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Jennifer M. Granholm, Governor

Department of Energy, Labor & Economic Growth  
Bureau of Labor Market Information & Strategic Initiatives

# Michigan Economic and Workforce Indicators

## Preface

Is the recession over? Will the recent turmoil in Europe's financial markets interrupt a global recovery? Is our state economy still centered around the auto industry? These and many more economic and workforce questions are being asked at a time when the pace of change seems to be accelerating. Basing decisions on sound data continues to be a major need for policy makers, community leaders and job seekers.

The information presented in this report is intended to offer analysis and insight into the dynamic environment in which Michigan competes. The report presents analysis of key economic and workforce data with new and informative metrics that shed light on matters relevant to the state economy. For this reason the Bureau of Labor Market Information and Strategic Initiatives continuously strives to evaluate information from more than one source or perspective.

This edition of *Michigan Economic and Workforce Indicators* highlights one of Michigan's strongest growth areas in recent years, the Healthcare Industry. Also included is an executive summary of our latest research, *Michigan Green Jobs Report: A Regional Analysis*, which presents regional detail of survey data originally compiled for our *Michigan Green Jobs Report 2009*.

The changing needs of our workforce and our employers continues to influence the programs we develop. Our intent is to offer quality and timely information to help guide program decisions, measure their impact and provide a foundation for maintaining Michigan as a leader.

Richard Waclawek, Director  
Bureau of Labor Market Information & Strategic Initiatives  
Michigan Department of Energy Labor & Economic Growth

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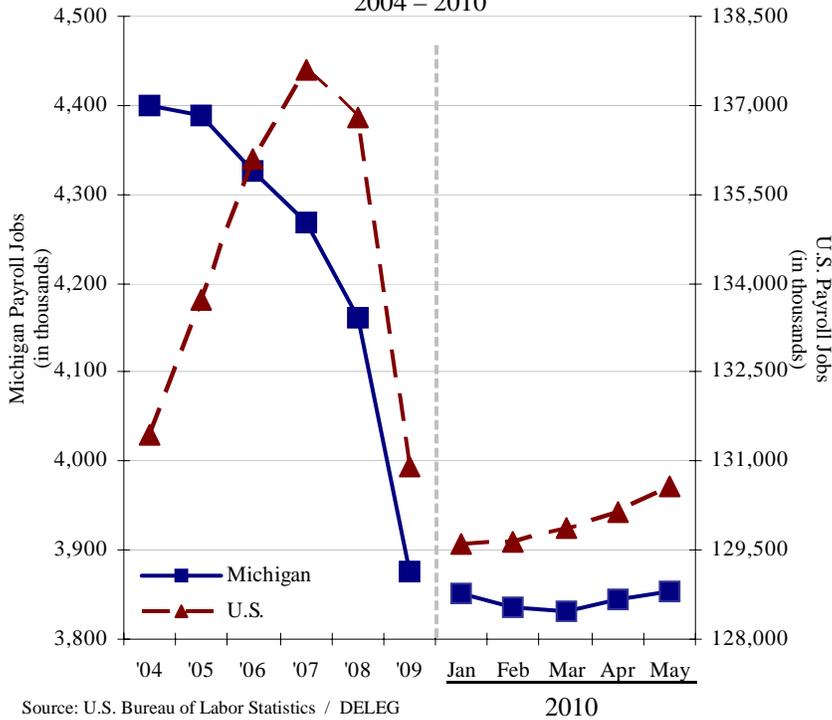
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# Michigan Job Trends

## Nonfarm Payroll Jobs

Michigan vs. U.S. Total Payroll Jobs  
2004 – 2010



- There are two government surveys that measure the state of the labor market. Both surveys show a sharp acceleration in job loss in Michigan and nationally during 2009, as the financial crisis affected jobs in all industries.

- The *nonfarm payroll or establishment* survey measures the total number of jobs supplied by establishments in the state and its metro areas. This survey excludes the self-employed and agriculture.

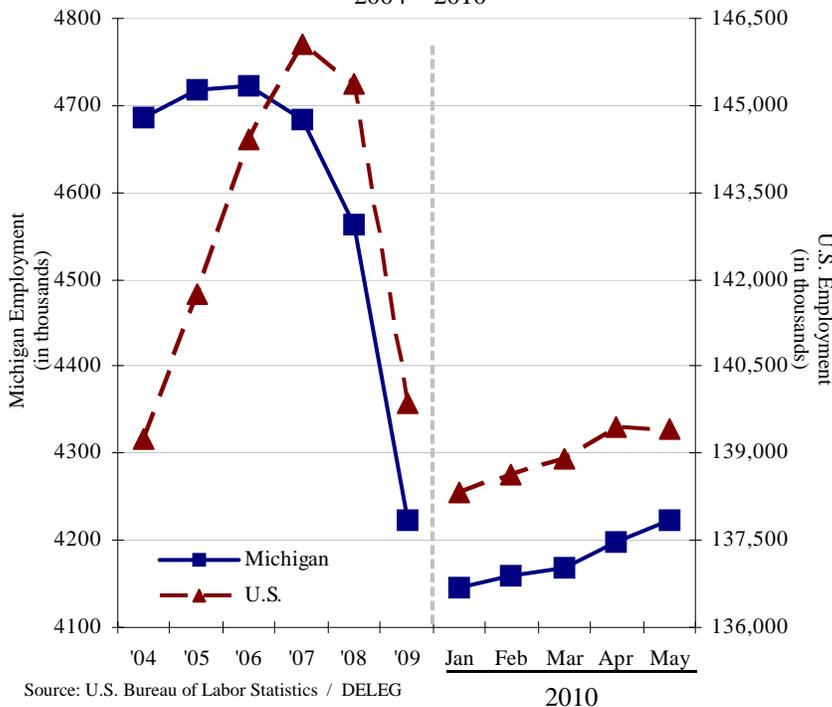
- The recession that started in December 2007 stalled any hopes of a job recovery in Michigan. The hemorrhaging of jobs in the 4<sup>th</sup> quarter 2008 and all of 2009 (-284,200) following the September 2008 financial crisis was unprecedented. This accounted for one-third of Michigan job losses from 2001–2009.

- Nationally, the recession and financial crisis reversed 4 years of job growth. Job gains from September 2003 to December 2007 (+8.1 million) were eliminated with 2 years of job losses (-8.3 million). Job levels have flattened out in the first five months of 2010.

- Michigan managed a slight gain of 8,300 jobs during the first five months of 2010, reversing the large pace of job loss in 2009. In May 2010, Michigan was no longer among the top ten in over-the-year job cuts among states. Its ranking improved to 11<sup>th</sup> (-21,400), and 24<sup>th</sup> in over-the-year percent job loss (-0.6).

## Household Employment

Michigan vs. U.S. Total Household Employment  
2004 – 2010



- The *household survey* measures the number of Michigan residents who are employed. This survey is more comprehensive than the payroll survey, including all segments of employment including the self-employed.

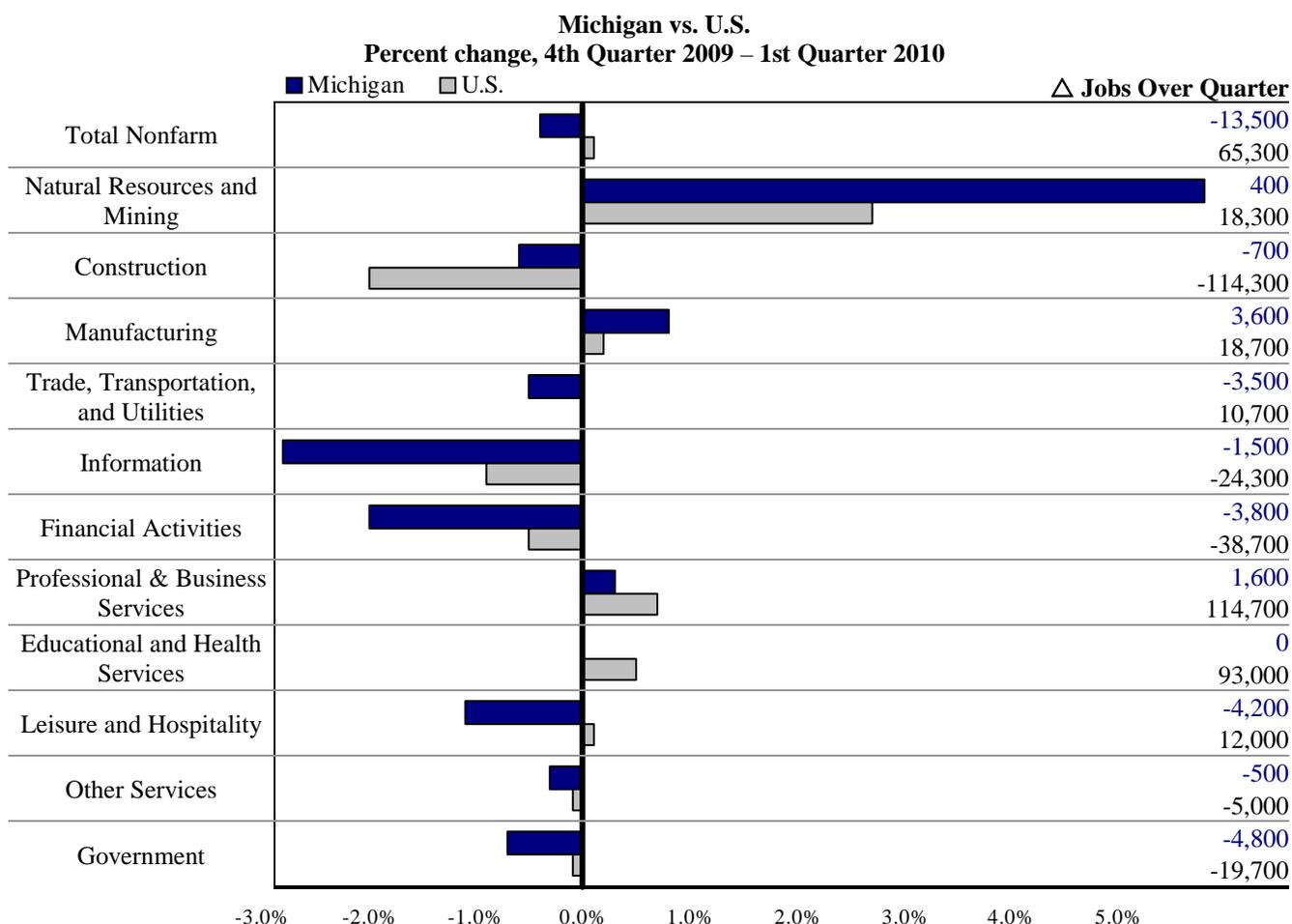
- Michigan household employment has declined each year since 2006, with a slight reduction of less than one percent in 2007, followed by a sharp drop of 2.6 percent in 2008, and an unprecedented plunge of over 339,000 or -7.4 percent during 2009.

