool Talxcellenz® by Metrics Reporting, Inc. This tool has an algorithm that compares 420 O*NET elements, including but not limited to knowledge, skills, and abilities (competencies) and lets us identify outliers in a group. For the *Health Care* industry, the West Michigan Workforce Innovation Council for Health Care selected the occupations they wanted to see data for. Therefore, the Job Families in this industry do not include all the occupations that have a 10 percent or more employment nationwide.

Determining Supply

In order to determine the percentage of graduates that go to a specific occupation, we created a matrix that shows CIP codes as rows, and SOC (occupations) as columns. The data collected showed in the region, completions for 717 CIP codes. Consequently, the matrix cross-references 717 CIP codes to 663 SOCs. For each time a CIP code "supplied" to an occupation, we connected the number of employed in that column and then added them by rows. Using these numbers we calculated the percentage of completions that were going to each occupation, based on 2014 employment totals for the region.

Determining Demand

For the demand side, we used 2014 job advertisement totals in the region by occupation. However, as some occupations are employed in different industries, we used the employed percentages by industry published in the O*NET. For several occupations, we had to adjust the percentages to allocate demand by industry. For example, in the O*NET database, *Agricultural and Food Science Technicians* (19-4011) are employed by the following industries: *Agriculture, Forestry, Fishing, and Hunting* (32%), *Manufacturing* (21%), *Educational Services* (20%), and *Professional, Scientific, and Technical Services* (12%). Adjustment consisted on allocating 100 percent to only those industries in our area of study. Thus, *Agriculture* (32%) plus *Manufacturing* (21%) equals 53%, If 53% is our new total, and by dividing 32 by 53 and 21 by 53 we determine our new percentages by industry: Agriculture 60% and Manufacturing 40%.

Note 2

Multiple issues became apparent as our data team began to review the supply-demand data. For one, the real-time demand data (provided by the Conference Board through our partnership with the Bureau of Labor Market Information and Strategic Initiatives) has the same issues that all job advertisement aggregators do. This includes undercounting for industries like *Construction* and *Agriculture* that fill vacancies largely by word-of-mouth and referrals, as opposed to posting job ads. In these industries, the total job ads for the job families could total less than a half of a percent of the total employment in the sector, which does not lead us to believe this is an accurate representation of employer demand.

The crosswalk from supply to demand was done using the CIP (Classification of Instructional Programs) to SOC (Standard Occupation Classification) crosswalk provided by the NCES (National Center for Educational Studies). This crosswalk can be found on the NCES website. However, this crosswalk was established for the year 2010, while we were crossing supply and demand data from 2014. Additionally, in the absence of crosswalk ratios (since some CIP codes feed into multiple SOC codes, and vice versa), Talent 2025 used 2014 employment levels for individual SOC codes to establish the flow of program completers to occupations. Additionally, establishing this flow does not account for any outflow or inflow of talent.

Note 3

Because of data issues cited in Note 2, some industry sectors lacked the data confidence necessary to release data at the job family or sector level. It is the hope of Talent 2025 that we will be able to work with local and national partners to gather more thorough and verifiable data and run them through an established, confirmable, and replicable crosswalk to conduct supply-demand calculation which can be used throughout the region with confidence.

Note 4

The projections data are produced using QCEW, CES, Census and other sources of industry employment to estimate base year and future employment by industry at the 3-digit (and in some cases the 4-digit) NAICS levels. The resulting industry projections are then combined with state and regional occupational staffing patterns to produce estimates of base year employment by occupation as well as a portion of the projected year employment by occupation. National change factors from the BLS, which estimate how a particular occupation is expected to change within a given industry, are applied to the localized (state or regional) distribution of industries for each occupation and are added to the change due to localized industry employment projections. Replacement rates are also estimated using BLS data.

Note 5

The following information about the Workforce Innovation and Opportunity Act (WIOA) comes from the Department of Labor Website:

> *The bipartisan Workforce Innovation and Opportunity Act (WIOA) (Pub. L. 113-128), signed by President Obama on July 22, 2014, created a new vision for how America prepares an educated and skilled workforce that expands opportunity for workers and employers. WIOA represents the most significant reform to our public workforce development system in nearly 20 years.*
>
> *The 21st century public workforce development system created through WIOA builds closer ties between business leaders, State and Local Workforce Development Boards, labor unions, community colleges, nonprofit organizations, youth-serving organizations, and State and local officials to deliver a more job-driven approach to training and skills development. The system will deliver integrated, job-driven services to job seekers, including youth and those with barriers to employment, as well as to workers and employers. It supports the development of strong regional economies and enhances performance accountability to better inform consumers and investors about programs and services that work.*

More information about WIOA can be found here.

