



Summer 2009

www.michigan.gov/lmi

Jennifer M. Granholm, Governor

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

Michigan Economic and Workforce Indicators

Preface

The national recession continues to impact local economies and labor markets. Many states, including Michigan, are experiencing unprecedented levels of unemployment as structural changes impact key industry sectors. As a result, useful workforce information will be even more critical as jobseekers evaluate and upgrade their skills, knowledge, and abilities to land job openings in expanding sectors.

The economic and workforce information provided in this report is intended to provide dimension and insight into the dynamic environment in which Michigan competes. In some cases, existing data sets do not adequately portray the complex economic changes taking place, or may not be timely enough to assess current needs. For this reason the Bureau of Labor Market Information and Strategic Initiatives continuously looks to find new tools and methods to deliver useful economic and workforce data to Michigan.

In this edition of *Michigan Economic and Workforce Indicators*, several new metrics have been added, including the demographics of Michigan involuntary part-time workers and a measure on employment resulting from foreign affiliates in Michigan. We have also included a summary of our innovative study on jobs in the Michigan “green economy”, a sector that has been gathering economic momentum and national interest.

The changing needs of our workforce and our employers will continue to drive the programs we develop. Quality information will help to guide those programs and measure their impact.

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

Table of Contents

Preface	2
Michigan Job Trends	4
Payroll Jobs by Industry Sector	5
Michigan Jobs Lost and Gained During Recession	6
Unemployment Rates	7
Labor Market Demographics	8
Motor Vehicle Employment	9
Motor Vehicle Production	10
Per Capita Personal Income	10
Globalization Indicator: Employment by Foreign Affiliates	11
College Graduates/Tech Degrees	12
Appendix	16