- Employment loss was very steep during the first half of 2009, with seven consecutive months of employment reductions in the 20,000–40,000 range.

- The first five months of 2010 have displayed evidence that this long trend of employment loss in Michigan may have bottomed out. Household employment rose for five consecutive months from January–May 2010, increasing by 85,000 over this period.

- Nationally, household employment fell in 2009 by 3.8 percent, about half the pace of the Michigan decline. However, from December 2009–May 2010, Michigan employment growth of 2.1 percent has outpaced U.S. gains (+1.2 percent).

## Payroll Jobs by Industry Sector

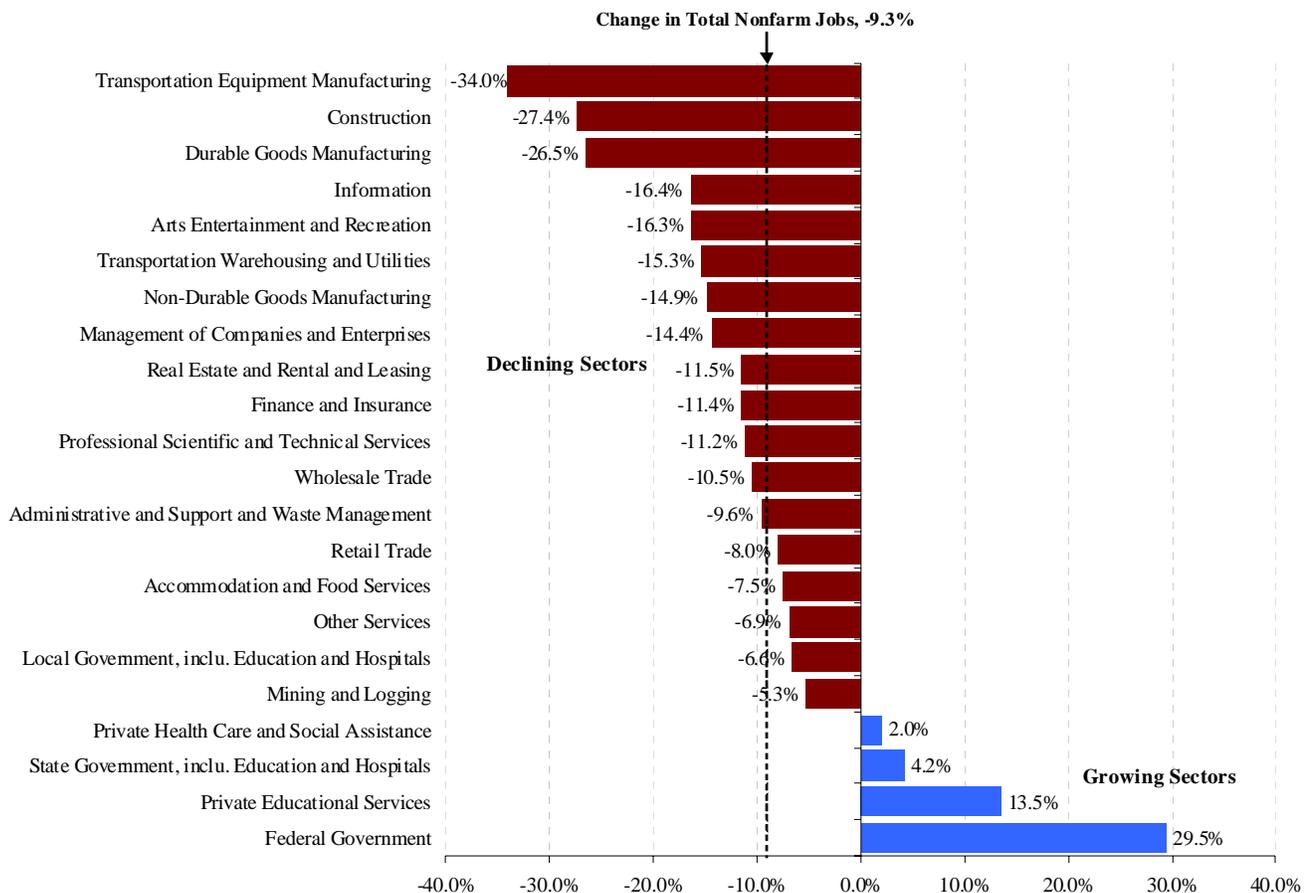


Source: U.S. Bureau of Labor Statistics / DELEG

- Total nonfarm payrolls stabilized in the first quarter 2010 for both Michigan and the U.S.. Though Michigan is still losing jobs, the negative trend is moderating. Nationally, payroll jobs showed signs of a modest recovery. In Michigan, jobs in the private sector edged down by 0.3 percent between 4<sup>th</sup> quarter 2009 and 1<sup>st</sup> quarter 2010. This compared favorably with a job decline of -4.1 percent in the first quarter 2009. Nationally, the 2 percent job loss recorded in the first quarter 2009 turned to a marginal gain of 0.1 percent in the first quarter 2010.
- Over the year (first quarter 2009 to first quarter 2010), private sector payrolls in Michigan contracted by 2.8 percent, on par with the national loss of 2.7 percent. Job losses since the beginning of the recession were broad based, with the goods producing sector contracting by 25 percent since December 2007 and private services down by 7 percent.
- The first quarter 2010 started with a modest recovery in the Manufacturing and Administrative & Waste services sectors in both Michigan and the U.S.. Recovery in the manufacturing sector was triggered by the automotive industry emerging from bankruptcy and employment and production stabilizing at sharply reduced levels. Jobs in transportation equipment manufacturing in Michigan were at a peak in the 2<sup>nd</sup> quarter 2000, averaging 352,000. By the first quarter 2010, Michigan jobs in the industry had fallen to just 129,000, a decline of over 60 percent. Nationally, 49 percent of motor vehicle manufacturing jobs were lost over the same period.
- Administrative & Waste Services (including the temporary help industry) is the other sector to show a turnaround, with Michigan gaining 25,000 jobs from August 2009 to 1<sup>st</sup> quarter 2010, after losing 51,000 from January 2008 to July 2009. This sector is growing partly due to the outsourcing of local government education-related jobs. Nationally, this was the first sector to grow as uncertainty about the economic recovery led businesses to hire more temporary workers to meet increased demand. Nationally, the sector lost 1.3 million jobs from January 2008 to September 2009, but rebounded with a job addition of 281,000 in the 1<sup>st</sup> quarter 2010.
- Job gains were spurred by GDP growth (+2.7 percent) in the 1<sup>st</sup> quarter 2010, the third consecutive quarter of growth. GDP fell during the recession by a post-war record of 3.7 percent from peak to trough. However, job recovery remains slow as many employment losses were not cyclical in nature, but were due to large structural changes in the manufacturing, financial, and other sectors. The long-term unemployed may need skills training if their former jobs have disappeared due to industry restructuring.