Note 6

These data from the Bureau of Labor Market Information and Strategic Initiatives is produced by their Occupational Employment Statistics Program. For these given indicators, there were not enough data to release a reliable estimate.

Appendix 1

Population Estimates

	2000	2010	2011	2012	2013	2014	2015
United States	**282,162,411**	**309,346,863**	**311,718,857**	**314,102,623**	**316,427,395**	**318,907,401**	**321,418,820**
Michigan	**9,952,450**	**9,877,369**	**9,876,589**	**9,886,879**	**9,900,506**	**9,916,306**	**9,922,576**
West Michigan	**1,450,631**	**1,518,313**	**1,523,976**	**1,533,898**	**1,547,635**	**1,559,843**	**1,570,606**
Allegan	105,904	111,502	111,530	111,898	112,391	113,743	114,625
Barry	56,931	59,080	58,970	59,070	59,140	59,239	59,314
Ionia	61,712	63,865	63,865	63,911	64,021	64,299	64,223
Kent	576,178	602,992	608,111	615,025	623,221	630,225	636,369
Lake	11,338	11,513	11,487	11,482	11,394	11,345	11,424
Mason	28,350	28,730	28,651	28,677	28,659	28,786	28,783
Mecosta	40,657	42,844	43,442	43,519	43,270	43,207	43,067
Montcalm	61,484	63,311	63,223	63,103	62,850	62,900	62,945
Muskegon	170,396	171,922	169,985	170,129	172,213	172,300	172,790
Newaygo	47,972	48,378	48,418	47,952	47,943	47,883	47,948
Oceana	26,902	26,522	26,417	26,251	26,200	26,174	26,105
Osceola	23,248	23,513	23,448	23,265	23,253	23,144	23,058
Ottawa	239,559	264,141	266,429	269,616	273,080	276,598	279,955

Source: U.S. Census Bureau, Population Estimates, 2010 Intercensal Estimates and 2014 Population Estimates

Population Structure

Female			Male	
West Michigan	Michigan		West Michigan	Michigan
48,543	278,712	0-4	51,018	293,064
51,134	292,559	5-9	53,717	305,687
52,507	310,500	10-14	54,384	324,108
54,459	327,635	15-19	56,548	342,918
55,119	352,851	20-24	58,301	366,688
52,508	311,376	25-29	53,724	319,804
49,897	295,939	30-34	51,225	296,289
46,806	289,520	35-39	47,723	285,464
45,166	303,336	40-44	46,669	297,141
48,921	328,591	45-49	49,585	323,425
55,155	366,247	50-54	55,231	356,165
55,213	375,825	55-59	54,207	358,508
49,027	336,299	60-64	47,351	313,254
39,486	277,417	65-69	37,000	252,969
28,800	201,075	70-74	25,705	175,679
20,971	144,948	75-79	17,517	116,887
15,711	111,373	80-84	11,493	77,411
19,358	140,225	85+	10,427	72,687

Source: U.S. Census Bureau, Population Estimates, 2014 Population Estimates

Appendix 1 (continued)

Educational Attainment

	West Michigan	Michigan	United States
25 and over			
Less than 9th grade	3.8%	3.3%	5.8%
9th to 12th grade, no diploma	7.0%	7.4%	7.8%
High school graduate (includes equivalency)	31.7%	30.2%	28.0%
Some college, no degree	23.1%	23.9%	21.2%
Associate's degree	9.0%	8.8%	7.9%
Bachelor's degree	16.8%	16.1%	18.3%
Graduate or professional degree	8.7%	10.3%	11.0%
18-24			
Less than high school graduate	14.4%	14.2%	15.0%
High school graduate (includes equivalency)	29.1%	27.8%	29.5%
Some college or associate's degree	48.1%	49.1%	45.8%
Bachelor's degree or higher	8.4%	8.9%	9.6%

Source: U.S. Census Bureau, American Community Survey, 2010-2014 5-Year Estimates

Appendix 2

Commuting by Prosperity Region, 2014

	Inflow	Internal	Outflow	Employed in area	Living in area	Inflow / All Employed	Outflow / All Living
Region 1	13,900	89,307	18,826	103,207	108,133	13.5%	17.4%
Region 2	24,048	83,642	26,062	107,690	109,704	22.3%	23.8%
Region 3	13,944	38,315	26,196	52,259	64,511	26.7%	40.6%
Region 4	**105,362**	**525,412**	**119,184**	**630,774**	**644,596**	**16.7%**	**18.5%**
Region 5	52,271	137,369	58,494	189,640	195,863	27.6%	29.9%
Region 6	66,847	158,901	157,197	225,748	316,098	29.6%	49.7%
Region 7	96,410	124,105	57,880	220,515	181,985	43.7%	31.8%
Region 8	67,919	209,073	95,365	276,992	304,438	24.5%	31.3%
Region 9	142,560	230,506	165,843	373,066	396,349	38.2%	41.8%
Region 10	299,308	1,307,096	217,481	1,606,404	1,524,577	18.6%	14.3%