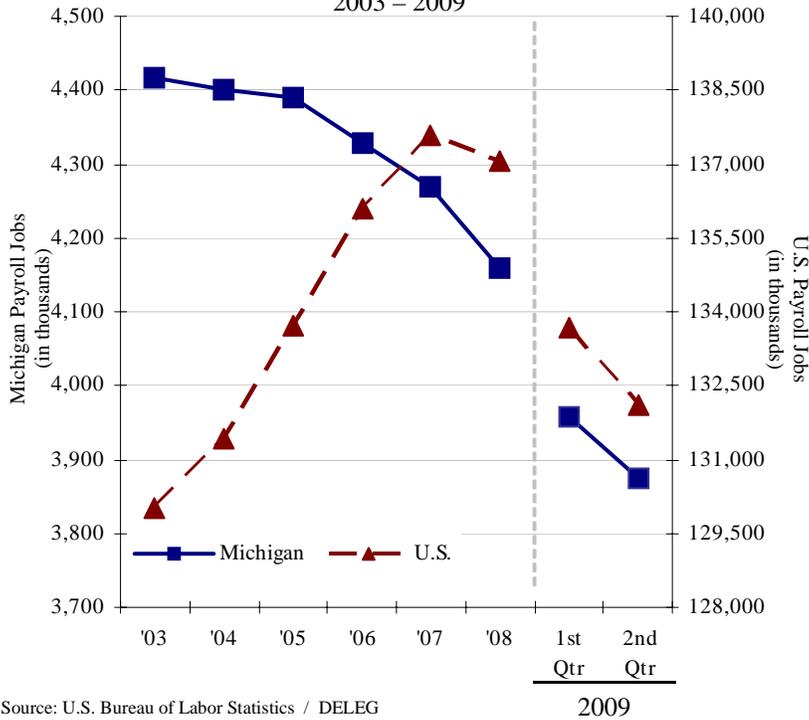
Special Workforce Report

Executive Summary - Green Jobs Report 2009	13
--	----

Michigan Job Trends

Nonfarm Payroll Jobs

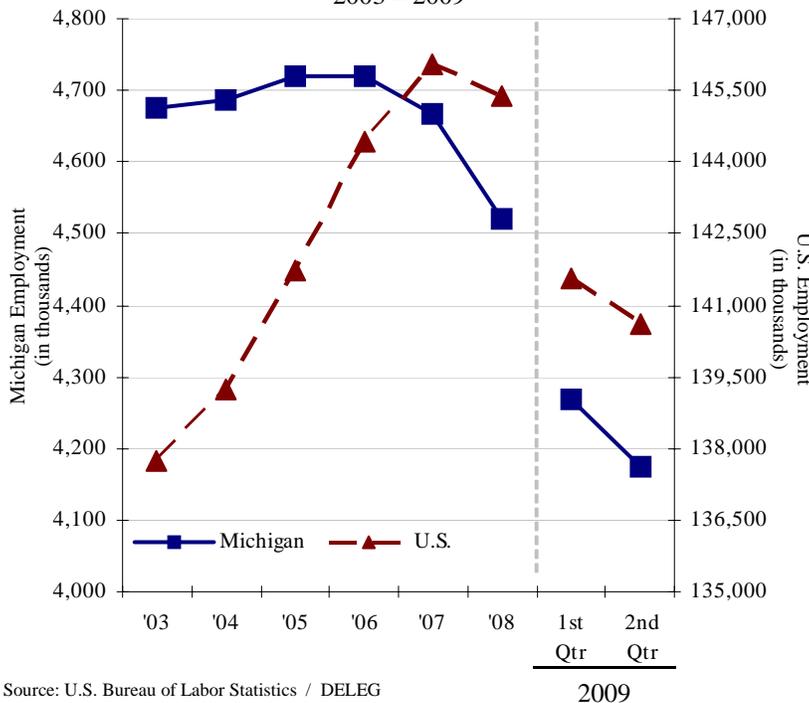
Michigan vs. U.S. Total Payroll Jobs
2003 – 2009