## Michigan Jobs Lost and Gained During Recession

### Percent Change in Michigan Payroll Jobs by Sector, December 2007 through May 2010

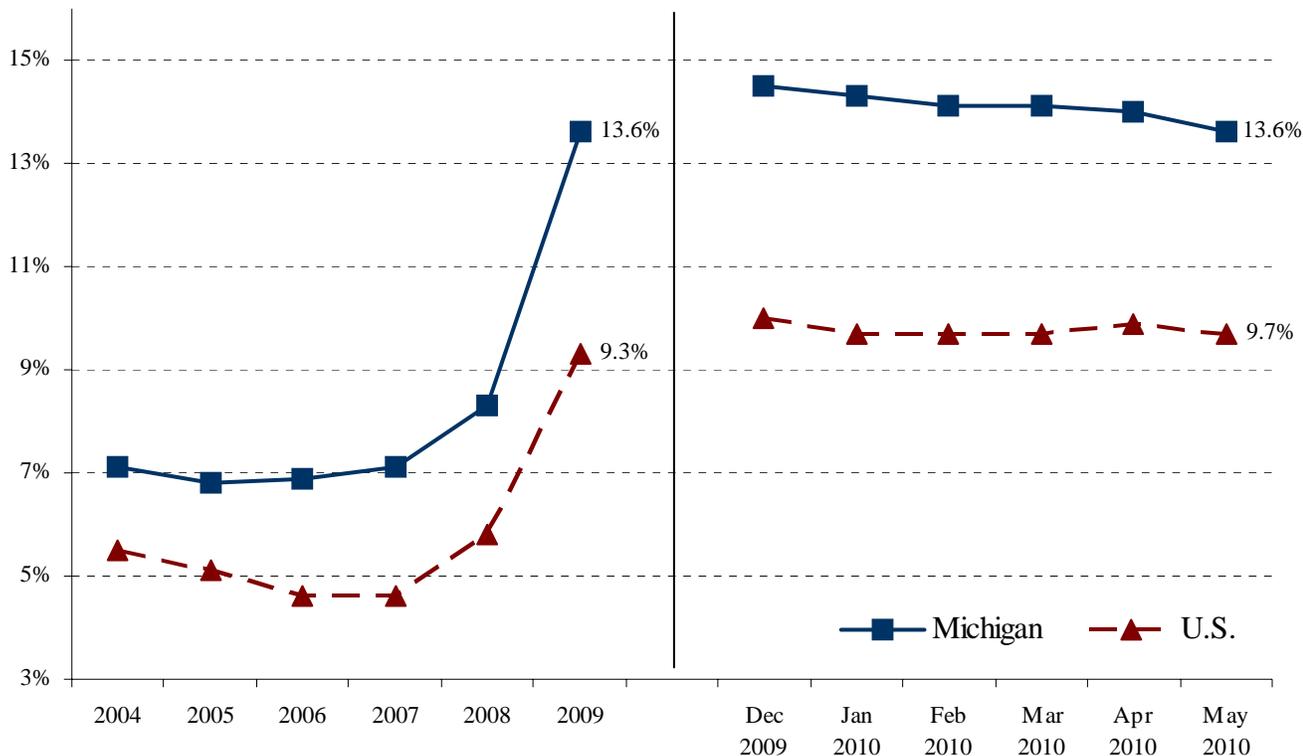


Source: U.S. Bureau of Labor Statistics / DELEG

- The national recession that began in December 2007 has resulted in a loss of almost 7.4 million jobs across the U.S., a decline of 5.4 percent. Michigan's pace of job loss was substantial, shedding over 390,000 jobs at a rate of 9.3 percent between the start of the recession and May 2010. The state accounted for one out of every 20 jobs lost nationally during this period.
- *Auto manufacturing* in Michigan declined by over 65,000 jobs and contributed nearly half of the job loss in the state's overall manufacturing sector, which shrunk by 24 percent during this time. Jobs in *Construction*, *Wholesale*, and *Retail trade* were also impacted substantially due to the housing market and financial crises and declining disposable incomes. These industries combined have cut over 100,000 Michigan jobs since the start of the recession. *Local governments*, including K-12 schools, have struggled to balance budgets due to decreasing revenue and rising healthcare costs, and shed over 28,000 jobs as a result.
- *Management of companies* and *Professional, scientific, and technical services* are sectors that employ large numbers of high wage professional workers. Both of these sectors registered double-digit job reductions in Michigan since December 2007. Many jobs lost in Michigan in these sectors were among firms related to the auto industry. The sharp cuts in business spending and investment due to the national recession also caused employment reductions in business, management, and technical jobs.
- The gain in *Federal government* employment of nearly 30 percent since the end of 2007 is deceptive, as many of these additions (+16,000) reflected hiring of temporary employees to work on Census 2010. Nationally, *Federal government* jobs rose by 23 percent. *Private educational services* posted a modest gain of about 11,000 jobs during the period, likely as a result of increased interest in educational and vocational programs from jobseekers attempting to remain competitive in an ever-tightening job market.

# Unemployment Rates

Average Annual & Monthly Jobless Rates, Michigan and U.S.



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

Jobless Rates By Quarter

Month	Michigan	U.S.	Gap
January	14.3	9.7	4.6
February	14.1	9.7	4.4
March	14.1	9.7	4.4
<b>1st Quarter 2010</b>	<b>14.2</b>	<b>9.7</b>	<b>4.5</b>
October	14.4	10.1	4.3
November	14.4	10.0	4.4
December	14.5	10.0	4.5
<b>4th Quarter 2009</b>	<b>14.4</b>	<b>10.0</b>	<b>4.4</b>
January	11.3	7.7	3.6
February	12.0	8.2	3.8
March	12.6	8.6	4.0
<b>1st Quarter 2009</b>	<b>12.0</b>	<b>8.2</b>	<b>3.8</b>

Quarterly Rate Movements

	Michigan	U.S.
1st. Quarter 2010 Average Rate	14.2	9.7
Change Since Prior Quarter	-0.2	-0.3
Change Since 1st Quarter 2009	2.2	1.5

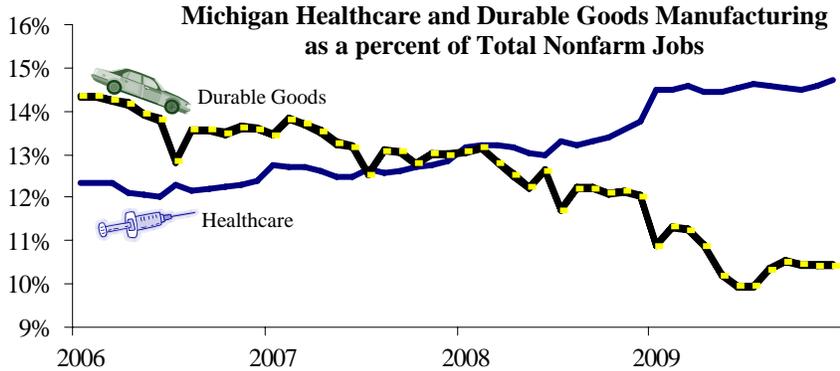
Source: U.S. Bureau of Labor Statistics / DELEG

- Unemployment rates in Michigan and the U.S. in 2010 remain at very high levels. The Michigan jobless rate has averaged 14.0 percent from January–May 2010, the highest rate since 1983. The state jobless rate has roughly doubled since 2007. The U.S. unemployment rate hit 10.1 percent in October 2009, the highest national rate since June 1983. Unemployment nationally has about doubled since early 2008.
- In Michigan, jobless rates accelerated at an unprecedented pace in the first half of 2009, jumping by nearly 5.0 percentage points in just nine months from September 2008 to June 2009. This was by far the fastest nine-month rise in unemployment in Michigan in at least 40 years.
- The 2009 Michigan unemployment rate was 13.6 percent, up 5.3 percentage points from the 2008 average of 8.3 percent. The national rate spiked 3.5 percentage points during the same period.
- The Michigan jobless rate peaked at 14.5 percent in December 2009. During the first five months of 2010, the state jobless rate has edged down slowly to 13.6 percent in May.
- The gap between the Michigan and U.S. jobless rates continued to widen during 2009, from 3.8 percentage points in the 1<sup>st</sup> quarter 2009 to 4.5 percentage points one year later. The University of Michigan RSQE May 2010 forecast anticipates continued high unemployment in the state, with average rates of 13.9 percent in 2010 and 13.3 percent in 2011.

## Industry Highlights: Healthcare

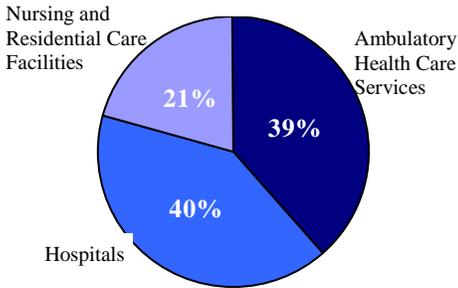
Healthcare is one of the few industries in Michigan experiencing employment growth during the first decade of the new millennium.

- January 2008 marked the point in time when jobs in Healthcare (460,000) surpassed those in the Durable Goods manufacturing sector (456,400) in Michigan. This is a trend that accelerated in 2009 and has continued through May 2010.



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

### Michigan's Healthcare Employment by Industry 2009



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

- The Healthcare industry's three segments have all experienced job growth between 2001 and 2009. Ambulatory Healthcare Services increased by 21 percent, Hospitals grew by 12 percent, and Nursing & Residential Care Facilities expanded by 13 percent. This is significant, given that total nonfarm jobs fell by 15 percent in Michigan over this time frame.
- Among the five Great Lakes states, Michigan had the highest percent of Healthcare jobs in the Hospitals and Ambulatory Services sectors.
- The healthcare sector generates jobs at all education and skill levels, and this is reflected in wage levels. Healthcare practitioner wages are among the highest in Michigan, and wages for healthcare technician occupations are also positive, ranging from \$13-30 per hour. However, some healthcare support occupations require only short-term training, and wages are well below average. Skilled healthcare jobs may offer a competitive wage for retrained former production workers.