Source: U.S. Census Bureau, OnTheMap Application, Longitudinal-Employer Household Dynamics

Appendix 2 (continued)

Commuting in West Michigan Over Time

	Inflow	Internal	Outflow	Employed in area	Living in area	Inflow / All Employed	Outflow / All Living
2014	105,362	525,412	119,184	630,774	644,596	16.7%	18.5%
2013	98,764	510,940	117,365	609,704	628,305	16.2%	18.7%
2012	95,735	500,503	115,921	596,238	616,424	16.1%	18.8%
2011	90,566	487,387	113,839	577,953	601,226	15.7%	18.9%
2010	97,632	465,785	109,362	563,408	575,147	17.3%	19.0%
2009	88,817	460,468	109,093	549,285	569,561	16.2%	19.2%
2008	92,695	502,505	107,078	595,200	609,583	15.6%	17.6%
2007	84,269	512,019	104,550	596,288	616,569	14.1%	17.0%
2006	77,857	525,167	95,656	603,024	620,823	12.9%	15.4%
2005	80,082	525,829	95,804	605,911	621,633	13.2%	15.4%
2004	76,586	521,912	91,455	598,498	613,367	12.8%	14.9%
2003	76,004	513,868	95,598	589,872	609,466	12.9%	15.7%
2002	79,839	524,971	97,025	604,810	621,996	13.2%	15.6%

Source: U.S. Census Bureau, OnTheMap Application, Longitudinal-Employer Household Dynamics

Commuting within West Michigan, 2014

Area of Residence	Area of Employment: Kent	Ottawa	Muskegon	Allegan	Ionia	Montcalm	Barry	Newaygo	Mecosta	Mason	Oceana	Osceola	Lake	Balance	Total Residents	% in County	% in West Michigan
Kent	195,676	16,824	3,299	3,421	1,907	2,001	1,047	650	778	186	66	156	29	40,262	266,302	73.5%	84.9%
Ottawa	35,934	57,012	6,499	6,346	190	176	151	395	191	160	107	40	8	15,035	122,244	46.6%	87.7%
Muskegon	9,247	10,639	34,673	520	176	140	34	1,374	161	171	631	25	17	10,057	67,865	51.1%	85.2%
Allegan	11,012	10,078	595	14,061	155	122	464	81	58	35	9	22	3	15,113	51,808	27.1%	70.8%
Ionia	7,714	459	247	124	7,036	1,007	492	64	192	21	8	22	3	6,915	24,304	28.9%	71.5%
Montcalm	6,685	414	240	129	1,327	6,707	61	195	439	20	8	30	2	7,250	23,507	28.5%	69.2%
Barry	6,627	725	235	1,060	438	70	7,017	32	38	18	5	7	1	9,048	25,321	27.7%	64.3%
Newaygo	5,058	746	1,572	172	107	274	9	5,735	714	150	282	181	128	3,070	18,198	31.5%	83.1%
Mecosta	2,180	379	311	159	124	520	11	191	4,852	77	30	600	49	3,649	13,132	36.9%	72.2%
Mason	955	264	555	103	45	71	9	98	139	5,995	354	23	94	2,803	11,508	52.1%	75.6%
Oceana	779	436	2,023	88	53	39	7	602	60	578	3,100	28	19	1,852	9,664	32.1%	80.8%
Osceola	714	179	242	99	66	63	7	51	803	52	29	2,227	123	2,952	7,607	29.3%	61.2%
Lake	367	99	102	40	26	45	1	49	172	132	45	332	548	1,178	3,136	17.5%	62.4%

Source: U.S. Census Bureau, OnTheMap Application, Longitudinal-Employer Household Dynamics

Appendix 3

Labor Force Statistics, West Michigan

	Labor Force	Employment	Unemployment	Unemployment Rate
2000	776,628	749,846	26,782	3.4%
2001	776,396	736,371	40,025	5.2%
2002	760,350	711,051	49,299	6.5%
2003	760,282	704,149	56,133	7.4%
2004	772,663	720,315	52,348	6.8%
2005	782,092	733,097	48,995	6.3%
2006	788,120	736,389	51,731	6.6%
2007	778,790	727,668	51,122	6.6%
2008	769,113	712,257	56,856	7.4%
2009	758,274	663,606	94,668	12.5%
2010	763,165	676,948	86,217	11.3%
2011	755,356	686,773	68,583	9.1%
2012	761,983	703,201	58,782	7.7%
2013	778,775	722,426	56,349	7.2%
2014	796,233	750,739	45,494	5.7%
2015	806,984	773,497	33,487	4.1%
2016*	820,442	789,850	30,592	3.7%