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

Household Employment

Michigan vs. U.S. Total Household Employment
2003 – 2009

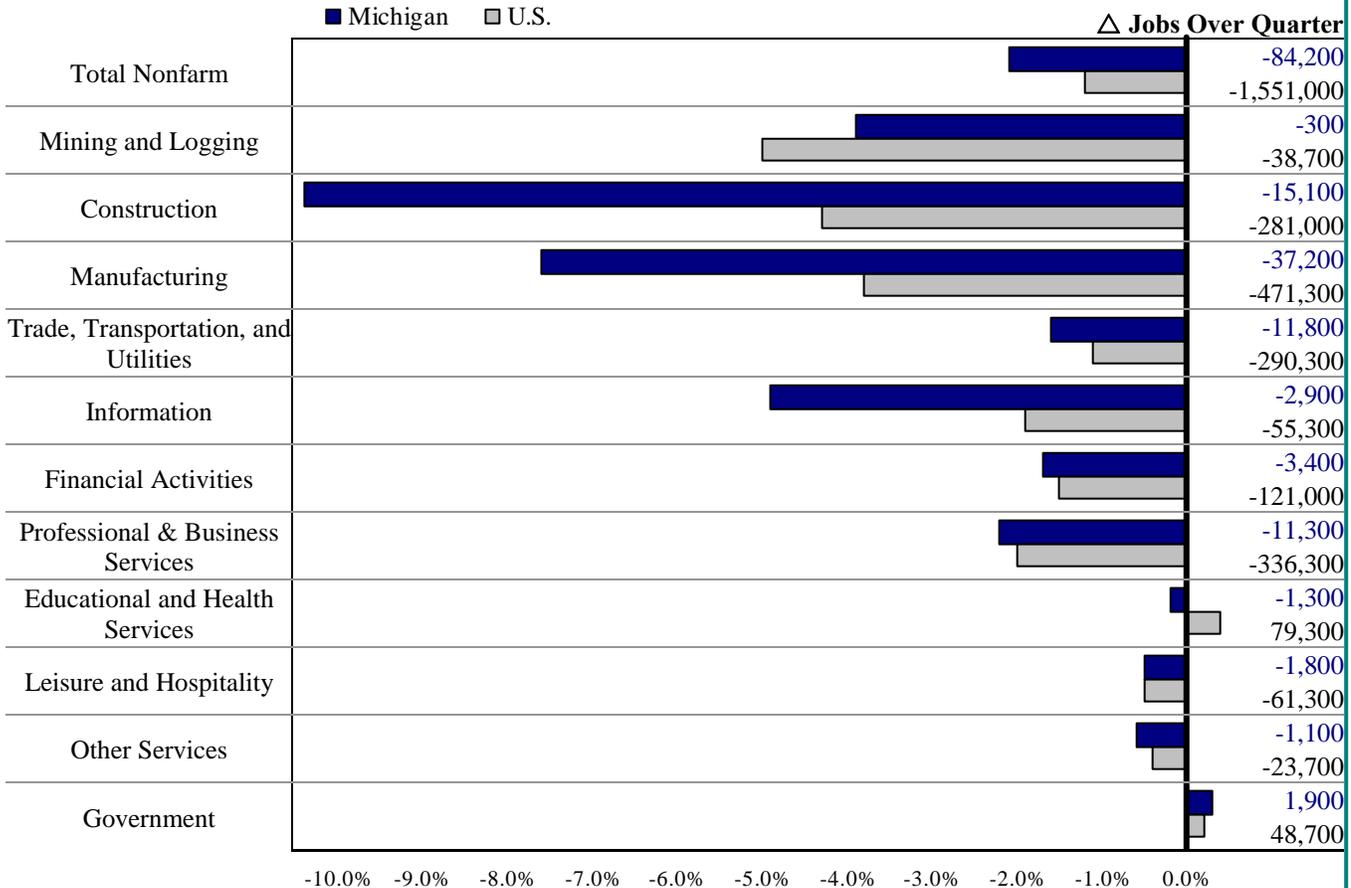


Source: U.S. Bureau of Labor Statistics / DELEG

- 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 since the end of 2008, as the recession affected all job categories.
- 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 payroll survey recorded an average monthly loss of -17,000 Michigan jobs per month in 2008 with 41 percent of the cuts in the last two months. In the first six months of 2009, an average of 32,000 jobs per month were shed. Michigan lost an average of -18,000 jobs a month in the Manufacturing sector alone as the auto industry struggled with bankruptcy-related restructuring.
- Nationally, average monthly job loss was 256,500 per month in 2008 with 42 percent of the job cuts occurring in the last two months. Job reductions accelerated in the first six months of 2009, with the average monthly decline (-563,700) more than double the 2008 pace. Manufacturing accounted for 31 percent of job loss over this period.
- Since the start of the national recession in December 2007, Michigan lost 396,200 payroll jobs (-9.3 percent), following California and Florida. Nationally, jobs contracted by 6.5 million (-4.7 percent).
- 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.
- The household survey recorded a major employment reduction in Michigan in 2008 of 147,000 or -3.2 percent. U.S. employment during 2008 edged down by just 0.5 percent. By the end of 2008, Michigan employment fell to the lowest levels since mid-1993.
- Employment reductions accelerated in Michigan in the first half of 2009. In the six month period from December 2008 to June 2009, employment in Michigan plunged by 257,000 or -5.9 percent. Since the start of the national recession in December 2007, Michigan's total employment dropped by nearly 500,000.
- Michigan employment has declined for 25 consecutive months (May 2007 – June 2009). The June 2009 household employment level of 4,132,000 is Michigan's lowest since July 1987. Nationally, employment has declined to the lowest level since December 2004.

Payroll Jobs by Industry Sector

Michigan vs. U.S.
Percent change, 1st Quarter 2009 – 2nd Quarter 2009
 (Seasonally Adjusted)