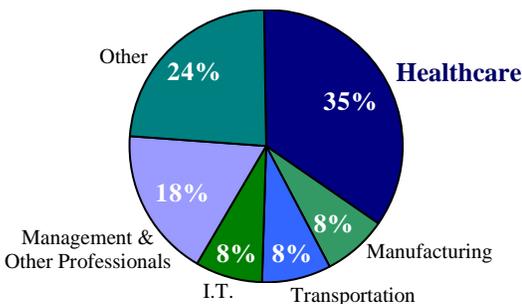
### 2009 Employment and Wages in Healthcare Occupations vs. Production Occupations

	Michigan			U.S.		
	Employment	Hourly Wage	Annual Wage	Employment	Hourly Wage	Annual Wage
<b>Healthcare Practitioners / Technical Occupations</b>	240,780	\$33.21	\$69,070	7,200,950	\$33.51	\$69,690
<b>Healthcare Support Occupations</b>	137,130	\$12.75	\$26,520	3,886,690	\$12.84	\$26,710
<b>Production Occupations</b>	370,620	\$18.03	\$37,500	8,927,930	\$16.01	\$33,290

Source: U.S. Bureau of Labor Statistics 2009 wage data / DELEG

### Healthcare Future Job Trends and Workforce Training

#### No Worker Left Behind Training Through 1st Quarter 2010



Source: DELEG NWLB: WIA, TAA, & JET participants

- Projected job growth in Healthcare Practitioners/Technical occupations of +17.1 percent will be over three times the expected pace of job additions among all occupations (+5.6 percent) between 2008 and 2018.
- Healthcare Support occupations are projected to record strong job expansion of 24.9 percent through 2018.
- Qualified participants in Michigan's No Worker Left Behind initiative receive up to 2 years of free tuition and fees, as they prepare for 'in-demand' occupations. Through the first quarter of 2010, thirty-five percent of participants were engaged in Healthcare training; almost double any other group.

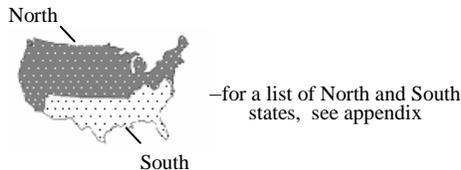


—For this publication the Great Lakes states are defined as: Illinois, Indiana, Michigan, Ohio, and Wisconsin.

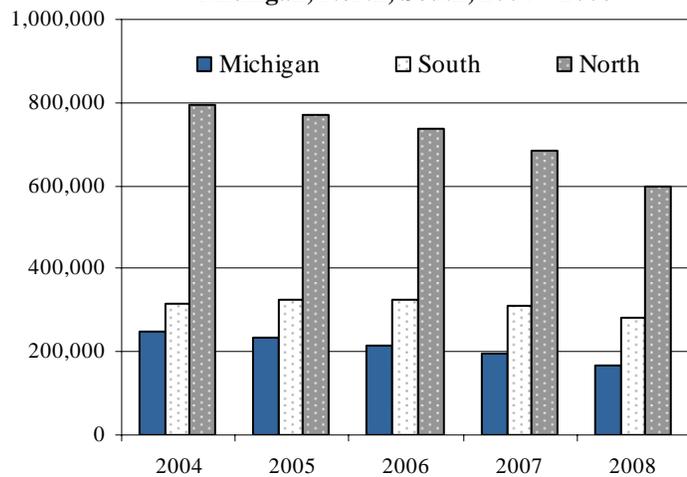
# Motor Vehicle Employment

This employment analysis compares *Motor Vehicle Manufacturing; Motor Vehicle Body and Trailer Manufacturing; and Motor Vehicle Parts Manufacturing* (NAICS 3361-63, hereafter referred to as automotive production) across two regions of the U.S. Also presented is a comprehensive look at total auto industry employment in Michigan, which includes automotive production employment as well as jobs related to manufacturing of materials, tooling and parts, and the non-manufacturing activity associated with vehicle design, engineering, and company management.

## Michigan Automotive Production Employment



**Automotive Production Employment  
Michigan, North, South, 2004 – 2008**



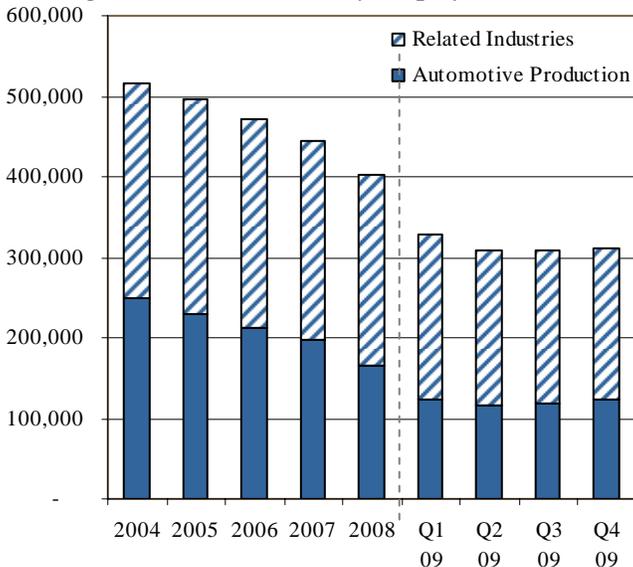
Source: U.S. Bureau of Labor Statistics / DELEG (NAICS 3361-3363)

Note: See appendix for description of employment estimates.

- In 2008, nearly one in five (19 percent) of the nation’s automotive industry workers still worked in Michigan. That share was down just one percent since 2007.
- However, Michigan accounted for almost 38 percent of auto industry job losses among northern states. In total, northern auto producing states lost an estimated 82,800 auto jobs (-12.1 percent) from 2007 to 2008, with Michigan registering an estimated 31,100 (-15.7 percent) of those losses. Southern states lost an additional 28,900 jobs (-9.4 percent) over the year. As this analysis presents annual averages for 2008, it only partially reflects the impact of substantial layoff activity resulting from the national recession. In 2009, auto industry jobs throughout the U.S. plunged due to domestic automaker restructuring and sharply reduced vehicle sales.

## Michigan Automotive Industry Employment

**Michigan Automotive Industry Employment 2004 – 2009**



Source: DELEG, Quarterly Census of Employment and Wages

- In the 4<sup>th</sup> quarter of 2009, automotive production and related industries contributed an estimated 311,108 jobs in Michigan, or 9.8 percent of the state’s workforce. Automotive production industries generated 122,364 of those jobs, while related industry sectors accounted for the remaining 188,744.
- Michigan’s automotive production and related industries contracted 22.2 percent between 2008 and 2009. At the same time, total private employment in Michigan declined 7.8 percent.
- While the automotive sector remains a major source of income and jobs for Michigan, the industry share of total state jobs continues to decline. The share of Michigan workers in automotive or related industries declined by 1.8 percentage points, or 89,400 jobs, from 2008 to 2009. In 2002, the first year this data was tabulated, the automotive production and related sector employed about 560,700 workers, or 15.0 percent of total Michigan jobs.
- Unlike 2008, during which automotive production industries bore the brunt of the employment losses, job separations in 2009 were split roughly evenly between automotive production industries (-44,000) and related industries (-45,400).

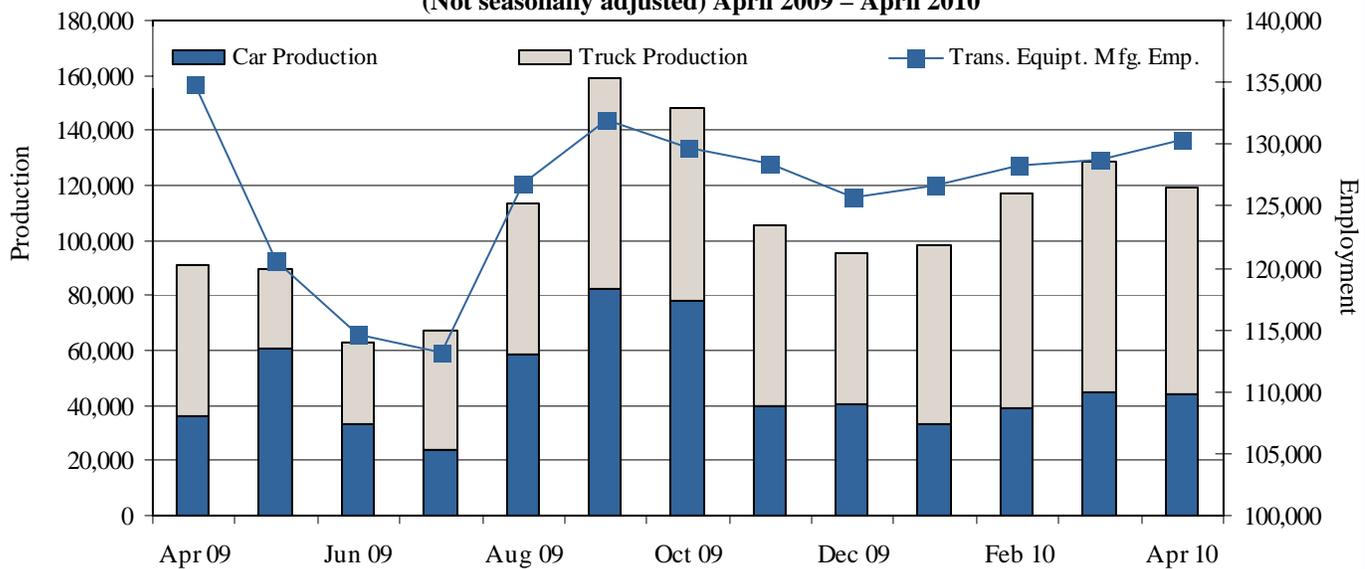
- While job losses occurred across the auto sector, a few industries were particularly impacted by job cuts in 2009. *Industrial machinery and equipment merchant wholesalers* shed 2,100 jobs, or 14.8 percent of total employment, joined by *Machine shops; turned products; and screw, nut, and bolt manufacturing*, which lost 6,200 positions (-23.4 percent) over the year. *Engineering services* fell by nearly 5,000 (-13.1 percent), while *Testing laboratories* contracted by nearly 2,400 jobs (-12.2 percent).