Source: DTMB, Bureau of Labor Market Information and Strategic Initiatives, Local Area Unemployment Statistics

Unemployment Rate

	West Michigan	Michigan	United States
2000	3.4%	3.6%	4.0%
2001	5.2%	5.2%	4.7%
2002	6.5%	6.3%	5.8%
2003	7.4%	7.2%	6.0%
2004	6.8%	7.0%	5.5%
2005	6.3%	6.8%	5.1%
2006	6.6%	7.0%	4.6%
2007	6.6%	7.0%	4.6%
2008	7.4%	8.0%	5.8%
2009	12.5%	13.7%	9.3%
2010	11.3%	12.6%	9.6%
2011	9.1%	10.4%	8.9%
2012	7.7%	9.1%	8.1%
2013	7.2%	8.8%	7.4%
2014	5.7%	7.3%	6.2%
2015	4.1%	5.4%	5.3%
2016*	3.7%	4.8%	5.0%

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

* denotes January through June data

Appendix 4

Private Sector Payroll Jobs, 2015

	West Michigan	Michigan
2000	594,102	3,931,877
2001	580,470	3,813,938
2002	567,358	3,738,282
2003	558,747	3,665,954
2004	565,869	3,651,749
2005	571,840	3,651,173
2006	569,632	3,594,823
2007	564,439	3,539,705
2008	552,201	3,440,220
2009	507,571	3,154,674
2010	513,314	3,166,928
2011	537,110	3,269,173
2012	558,746	3,362,223
2013	577,885	3,452,222
2014	595,581	3,528,145
2015	616,104	3,602,905

Source: DTMB, Bureau of Labor Market Information and Strategic Initiatives, Quarterly Census of Employment and Wages

West Michigan Jobs by Industry, 2015

	Employment	Share of Jobs
Manufacturing	146,966	21.5%
Health Care and Social Assistance	87,306	12.7%
Retail Trade	72,279	10.6%
Government	68,924	10.1%
Admin. and Support and Waste Management	63,113	9.2%
Accomodation and Food Services	53,768	7.8%
Wholesale Trade	31,855	4.7%
Construction	26,570	3.9%
Professional, Scientific and Technical Services	22,398	3.3%
Other Services	20,835	3.0%
Finance and Insurance	20,522	3.0%
Transportation and Warehousing	16,034	2.3%
Education Services	13,887	2.0%
Agriculture, Forestry, Fishing and Hunting	11,988	1.8%
Arts, Entertainment andRecreation	7,513	1.1%
Management of Companies and Enterprises	6,414	0.9%
Information	6,049	0.9%
Real Estate and Rental and Leasing	5,895	0.9%
Utilities	2,236	0.3%
Mining	476	0.1%

Source: DTMB, Bureau of Labor Market Information and Strategic Initiatives, Quarterly Census of Employment and Wages

Appendix 4 (continued)

West Michigan Jobs by Industry, 2015

	2007-2009	2009-2014
Region 1: Upper Peninsula	-6.9%	1.6%
Region 2: Northwest MI	-9.4%	11.2%
Region 3: Northeast MI	-10.8%	3.7%
Region 4: West Michigan	-10.1%	21.4%
Region 5: East Central MI	-7.2%	6.7%
Region 6: East MI	-12.7%	9.6%
Region 7: South Central MI	-8.8%	8.8%
Region 8: Southwest MI	-9.2%	8.9%
Region 9: Southeast MI	-10.7%	16.5%
Region 10: Detroit Metro	-12.9%	15.1%

Source: DTMB, Bureau of Labor Market Information and Strategic Initiatives, Quarterly Census of Employment and Wages