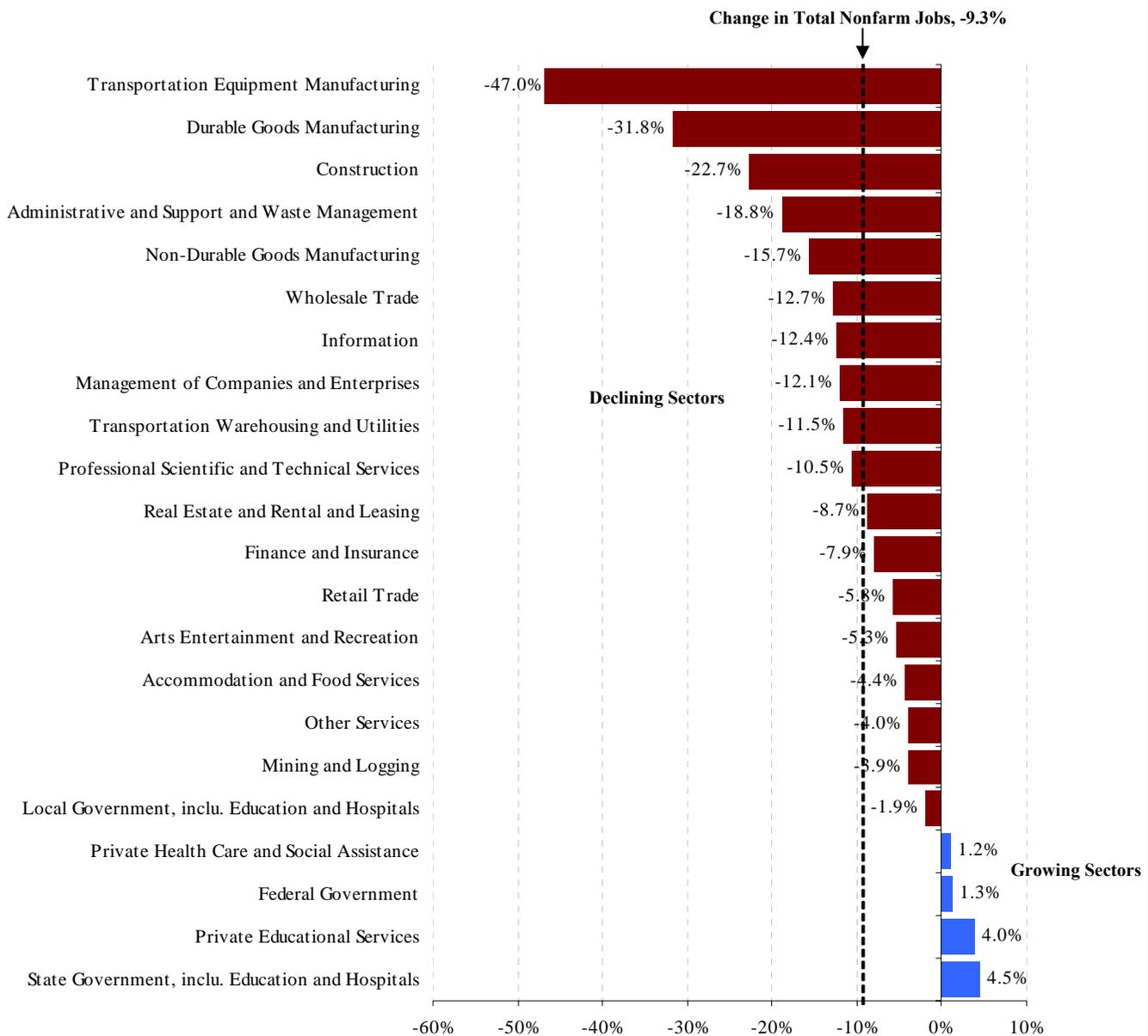


Source: U.S. Bureau of Labor Statistics / DELEG

- Total nonfarm payroll jobs continued to contract in the 2nd quarter 2009, but the pace of the downward slide moderated slightly in both Michigan and the U.S. Private sector job losses from the 1st to 2nd quarter slowed from 3.6 percent to 2.6 percent for Michigan and from 1.8 percent to 1.4 percent for the nation.
- Michigan followed the U.S. job trends in all industry sectors except for Education and Health Services. While nationally this was the only sector to exhibit modest growth, in Michigan the erosion of health care benefits caused by job cuts and layoffs in the automotive industry negatively affected health care job trends. This sector recorded the largest quarterly job loss (-1,300) since the 3rd quarter 1998. However, beginning in January 2009, job levels in the health services and social assistance industry exceeded Michigan manufacturing job levels. Though health services contracted by 0.3 percent in the 2nd quarter, its share of total nonfarm payroll jobs increased to 13.8 percent in June while manufacturing declined to 11.3 percent.
- As expected, the Manufacturing and Construction sectors accounted for an above average share of private sector job losses in Michigan. For example, in the 2nd quarter 2009, these sectors generated 61 percent of private sector job cuts in Michigan, well above the 52 percent share in the 1st quarter. Nationally, these two sectors only accounted for 48 percent of job reductions. Michigan job loss patterns in the service producing sectors were more consistent with national trends. The one exception was the Information sector, which showed a much larger percentage decline in Michigan due to weakness in the publishing industry.
- The slower pace of job decline in the 2nd quarter follows a moderation in national GDP contraction from 6.4 percent in the 1st quarter to a one percent annual rate in the second quarter. Domestic demand remained weak however, with personal consumption falling at a 1.2 percent annual rate. This is due to lost income, declining wealth, and unstable 401k portfolios, inducing people to increase savings. Spending on motor vehicles fell at a 11.9 percent rate compared to quarterly declines between 20 to 40 percent last year. In June, capacity utilization in the factory sector dropped to a record low of 64.6 percent after nearing a peak of 80 percent in 2007. The resulting structural changes accompanying the current cyclical downturn have led to permanent job losses which will dampen the recovery in the labor market even as the economy starts growing. This is more relevant for the Michigan economy as the auto industry tries to reinvent itself structurally and the economy diversifies.