## Motor Vehicle Production

- According to Ward’s Automotive Group, U.S. sales of light vehicles increased 19.9 percent from April 2009 to April 2010, a change that managed to lend some stability to an otherwise turbulent domestic auto market. Michigan production of cars and light trucks grew by 28,353 units, a 31.2 percent advance. In part because of steadied sales, employment in Michigan’s *transportation equipment manufacturing* industry contracted just 3.3 percent over this period, compared to large declines from 2008 to 2009.
- The Detroit Three (Chrysler, Ford, General Motors) have recorded increased market share in recent months, rising from a low of 41.2 percent in August 2009 to 45.4 percent of light vehicle sales in April 2010. Despite increasing sales, this figure is still a 1.1 percentage point decline in market share from a year ago.

### Michigan Automotive Production & Transportation Equipment Manufacturing Employment

(Not seasonally adjusted) April 2009 – April 2010

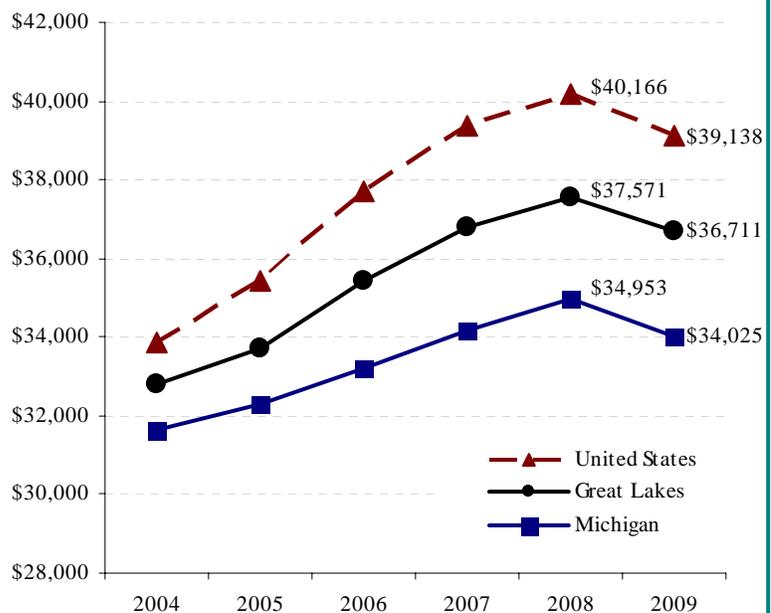


Sources: Ward’s Automotive Group, Census Bureau Annual Survey of Manufacturers (NAICS 3362-3363), DELEG

## Per Capita Personal Income

- Personal income per capita fell by 2.6 percent nationally in 2009 due to continued economic weakening as a result of the housing and financial crises of 2008–2009. This marked the only year since at least 1969 that non-inflation-adjusted income dropped in the U.S. Michigan per capita income followed the national pattern and decreased by 2.7 percent during 2009, as the domestic auto industry reeled from massive job declines.
- In the last five years, per capita income grew only 7.5 percent in Michigan—roughly half the national rate (+15.5 percent). The gap between national and Michigan income has grown in recent years, as the state’s per capita income was 13.1 percent below the U.S. average in 2009. Michigan lagged behind the U.S. average by only 6.6 percent in 2004 and by just 3.1 percent in 2000.
- Michigan’s position nationally in terms of per capita income fell slightly in 2009, ranking 38<sup>th</sup> out of all U.S. states compared to 37<sup>th</sup> in 2008. Michigan’s ranking fell throughout the decade, as it was in the top 20 in income in 2000. Illinois remained the top Great Lakes state with a 2009 per capita income of \$41,411.

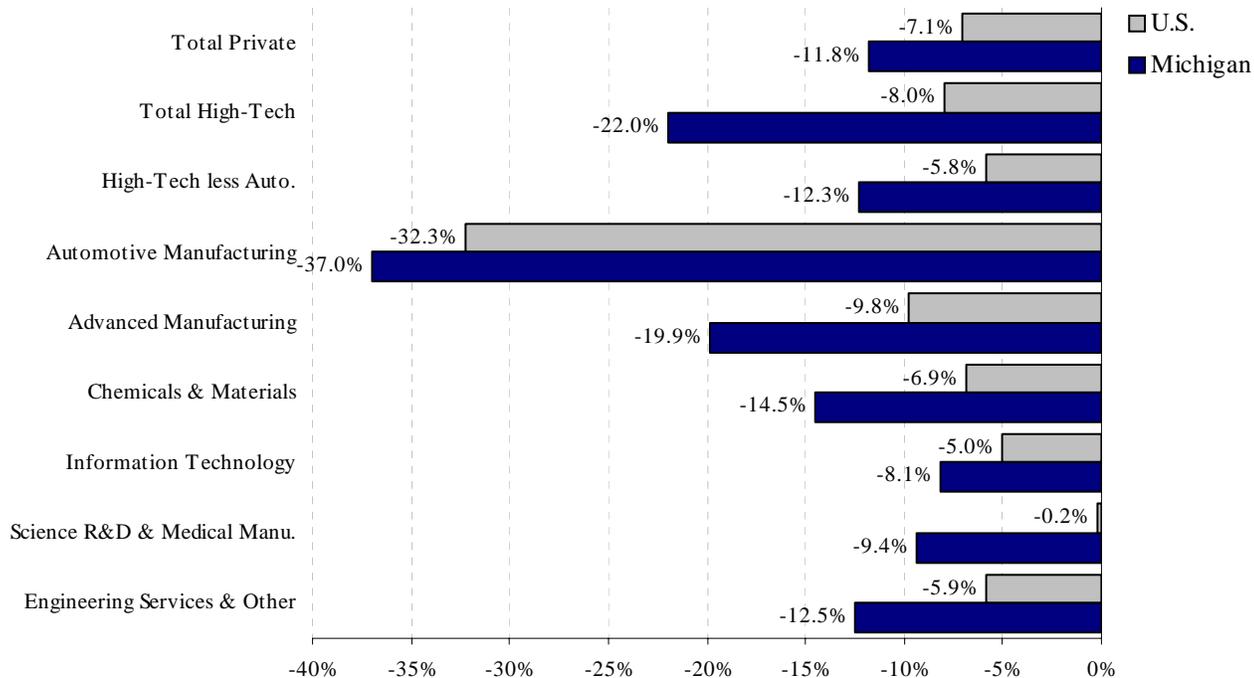
### Per Capita Personal Income, 2004 – 2009



Source: U.S. Bureau of Economic Analysis, Regional Economic Information System

## Jobs in High-Tech Industries

Percent Change in Payroll Jobs 3rd Quarter 2007 to 3rd Quarter 2009



Michigan Job Levels in High-Tech Industries

Period	Total Private Jobs	Total High Tech Jobs	High Tech less Automotive	Automotive Manufacturing	Advanced Manufacturing	Chemicals & Materials	Information Technology	Science R&D & Medical Manufacturing	Engineering Services & Other
2007 3rd Qtr.	3,608,000	486,200	295,000	191,200	52,100	17,300	84,100	40,100	101,400
2009 3rd Qtr.	3,181,000	379,300	258,800	120,500	41,800	14,800	77,200	36,300	88,700
Change	-427,000	-106,900	-36,200	-70,700	-10,300	-2,500	-6,900	-3,800	-12,700
Percent	-11.8%	-22.0%	-12.3%	-37.0%	-19.9%	-14.5%	-8.1%	-9.4%	-12.5%

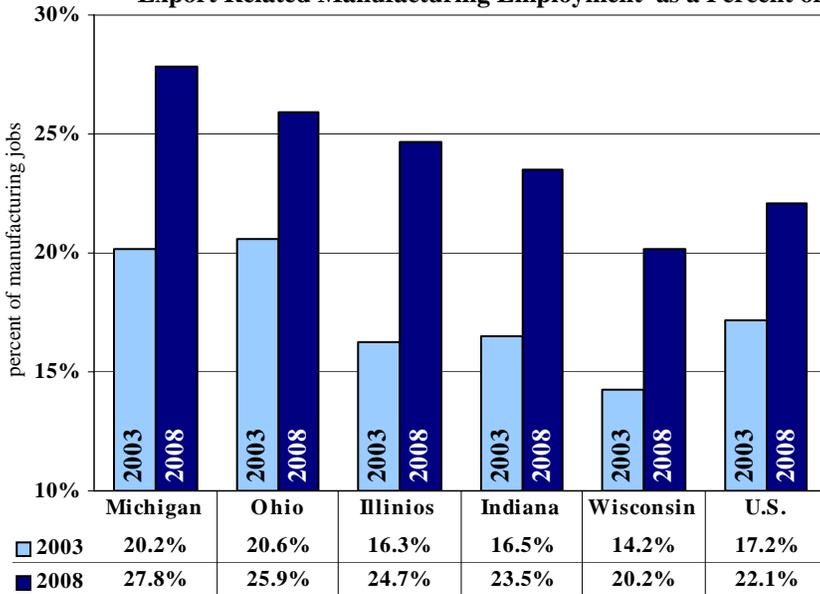
Source: DELEG, Quarterly Census of Employment & Wages

Note: Please see the Appendix for the detailed industry definition of the above clusters

- With the severe national recession, high-technology industries were significantly impacted by job loss nationally and in Michigan. In Michigan, high-technology industries provided more than 379,000 jobs in 2009, or nearly 12 percent of total state employment. However, the state's high-tech sector lost roughly 107,000 jobs between 2007 and 2009, which comprised about one-fourth of the total private sector job decline in the state during this time. In the U.S., high-tech jobs also fell over this period but by a much more modest 8.0 percent (versus the sharp cut of 22.0 percent in Michigan).
- The auto industry still contributes a major share (32 percent) of Michigan high-tech jobs, but that share has declined in recent years due to restructuring and major layoff activity. In fact, automotive manufacturing was responsible for much of the total job loss in the Michigan high-tech sector, accounting for 66 percent of Michigan high-tech job reductions.
- Outside of the auto sector, high-tech job reductions from 2007–2009 were still significant by historical standards, as jobs fell by 12.3 percent. However, this performance was more in line with the reduction in total private jobs (-11.8 percent).
- As the chart demonstrates, high-tech job cuts were generally lower in industries related to the service economy, such as information technology, research and development, and medical equipment. Job reductions were most significant in the manufacturing-related clusters of *Automotive*, *Advanced Manufacturing*, and *Chemicals and Materials*.
- Although job losses in Michigan exceeded U.S. averages across all high-tech clusters, some fared better than others. For example, the *Information Technology* sector actually added jobs from 2004–2006, prior to the recession-induced job decline of 8.1 percent from 2007–2009. This was the smallest reduction of any cluster over this period, and was reasonably comparable with the U.S. job change.