Job Change Before and After the Recession, West Michigan

by Percent Change			by Volume Change		
	2007-09	2009-15		2007-09	2009-15
Total	**-10.1%**	**21.4%**	**Total**	**-56,868**	**108,533**
Adm and Support and Waste Management	-16.4%	58.7%	Manufacturing	-27,749	33,431
Management of Companies and Enterprises	-13.6%	30.9%	Adm and Support and Waste Management	-7,810	23,350
Manufacturing	-19.6%	29.4%	Health Care and Social Assistance	2,644	12,757
Transportation and Warehousing	-9.7%	26.5%	Accomodation and Food Services	-2,919	8,279
Wholesale Trade	-6.3%	22.8%	Retail Trade	-4,932	6,171
Mining	-31.1%	19.3%	Wholesale Trade	-1,753	5,910
Construction	-19.3%	18.6%	Construction	-5,362	4,171
Accomodation and Food Services	-6.0%	18.2%	Transportation and Warehousing	-1,355	3,361
Health Care and Social Assistance	3.7%	17.1%	Professional, Scientific and Technical Services	-382	2,950
Professional, Scientific and Technical Services	-1.9%	15.2%	Other Services	-978	2,262
Other Services	-5.0%	12.2%	Finance and Insurance	-2,502	1,902
Agriculture, Forestry, Fishing and Hunting	3.5%	11.5%	Management of Companies and Enterprises	-773	1,514
Finance and Insurance	-11.8%	10.2%	Agriculture, Forestry, Fishing and Hunting	362	1,237
Retail Trade	-6.9%	9.3%	Education Services	-548	1,058
Education Services	-4.1%	8.2%	Arts, Entertainment and Recreation	-566	553
Arts, Entertainment and Recreation	-7.5%	7.9%	Real Estate and Rental and Leasing	-564	138
Real Estate and Rental and Leasing	-8.9%	2.4%	Mining	-180	77
Utilities	-4.0%	2.1%	Utilities	-91	45
Government	-0.6%	-1.0%	Information	-1,409	-634
Information	-17.4%	-9.5%	Government	-461	-690

Source: DTMB, Bureau of Labor Market Information and Strategic Initiatives, Quarterly Census of Employment and Wages

Appendix 5

Manufacturing Job Families

Job Family	SOC Code	Occupation Title
Managers and Supervisors	11-1021	General and Operations Managers
	49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers
	51-1011	First-Line Supervisors of Production and Operating Workers
	53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand
	11-3051	Industrial Production Managers
	11-9041	Architectural and Engineering Managers
Engineers and Designers	17-2141	Mechanical Engineers
	17-2112	Industrial Engineers
	27-1024	Graphic Designers
	17-2071	Electrical Engineers
	17-2072	Electronics Engineers, Except Computer
	49-3011	Aircraft Mechanics and Service Technicians
	19-4021	Biological Technicians
	41-9031	Sales Engineers
Machine Repair, Set-up, and Maintenance	49-9071	Maintenance and Repair Workers, General
	51-4041	Machinists
	49-9041	Industrial Machinery Mechanics
	49-9043	Maintenance Workers, Machinery
	49-9044	Millwrights
	49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment
	51-4111	Tool and Die Makers
	49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment
Quality	51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers
	43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping
	17-3029	Engineering Technicians, Except Drafters, All Other
Builders and Assemblers	51-2092	Team Assemblers
	51-2022	Electrical and Electronic Equipment Assemblers
	51-2041	Structural Metal Fabricators and Fitters
	51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers
	51-2031	Engine and Other Machine Assemblers
	51-5113	Print Binding and Finishing Workers
	51-2023	Electromechanical Equipment Assemblers
	51-2091	Fiberglass Laminators and Fabricators
Machine Operators	53-7051	Industrial Truck and Tractor Operators
	51-9111	Packaging and Filling Machine Operators and Tenders
	51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic
	51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic
	51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders
	51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic
	51-9011	Chemical Equipment Operators and Tenders
	51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic
	51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders
Labor	53-7062	Laborers and Freight, Stock, and Material Movers, Hand
	53-7064	Packers and Packagers, Hand
	51-9198	Helpers--Production Workers
	51-3011	Bakers
	51-3092	Food Batchmakers
	53-7063	Machine Feeders and Offbearers
	51-3023	Slaughterers and Meat Packers

Appendix 5 (continued)

Health Care Job Families

Job Family	SOC Code	Occupation Title
Managers	11-9111	Medical and Health Services Managers
Patient Care Assistants	31-1013	Psychiatric Aides
	31-1014	Nursing Assistants
	39-9021	Personal Care Aides
Medical Assistants	31-9092	Medical Assistants
Health Care Social Workers	21-1022	Healthcare Social Workers
	21-1014	Mental Health Counselors
	29-2053	Psychiatric Technicians
Health Technologists and Technicians	29-2055	Surgical Technologists
	29-2011	Medical and Clinical Laboratory Technologists
	29-2034	Radiologic Technologists
	29-2031	Cardiovascular Technologists and Technicians
	29-2035	Magnetic Resonance Imaging Technologists
	51-9082	Medical Appliance Technicians
Laboratory Technologists and Technicians	29-2012	Medical and Clinical Laboratory Technicians
	31-9093	Medical Equipment Preparers
Registered Nurses	29-1141	Registered Nurses
Advanced Practitioners	29-1071	Physician Assistants
	29-1151	Nurse Anesthetists
	29-1161	Nurse Midwives
	29-1171	Nurse Practitioners
Physicians	29-1061	Anesthesiologists
	29-1062	Family and General Practitioners
	29-1063	Internists, General
	29-1064	Obstetricians and Gynecologists
	29-1065	Pediatricians, General
	29-1066	Psychiatrists
	29-1067	Surgeons
	29-1069	Physicians and Surgeons, All Other