Michigan Jobs Lost and Gained During Recession

Percent Change in Michigan Payroll Jobs by Sector, December 2007 through June 2009

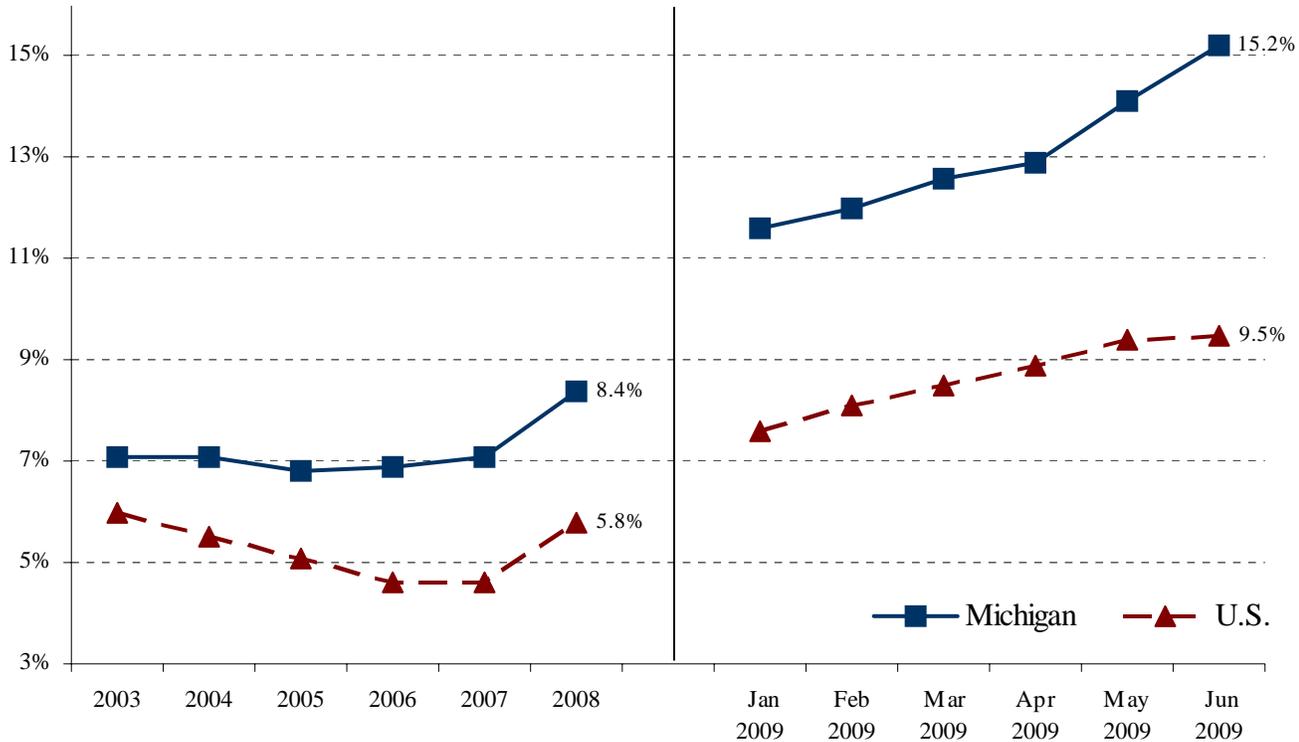


Source: U.S. Bureau of Labor Statistics / DELEG

- Since the beginning of the current recessionary period (December 2007) jobs have declined by 4.7 percent nationally, with losses spread throughout several industry sectors. Michigan, however, has recorded job reductions at twice the national rate, losing almost 400,000 payroll jobs or 9.3 percent of its December 2007 total.
- Nationally, motor vehicle and parts manufacturing led the way among sectors shedding jobs, registering a 35 percent decline during the current recession. Transportation equipment manufacturing in Michigan suffered an even more pronounced loss, as auto jobs were nearly cut in half in this time period. The roughly 90,000 jobs lost in this industry accounted for nearly a quarter of Michigan's total decline since the end of 2007.
- Four sectors registered positive changes in employment during this period, with only two private industries posting gains in the past year and a half. However, these industry sectors only added a combined 18,000 jobs since December 2007, a fraction of the overall change in total nonfarm payroll jobs.