# Michigan Export Related Manufacturing Jobs

**Export Related Manufacturing Employment as a Percent of Manufacturing Jobs: 2003 & 2008**



Source: International Trade Administration; Wisner Trade

- Michigan ranked number one in the Great Lakes region and fifth nationwide in the percent of total manufacturing jobs that were export related (2008, most recent data available).
- In Michigan 1 in 13 private sector jobs were related to manufactured exports compared to one in 17 for the U.S. in 2008. A quarter of Michigan manufacturing jobs are export related, and those jobs expanded by 7.6 percent since 2003. Nationally, just 20 percent of manufacturing jobs were supported by exports.
- In value terms Michigan ranked 7<sup>th</sup> among the states in export of manufactured goods in 2008.
- Between 2005 and 2007 the number of Michigan companies exporting goods increased by 12 percent. 90 percent of these firms were small to medium size employers (less than 500 employees).

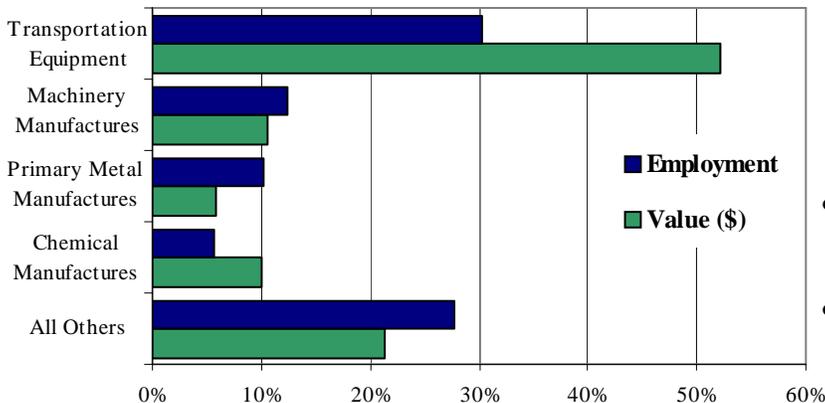
**Export Related Manufacturing Employment (XRE), 2003 - 2008: Industry Breakdown**

- As the table indicates, export related manufacturing jobs (XRE) increased between 2003–2008 (+8.9 percent).
- As columns 1 & 2 illustrate, many manufacturing sectors with overall job declines managed to record export related job growth.
- Columns 3 & 4 show that export related manufacturing jobs in Michigan in a number of industries account for a larger share of sector jobs than is the case nationally.
- The Michigan export job share in transportation equipment manufacturing is similar to the U.S. share.

2003 - 2008 (p)		Michigan's Top 10 XRE Industries (% Change)	2008 (p)	
% change in Total Emp.	XRE		XRE as a % of Industry Emp. MI	U.S.
-21.1	8.9	<b>Total Manufacturing</b>	<b>27.8</b>	<b>22.1</b>
-8.7	48.7	Computers & Electronic Products	32.6	37.8
-26.3	45.2	Nonmetallic Mineral Products	<b>35.7</b>	<b>11.8</b>
-14.6	33.3	Printing & Related support activities	<b>14.6</b>	<b>11.5</b>
-12.6	31.8	Chemicals	<b>32.2</b>	<b>26.6</b>
-10.9	19.4	Fabricated Metal products	<b>30.4</b>	<b>22.1</b>
-9.1	15.3	Machinery	26.1	33.5
-24.8	-0.8	Plastic & Rubber	<b>26.1</b>	<b>19.3</b>
-34.0	-1.7	Transportation Equipment	<b>31.8</b>	<b>31.4</b>
-17.0	-3.1	Primary Metals	<b>66.7</b>	<b>36.0</b>
-18.7	-27.6	Elec. Equip., appliances and components	21.0	26.7

Source: International Trade Administration and the U.S. Dept. of Commerce (p) Preliminary employment for 2008

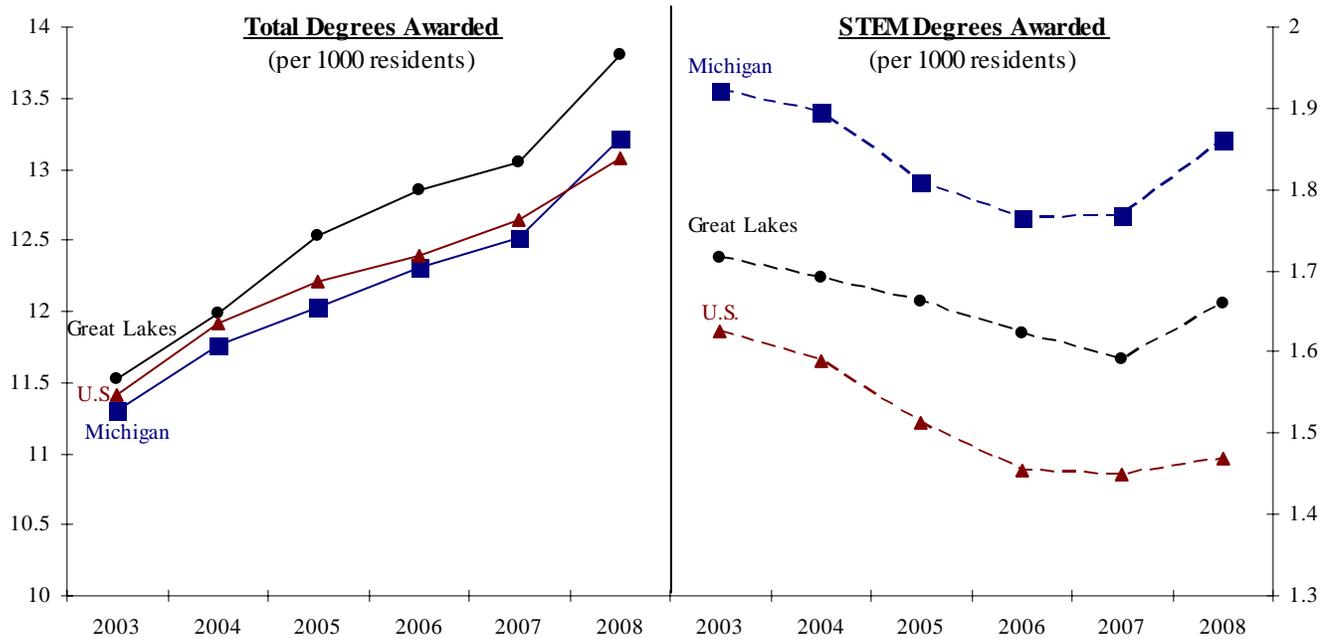
**Comparison: Share in Value and XRE of Manufactured Exports**



Source: WISERTrade, from U.S. Census Bureau, International Trade Administration

- As the chart indicates, a sector's share of the value of export sales is not strictly linked with the employment share due to variables such as the labor intensity of the industry. Though Transportation equipment accounted for 52 percent of the total value of manufacturing exports, it contributed 31 percent of total export related jobs.
- In terms of total dollar value in 2008, Michigan's exports to Canada were largest followed by exports to Mexico, Germany, Japan and China.
- In growth terms, Michigan's manufacturing trade rose by 25.9 percent from 2003-2008. The value of manufacturing trade with China grew by 247.8 percent, Germany 61.4 percent, Mexico 60.7 percent, Japan 30.3 percent and Canada 2.9 percent.