Appendix 5 (continued)

Agriculture Job Families

Job Family	SOC Code	Occupation Title
Managers and Supervisors	11-9013	Farmers, Ranchers, and Other Agricultural Managers
	45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers
Scientists and Technicians	19-4011	Agricultural and Food Science Technicians
	19-1011	Animal Scientists
Skilled Labor	45-2091	Agricultural Equipment Operators
	45-4022	Logging Equipment Operators
	39-2011	Animal Trainers
	45-2041	Graders and Sorters, Agricultural Products
	19-1032	Foresters
	45-2021	Animal Breeders
	45-4011	Forest and Conservation Workers
	37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation
	45-3011	Fishers and Related Fishing Workers
	45-3021	Hunters and Trappers
Laborers and Helpers	45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse
	45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals
Installation and Repair	49-3041	Farm Equipment Mechanics and Service Technicians

Appendix 5 (continued)

Construction Job Families

Job Family	SOC Code	Occupation Title
Managers and Supervisors	47-1011	First-Line Supervisors of Construction Trades and Extraction Workers
	11-9021	Construction Managers
Professionals	47-2073	Operating Engineers and Other Construction Equipment Operators
	13-1051	Cost Estimators
	17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors
	17-3012	Electrical and Electronics Drafters
Skilled Trades	47-2111	Electricians
	47-2031	Carpenters
	47-2152	Plumbers, Pipefitters, and Steamfitters
	47-2051	Cement Masons and Concrete Finishers
	51-4121	Welders, Cutters, Solderers, and Brazers
	47-2021	Brickmasons and Blockmasons
	47-2221	Structural Iron and Steel Workers
	53-7021	Crane and Tower Operators
	49-9044	Millwrights
	47-2011	Boilermakers
	47-2022	Stonemasons
	49-9096	Riggers
	51-2041	Structural Metal Fabricators and Fitters
Installation / Repair	49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers
	47-2141	Painters, Construction and Maintenance
	47-2181	Roofers
	47-2211	Sheet Metal Workers
	49-9051	Electrical Power-Line Installers and Repairers
	47-2132	Insulation Workers, Mechanical
	47-2071	Paving, Surfacing, and Tamping Equipment Operators
	47-2081	Drywall and Ceiling Tile Installers
	47-2131	Insulation Workers, Floor, Ceiling, and Wall
	49-9052	Telecommunications Line Installers and Repairers
	47-2151	Pipelayers
	47-2171	Reinforcing Iron and Rebar Workers
	47-2121	Glaziers
	49-2098	Security and Fire Alarm Systems Installers
Helpers / Labor	47-2061	Construction Laborers
	47-3013	Helpers--Electricians
	47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters
	49-9098	Helpers--Installation, Maintenance, and Repair Workers
	47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters
	47-3012	Helpers--Carpenters
	47-3016	Helpers--Roofers
	47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons
	47-5081	Helpers--Extraction Workers

Appendix 5 (continued)

Energy Job Families

Job Family	SOC Code	Occupation Title
Engineering and Design	17-2071	Electrical Engineers
	17-2161	Nuclear Engineers
Plant Operators	51-8031	Water and Wastewater Treatment Plant and System Operators
	51-8013	Power Plant Operators
	51-8092	Gas Plant Operators
	51-8012	Power Distributors and Dispatchers
	53-7071	Gas Compressor and Gas Pumping Station Operators
	51-8011	Nuclear Power Reactor Operators
	19-4051	Nuclear Technicians
Installation and Repair	49-9051	Electrical Power-Line Installers and Repairers
	49-9012	Control and Valve Installers and Repairers, Except Mechanical Door
	49-9081	Wind Turbine Service Technicians
	49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay
Meter Reader/Customer Service	43-5041	Meter Readers, Utilities