Unemployment Rates

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



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

- Michigan has recorded an unprecedented increase in unemployment in just an 18-month period since the start of the national recession in December 2007. From December 2007 – June 2009, Michigan’s jobless rate soared by nearly 8 full percentage points to 15.2 percent, the number of unemployed more than doubled to 740,000, and the number of employed fell by nearly 500,000.
- This rapid deterioration of labor market conditions significantly outpaces anything recorded in recent prior economic downturns. For example, in the 18 months prior to the unemployment rate peak of 16.9 percent reached in November 1982, the Michigan jobless rate rose by only 5 percentage points.
- The rapid acceleration of the Michigan jobless rate during the first half of 2009 was tied to significant job cuts in the auto industry with the restructuring and bankruptcy proceedings in the domestic auto industry, and the large reductions in the national pace of auto sales. These job cuts have extended into most other sectors of the Michigan economy. As a result, the Michigan jobless rate jumped sharply by five percentage points in just six months from December 2008 – June 2009. Jobless rates recorded significant increases in January 2009 (+1.4 percentage points), May 2009 (+1.2 percentage points), and June 2009 (+1.1 percentage points).
- Unemployment nationally has moved upward at a rapid pace similar to the gains recorded in Michigan. From June 2008 – June 2009, the number of unemployed in Michigan jumped by 83.6 percent, compared with a 70.0 percent increase nationally.

Jobless Rates By Quarter

Month	Michigan	U.S.	Gap
April	12.9	8.9	4.0
May	14.1	9.4	4.7
June	15.2	9.5	5.7
2nd Qtr. 2009	14.1	9.2	4.9
January	11.6	7.6	4.0
February	12.0	8.1	3.9
March	12.6	8.5	4.1
1st Qtr. 2009	12.1	8.1	4.0
April	7.9	5.0	2.9
May	8.2	5.5	2.7
June	8.1	5.6	2.5
2nd Qtr. 2008	8.1	5.4	2.7

Quarterly Rate Movements

	Michigan	U.S.
2nd Qtr. 2009 Average Rate	14.1	9.2
Change Since Prior Qtr.	2.0	0.7
Change Since 2nd Qtr. 2008	6.0	3.8

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

Labor Market Demographics

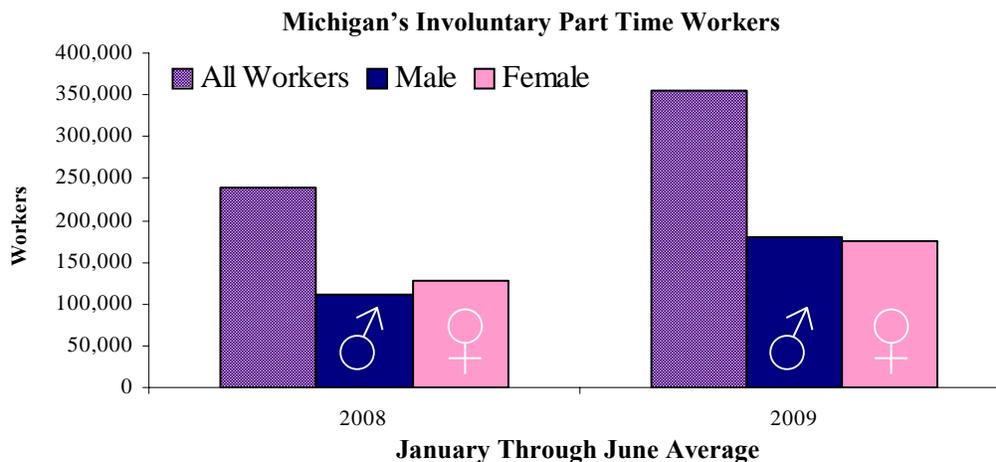
Involuntary Part-time Workers Increase Sharply in 2009

Involuntary part-time workers are individuals working part-time hours (1–34), but would prefer full-time work. This includes persons whose current employer cut their hours due to slack work or business conditions or who could only find part-time jobs. The number of involuntary part-time workers has increased substantially in both Michigan and the U.S. from 2008 to 2009.