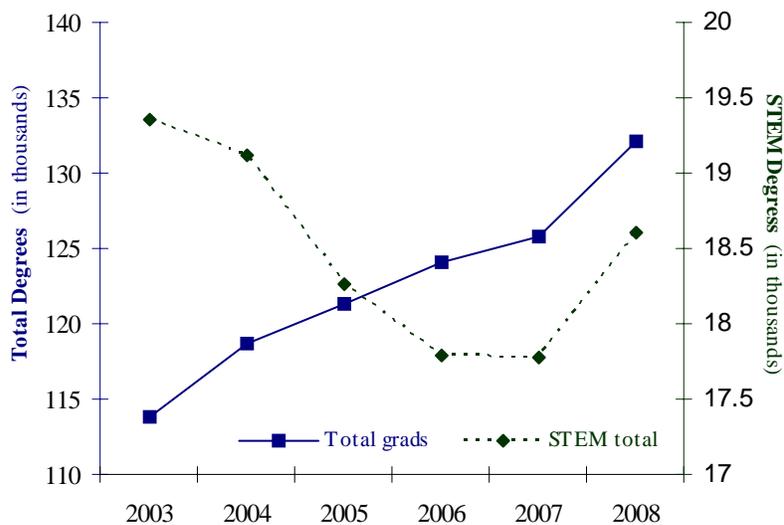
## College Graduates/ Tech Degrees



Source: IPEDS from U.S. Department of Education, U.S. Census Bureau

- In 2008, Michigan slipped from 8<sup>th</sup> to 9<sup>th</sup> in the nation in the number of post high school degrees and certificates conferred. In terms of degrees awarded per 1,000 residents, Michigan continues to lag behind the Great Lakes states but is now above the U.S. average. The gap between the Great Lakes average and Michigan has held relatively constant since 2005.
- Michigan again ranked 7<sup>th</sup> in the United States in the number of Science, Technology, Engineering and Math (STEM) degrees conferred with more than 18,600 in 2008. Of those, 16,550 graduated with an associate’s, bachelor’s, master’s, or doctorate degree. This was up from 16,200 in 2007. From 2003–2006 Michigan STEM degrees declined annually. From 2006–2008, the number of degrees awarded leveled off and began to rise.
- Women are still more likely than men to earn a post high school degree, but are much less likely to earn a degree in a STEM discipline. In 2008 the gender gap stayed roughly the same with women accounting for nearly 60 percent of the total degrees awarded, but only just over one in four STEM graduates.
- The gender gap appears even more significant based on the distribution of degrees. Of the total graduating class of 2008, more than a quarter of males pursued a STEM field of study, while only 8 percent of females did the same
- When looking at gender on a regional basis, Michigan has the highest percentage of males and females in the Great Lakes region attaining degrees in STEM disciplines.
- At all degree levels, engineering and computer science remain the most male dominated fields of study.

### Michigan Graduates, Total and STEM



Source: IPEDS from U.S. Department of Education, U.S. Census Bureau

<sup>1</sup> In the 2008 report this was defined as “college graduates”. A change in methodology has caused the data for previous years to change from the initial study.

## Michigan Green Jobs Report: A Regional Analysis – Highlights

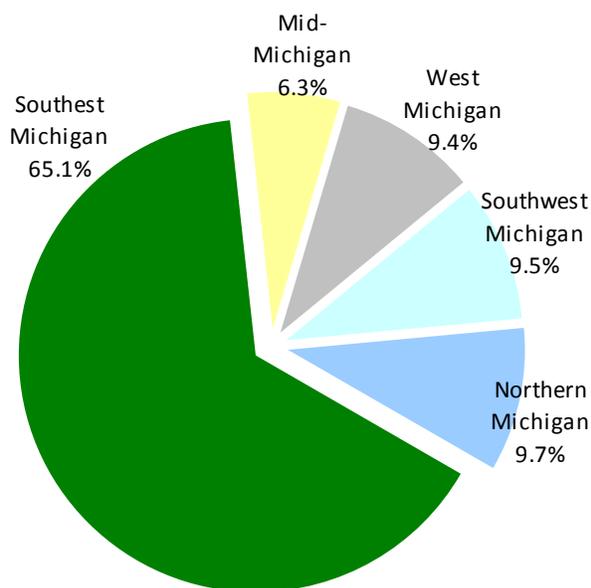
In July of 2010, the Bureau of Labor Market Information and Strategic Initiatives released the *Michigan Green Jobs Report: A Regional Analysis*. The report was an extension of the Michigan Green Jobs Report, and for the first time, released green jobs data for five regions in Michigan.<sup>1,2</sup> The five regions are Southeast Michigan, Southwest Michigan, Mid-Michigan, West Michigan, and Northern Michigan. The following are some highlights from the *Michigan Green Jobs Report: A Regional Analysis*.

### Key Findings

- Green jobs accounted for about 2-4 percent of total private jobs across Michigan regions.
- The auto industry is a significant source of green jobs in several Michigan regions, and particularly in Southeast Michigan.
- Concentrations of green jobs can be identified in each region, such as renewable energy jobs in Mid-Michigan, natural resource positions in Northern Michigan, energy efficiency jobs in Southwest Michigan, and environmental cleanup jobs in West Michigan.
- Green jobs by occupation differ across regions, but engineering, construction, production, and installation and repair occupations were reported as “green” by employers in all regions.

### Green Jobs by Region

- **Notable green job levels exist in each region of the state.** Green job levels were analyzed by region in two ways: (1) by comparing the **number** of green jobs by region; and (2) by calculating the **concentration** of total private jobs in a region that are considered “green.”
- Michigan boasts a total of 104,000 green jobs. **The largest numbers of green jobs were in Southeast Michigan.** Northern Michigan, Southwest Michigan, and West Michigan were in the second, third, and fourth positions, respectively. Mid-Michigan was the region to report the fewest number of green jobs.
- Statewide, 3.3 percent of total private jobs were considered “green.” **The region with the largest concentration of green jobs was Northern Michigan,** with 4.3 percent. Mid-Michigan and West Michigan reported the lowest concentration of green jobs with 1.8 percent and 2.0 percent, respectively.



### Green Jobs by Core Area

- The *Michigan Green Jobs Report* classified green jobs in one of five core areas: *Clean Transportation and Fuels; Increasing Energy Efficiency; Pollution Prevention and Environmental Cleanup; Agriculture and Natural Resources Conservation; and Producing Renewable Energy.*

<sup>1</sup>The regional report includes additional survey data beyond what was reflected in the *Michigan Green Jobs Report*. As a result, the estimated number of direct green jobs in Michigan has been revised upward to 104,000.

<sup>2</sup>The *Michigan Green Jobs Report* and the companion regional analysis can be found on the DELEG Bureau of Labor Market Information and Strategic Initiatives website, at [www.michigan.gov/lmi](http://www.michigan.gov/lmi) under “Publications”.

## Michigan Green Jobs Report: A Regional Analysis – Highlights

- Southeast Michigan, due to its large size, is home to the majority of green jobs in all five core areas. **Nevertheless, the core area of *Clean Transportation and Fuels* accounted for over half of all green jobs in Southeast Michigan.** This is primarily due to the many green jobs created by the automotive industry and auto suppliers.
- A high regional concentration of green jobs in particular core areas may suggest that **regional specialization exists in different types of green products and services.** Indeed, each of the state's five regions reported a higher-than-average concentration of green jobs in a particular core area when compared to the statewide averages.
- For example, **Southwest Michigan** contains a good share of Michigan employment in *Increasing Energy Efficiency* while **West Michigan** recorded positive statewide job shares in *Agriculture and Natural Resource Conservation* and *Pollution Prevention & Environmental Cleanup*. **Mid-Michigan** reported 16 percent of Michigan jobs in *Producing Renewable Energy* and **Northern Michigan** boasted 20 percent of statewide jobs in *Agriculture and Natural Resource Conservation*.

### Green Jobs by Industry and Occupation

- **Regional green jobs were found in a cross-section of industries and occupations.** As expected, there were several green industries and green occupations that were found commonly across all regions. The table on this page gives a few examples of common and region-specific sectors producing green jobs.
- The majority of green jobs in **Southeast Michigan** were predictably concentrated in two industries: transportation equipment manufacturing and professional, scientific and technical services. Other major sources of green jobs were construction, administrative and support services, and waste management and remediation services.

#### Common Green Industries (Across Regions)

Professional, Scientific, and Technical Services  
Specialty Trade Contractors  
Construction of Buildings  
Crop Production

#### Unique Green Industries (Region Specific)

Transportation Equipment Manufacturing  
Waste Management and Remediation Services  
Wood Products Manufacturing  
Green Wholesaling  
Chemical Manufacturing  
Primary Metal Manufacturing

- Among the occupations reporting significant green employment in Southeast Michigan were architecture and engineering occupations, production occupations, installation, maintenance, and repair occupations, and construction and extraction occupations.
- The mix of green industries and green occupations in Southeast Michigan reflect the region's large auto-related economy. **Significant numbers of engineers, technicians, production staff and others in the auto sector are increasingly focused on research, design, and production of fuel-efficient vehicles and new green auto technologies.**
- In **Southwest Michigan**, construction, professional, scientific, and technical services, and crop production were among the industries providing the most green jobs. Occupational employment was concentrated in farming, fishing, and forestry occupations, production occupations, construction occupations, architecture and engineering occupations, and installation, maintenance, and repair occupations.
- The mix of green industries and occupations in Southwest Michigan represent the wide range of knowledge, skills, and abilities that can be applied

## Michigan Green Jobs Report: A Regional Analysis – Highlights

to green jobs. **Green employment in Southwest Michigan ranges from moderate-skill jobs in farming and production to highly skilled jobs in professional services.**

- Industries posting significant green job counts in **West Michigan** included construction, transportation equipment manufacturing, and waste management and remediation. Above average job levels were recorded in construction occupations, production occupations, and installation, maintenance, and repair occupations.
- These industries and occupations reflect the diverse nature of the West Michigan economy. **While the automotive industry is certainly important in West Michigan, other industries have flourished there, making it a region with a diverse range of green-related businesses.**
- Green jobs in **Mid-Michigan** were found in professional, scientific, and technical services and specialty trade contractors. In Mid-Michigan, green employment was concentrated in production and architecture & engineering occupations. Significant job levels also were reported in construction and life, physical, and social science occupations.
- While Mid-Michigan green jobs are a modest share of total employment, the region has attracted new investment in green technology. **The region's significant employment in green-related production occupations reflect the production of more fuel-efficient motor vehicles and parts as well as the manufacturing of products for clean and renewable energy production, such as solar panel components and wind turbines and related components.**
- Many of the green jobs in **Northern Michigan** were concentrated in construction, professional services, and agricultural and natural resource industries. Large green occupations included construction and extraction occupations, architecture and engineering occupations, and production occupations.