Information Technology Job Families

Job Family	SOC Code	Occupation Title
Managers	11-3021	Computer and Information Systems Managers
	11-2011	Advertising and Promotions Managers
	27-2012	Producers and Directors
	11-1021	General and Operations Managers
	11-3021	Computer and Information Systems Managers
	11-9041	Architectural and Engineering Managers
Architects and Designers	15-1143	Computer Network Architects
Programmers and Developers	15-1132	Software Developers, Applications
	15-1133	Software Developers, Systems Software
	15-1131	Computer Programmers
	15-1134	Web Developers
	15-1141	Database Administrators
	17-2072	Electronics Engineers, Except Computer
Technicians	15-1151	Computer User Support Specialists
	15-1142	Network and Computer Systems Administrators
	15-1152	Computer Network Support Specialists
	27-4011	Audio and Video Equipment Technicians
	43-9011	Computer Operators
	27-4014	Sound Engineering Technicians
	15-1141	Database Administrators
	17-3024	Electro-Mechanical Technicians
Analysts	15-1122	Information Security Analysts
	15-1111	Computer and Information Research Scientists
	13-1111	Management Analysts
	15-1121	Computer Systems Analysts
	15-2031	Operations Research Analysts
Other	43-4171	Receptionists and Information Clerks
	43-9021	Data Entry Keyers
	17-2061	Computer Hardware Engineers
	49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers

Appendix 6

Online Advertisements Trend, West Michigan

Date	West Michigan	Date	West Michigan
July, 2016	21,360	July, 2013	21,130
June, 2016	21,690	June, 2013	20,270
May, 2016	21,760	May, 2013	21,200
April, 2016	22,570	April, 2013	20,340
March, 2016	22,100	March, 2013	20,290
February, 2016	23,900	February, 2013	18,650
January, 2016	22,520	January, 2013	18,130
December, 2015	25,150	December, 2012	16,770
November, 2015	32,040	November, 2012	18,200
October, 2015	30,180	October, 2012	19,630
September, 2015	25,440	September, 2012	18,110
August, 2015	29,860	August, 2012	19,620
July, 2015	28,600	July, 2012	18,500
June, 2015	31,620	June, 2012	18,130
May, 2015	31,450	May, 2012	18,030
April, 2015	30,140	April, 2012	16,500
March, 2015	26,820	March, 2012	16,980
February, 2015	28,920	February, 2012	15,900
January, 2015	22,930	January, 2012	14,820
December, 2014	26,560	December, 2011	13,760
November, 2014	31,660	November, 2011	15,790
October, 2014	31,080	October, 2011	17,490
September, 2014	30,370	September, 2011	17,900
August, 2014	32,420	August, 2011	17,930
July, 2014	29,500	July, 2011	16,580
June, 2014	27,940	June, 2011	16,880
May, 2014	26,800	May, 2011	16,280
April, 2014	27,920	April, 2011	16,170
March, 2014	25,910	March, 2011	16,640
February, 2014	21,530	February, 2011	13,800
January, 2014	21,110	January, 2011	11,950
December, 2013	19,260	December, 2010	10,730
November, 2013	20,690	November, 2010	12,080
October, 2013	23,190	October, 2010	12,990
September, 2013	21,850	September, 2010	12,820
August, 2013	22,060	August, 2010	12,790

Source: The Conference Board, Help Wanted Online© Data Series

Top Locations for Online Advertisements, July 2016

City	Volume
Grand Rapids, MI	9,117
Holland, MI	2,082
Muskegon, MI	1,924
Wyoming, MI	1,029
Zeeland, MI	427
Grandville, MI	425
Shelby, MI	396
Big Rapids, MI	390
Grand Haven, MI	373
Greenville, MI	308
Ludington, MI	286

Source: The Conference Board, Help Wanted Online© Data Series

Top Occupations by Job Ads, July 2016

Occupation	Volume
Registered Nurses	997
Truck Drivers	881
Retail Salespersons	587
Retail Sales Supervisors	510
Production and Operating Supervisors	404
Industrial Engineers	400
Customer Service Representatives	400
Food Service Supervisors	386
General Maintenance and Repair Workers	349
Janitors and Cleaners	294
Office and Administrative Supervisors	267
Medical Assistants	259
Nursing Assistants	256
Helpers--Production Workers	253
Laborers and Freight, Stock, and Material Movers, Hand	238
Accountants	234
Sales Representatives, Wholesale and Mfg.	217
Computer User Support Specialists	215
Licensed Practical and Licensed Vocational Nurses	213
Computer Systems Analysts	212
Light Truck or Delivery Services Drivers	198

Source: The Conference Board, Help Wanted Online© Data Series

Appendix 6 (continued)