The demographic data on involuntary part-time workers has been drawn from the Current Population Survey (CPS), a survey produced by the U.S. Census Bureau for the Bureau of Labor Statistics (BLS). Sixty thousand households nationally and over 1,700 households in Michigan are surveyed monthly to produce a myriad of labor market information including the official U.S. labor force statistics. For this study of the involuntary part-time, two time frames were compared: the six-month averages from January–June 2008 and January – June 2009. These time frames encompass months two through seven and months 14 through 19 of the current recession, and CPS data for this period can reflect labor market impacts during one of the harshest recessions in nearly 70 years.

- From the first six months of 2008 to the first six months of 2009, the number of involuntary part-time workers increased nationally by 72 percent.
- Over the same period, the number of involuntary part-time workers rose in Michigan by a lesser 49 percent. The smaller increase in Michigan was most likely due to a higher share of full-time workers becoming unemployed, rather than becoming involuntary part-time workers. Since Michigan's unemployment rate has been much higher than the national rate, it is more likely that formerly full-time workers in Michigan may now be unemployed rather than receiving cuts in work hours.

The survey also records the disparate influence of the recession on male and female workers in Michigan.



- The increase in Michigan involuntary part-time working males from 2008 to 2009 was 68,700 or 62 percent.
- The increase in Michigan involuntary part-time working females from 2008 to 2009 was 47,900 or 37 percent.

Several factors may help shed some light on why the upward shift in involuntary part-time work was larger for males:

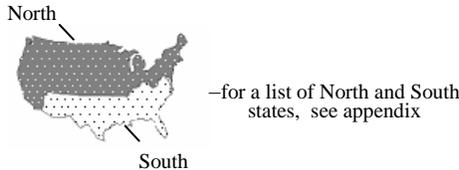
- According to the CPS, overall unemployment rose at a faster pace for males in this time period. Average monthly unemployment from the first six months of 2008 to the first six months of 2009 jumped 81 percent for males, versus 42 percent for females.
- According to the Current Employment Statistics (CES) program that measures payroll jobs, job loss from 2008 to 2009 in male dominated industry sectors was greater than that of all industry sectors. For example, CES seasonally adjusted payroll job data indicate that from June 2008 to June 2009, goods producing industry sectors (mining, construction, manufacturing) recorded a higher percentage of job loss (-24.4 percent) than overall payroll job loss (-8.1 percent) in Michigan.

Given the weakness in the state's labor market during the current recession, labor underutilization (the shortening of working hours or persons who can only find part-time work) has become more prevalent in Michigan and throughout the nation.

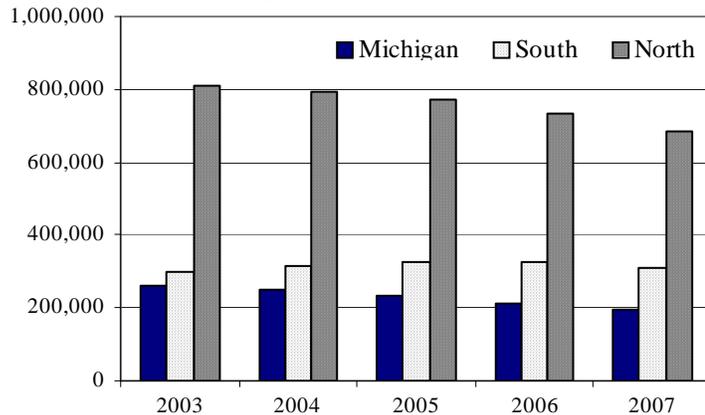
Motor Vehicle Employment

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 nonmanufacturing activity associated with vehicle design, engineering, and company management.