- Green employment in Northern Michigan is fairly diversified. **The landscape of Northern Michigan ensures adequate opportunities for agriculture and natural resource-related green business, yet there are opportunities for other businesses in green building and alternative fuels.**

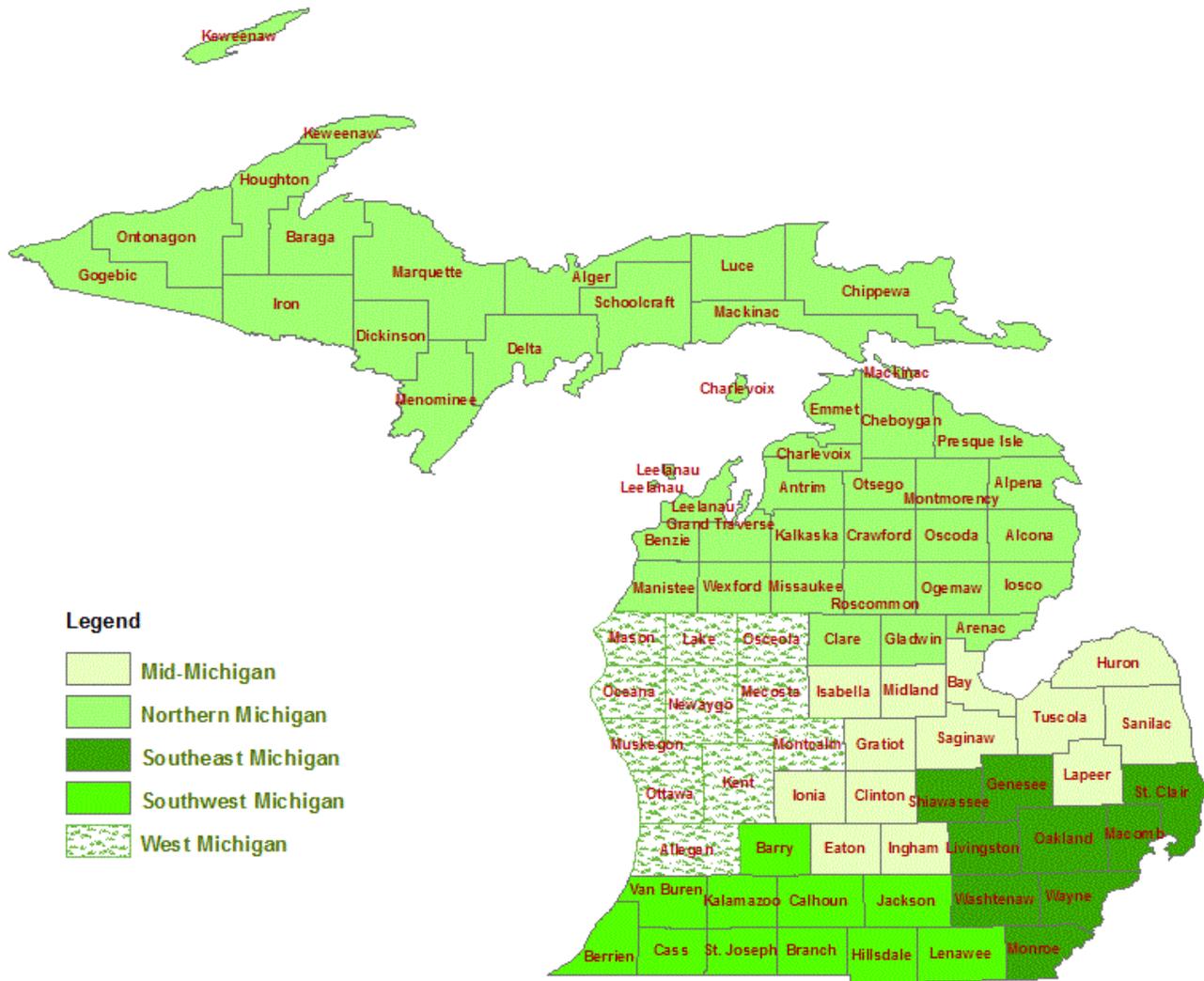
### Green Job Characteristics and Employer Expectations

- The *Michigan Green Jobs Report: A Regional Analysis* also summarizes the responses of regional green employers to five additional survey questions. These survey questions covered topics such as: potential recruiting difficulties when trying to fill specific green occupations; the existence of unique skills for regional workers on green projects; employer expectations for short-term green job growth; and the likely use of formal versus informal training for future green-related workers.
- Statewide, 16 percent of employers expected recruiting difficulties for green jobs. **Green businesses in Mid-Michigan expect the most difficulty recruiting for green jobs**, as nearly a quarter of employers anticipate some issues recruiting. In contrast, just one in ten green businesses in West Michigan expect recruiting difficulties.
- In Michigan, 64 percent of employers indicate that unique skills are required of workers who work on green projects. This measure varies significantly between the regions. **In Mid-Michigan, a large 82 percent of green employers indicate that unique skills are required for green jobs compared to Southwest Michigan, where just 44 percent of respondents indicated unique skills are required.**
- The skills required for green positions can be obtained through either formal or informal training. **Typically, employers indicate that informal training may be the most frequently used option.** Statewide, employers reported about 68 percent of training will be in an informal setting, versus 32 percent of training in formal programs. There was little regional divergence from these statewide results.

## Michigan Green Jobs Report: A Regional Analysis – Highlights

- In general, green businesses were cautiously optimistic in 2009 about short-term job gains. **While the long-run outlook for green employment is likely to be positive, only 30 percent of green employers indicated they expected to add green jobs by 2011.**
- Northern Michigan had the most optimistic expectations; as 36 percent of green employers in that region indicated green job gains by 2011. The least optimistic employers were in Mid-Michigan, where just 16 percent of businesses expected to add green jobs in the short-term.

The *Michigan Green Jobs Report: A Regional Analysis* uses the regional definitions illustrated in the map below.



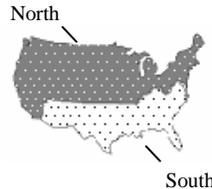
## Appendix

### State Comparison Groupings



Great Lakes States
Illinois
Indiana
Michigan
Ohio
Wisconsin

Source: DELEG



South States:	
Alabama	North Carolina
Arizona	Oklahoma
Arkansas	South Carolina*
Florida	Tennessee*
Georgia	Texas
Kentucky	Virginia*
Louisiana*	West Virginia
Mississippi*	

North States:				
California	Iowa	Michigan	New Jersey*	Pennsylvania
Colorado	Kansas*	Minnesota	New York	South Dakota
Delaware*	Maine	Missouri	North Dakota	Utah
Illinois	Maryland*	Nebraska	Ohio	Washington
Indiana	Massachusetts	New Hampshire	Oregon	Wisconsin*

Source: DELEG

\* Suppressed employment in NAICS 3361 estimated using Ward's Auto production data

### Motor Vehicle Indicators

Automotive Manufacturing and Related Industries			
NAICS Code	2007 NAICS U.S. Title	NAICS Code	2007 NAICS U.S. Title
326121	Unlaminated Plastics Profile Shape Manufacturing	335911	* Storage Battery Manufacturing
326199	All Other Plastics Product Manufacturing	3361	Motor Vehicle Manufacturing
326211	Tire Manufacturing (except Retreading)	3362	Motor Vehicle Body and Trailer Manufacturing
326220	* Rubber and Plastics Hoses and Belting Manufacturing	3363	Motor Vehicle Parts Manufacturing
326291	Rubber Product Manufacturing for Mechanical Use	336992	Military Armored Vehicle, Tank, and Tank Component Mfg
327211	Flat Glass Manufacturing	423110	Automobile and Other Motor Vehicle Merchant Wholesalers
331111	Iron and Steel Mills	423120	Motor Vehicle Supplies and New Parts Merchant Wholesalers
331511	Iron Foundries	423130	Tire and Tube Merchant Wholesalers
332510	* Hardware Manufacturing	423830	Industrial Machinery and Equipment Merchant Wholesalers
3327	Machine Shops; Turned Product; & Screw, Nut, and Bolt Mfg	425110	* Business to Business Electronic Markets
333511	Industrial Mold Manufacturing	425120	* Wholesale Trade Agents and Brokers
333514	Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	541330	Engineering Services
333515	Cutting Tool and Machine Tool Accessory Manufacturing	541380	Testing Laboratories
333618	Other Engine Equipment Manufacturing	541712	** Research & Dev't in Physical, Engineering, & Life Sciences
334514	* Totalizing Fluid Meter & Counting Device Manufacturing	55111	* Management of Companies and Enterprises
335110	* Electric Lamp Bulb and Part Manufacturing		

Notes: \* partial  
 \*\* estimated

Source: DELEG, with assistance from the Center for Automotive Research

## Appendix

### College Graduates/Tech Degrees

<b>Science, Technology, Engineering and Math (STEM) Degrees - CIP Codes</b>	
Computer Science	11.xxxx (except 11.06xx)
Engineering	14.xxx
Engineering Technology	15.xxx
Biological and Medical Science	26.xxxx
Mathematics and Statistics	27.xxxx
Military Technology	29.0101
Physical Science	40.xxxx
Science Technology	41.xxxx
Health Professions and Related Clinical Sciences	51.1401
Actuarial Science	52.1304

Source: The National Center for Education Statistics  
Classification of Instructional Programs (CIP)

### Jobs in High-Tech Industries

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

Source: Michigan Bureau of Labor Market Information and Strategic Initiatives

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