Hard-to-Fill Jobs by Online Ads (Postings Over 90 Days), West Michigan

Occupation	Volume
Registered Nurses	248
Retail Salespersons	175
Truck Drivers	164
Retail Sales Supervisors	109
Customer Service Representatives	87
Production and Operating Supervisors	77
Industrial Engineers	74
Food Service Supervisors	71
General Maintenance and Repair Workers	66
Food Preparation and Serving Workers	64
Licensed Practical and Licensed Vocational Nurses	61
Nursing Assistants	59
Helpers--Production Workers	56
Sales Representatives, Wholesale and Mfg.	56
Coaches and Scouts	51
Marketing Managers	46
Family and General Practitioners	46
Home Health Aides	45
Accountants	45
Laborers and Freight, Stock, and Material Movers, Hand	44
Office and Administrative Supervisors	44
Grand Total	**4,164**

Source: The Conference Board, Help Wanted Online© Data Series

Education of Hard-to-Fill Job Ads, West Michigan, July 2016

Education	Postings	Percent
Less than high school	688	17%
High School Diploma or Equivalent	1,348	32%
Some College, No Degree or Associate's Degree or Vocational Training	873	21%
Bachelor's degree	906	22%
Master's or Higher	349	8%
Grand Total	4,164	100%

Source: The Conference Board, Help Wanted Online© Data Series

Appendix 7

Occupational Forecasts in West Michigan

SOC Code	Occupation	Employment		Change		Annual Openings		
		Estimated (2012)	Projected (2022)	#	%	Growth	Replacement	Total
00-0000	Total, All Occupations	697,190	781,135	83,945	12.0%	8,573	16,172	24,745
11-0000	Management	38,760	43,210	4,450	11.5%	446	784	1,230
13-0000	Business and Financial Operations	27,265	31,050	3,785	13.9%	380	545	925
15-0000	Computer and Mathematical	11,250	13,335	2,085	18.5%	209	186	395
17-0000	Architecture and Engineering	14,825	16,700	1,875	12.6%	188	365	553
19-0000	Life, Physical, and Social Science	3,710	4,160	450	12.1%	45	110	155
21-0000	Community and Social Services	10,100	11,640	1,540	15.2%	156	234	390
23-0000	Legal	2,805	3,125	320	11.4%	32	45	77
25-0000	Education, Training, and Library	44,125	48,935	4,810	10.9%	481	910	1,391
27-0000	Arts, Design, Entertainment, Sports, and Media	9,635	10,660	1,025	10.6%	105	238	343
29-0000	Healthcare Practitioners and Technical	38,470	46,980	8,510	22.1%	851	776	1,627
31-0000	Healthcare Support	21,260	26,150	4,890	23.0%	489	407	896
33-0000	Protective Service	10,070	10,605	535	5.3%	55	295	350
35-0000	Food Preparation and Serving Related	53,525	58,600	5,075	9.5%	511	2,004	2,515
37-0000	Building and Grounds Cleaning and Maintenance	23,370	26,595	3,225	13.8%	322	475	797
39-0000	Personal Care and Service	20,610	23,490	2,880	14.0%	290	453	743
41-0000	Sales and Related	67,040	72,735	5,695	8.5%	572	1,976	2,548
43-0000	Office and Administrative Support	95,740	102,425	6,685	7.0%	796	2,150	2,946
45-0000	Farming, Fishing, and Forestry	10,700	12,155	1,455	13.6%	146	304	450
47-0000	Construction and Extraction	23,505	27,995	4,490	19.1%	449	396	845
49-0000	Installation, Maintenance, and Repair	26,415	30,260	3,845	14.6%	384	617	1,001
51-0000	Production	97,055	108,535	11,480	11.8%	1,178	1,824	3,002
53-0000	Transportation and Material Moving	46,955	51,795	4,840	10.3%	487	1,079	1,566

Source: DTMB, Bureau of Labor Market Information and Strategic Initiatives, Occupational Long-Term Projections, 2012-2022 (data for the West Michigan region)

Appendix 7 (continued)

Forecasted Occupational Growth by Prosperity Region, 2012-2022

	Job Growth (#)	Job Growth (%)
Region 1: Upper Peninsula	4,500	3.5%
Region 2: Northwest MI	11,715	9.1%
Region 3: Northeast MI	2,290	3.5%
Region 4: West Michigan	83,945	12.0%
Region 5: East Central MI	13,560	5.7%
Region 6: East MI	15,295	5.5%
Region 7: South Central MI	17,055	7.3%
Region 8: Southwest MI	23,790	7.4%
Region 9: Southeast MI	42,840	10.3%
Region 10: Detroit Metro	171,695	9.7%

Source: DTMB, Bureau of Labor Market Information and Strategic Initiatives, Occupational Long-Term Projections, 2012-2022 (data for the West Michigan region)

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