Automotive Production Employment



**Automotive Production Employment
Michigan, North, South, 2003 – 2007**



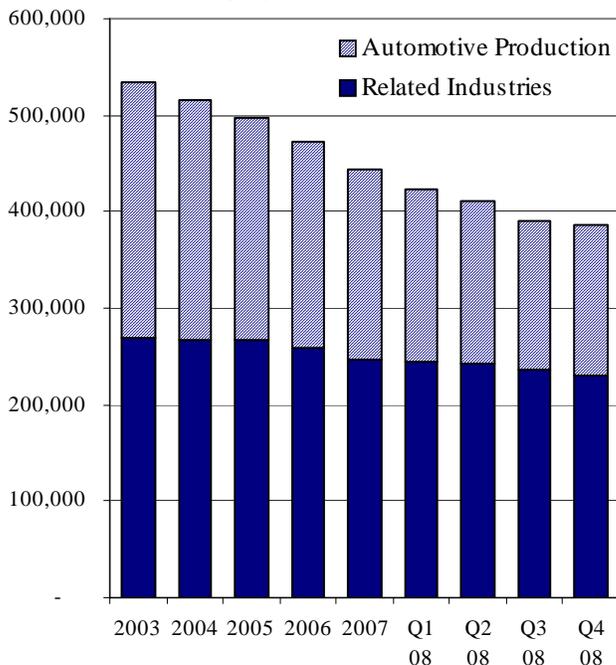
Source: U.S. Bureau of Labor Statistics / DELEG (NAICS 3361-3363)

Note: 3361 Employment estimated: Delaware, Kansas, Louisiana, Maryland, Mississippi, New Jersey, South Carolina, Tennessee, Virginia, Wisconsin

- While Michigan’s share of total U.S. automotive production employment declined again in 2007, nearly one in five of the nation’s auto industry workers are still in Michigan. Michigan accounted for nearly one in four auto industry workers five years ago.
- The shift in automotive employment from northern states to the south has slowed, as employment retreated in both areas in 2007. Northern states shed nearly 54,000 jobs, or 7.3 percent of automotive production employment over the year, while southern states lost an estimated 16,600 jobs, a 5.1 percent decline. A combination of the national recession, sharply reduced auto sales, and increased manufacturing productivity contributed to these job cuts.

Michigan Automotive Industry Employment

**Michigan Automotive Industry
Employment 2003 – 2008**



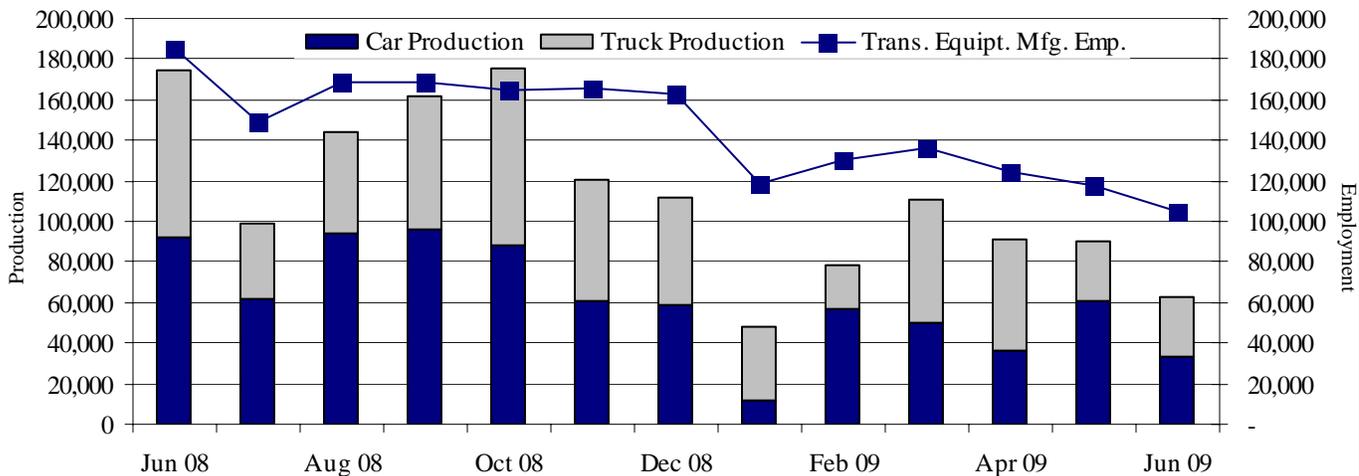
Source: DELEG, Quarterly Census of Employment and Wages

- By the end of 2008, the automotive industry accounted for 385,971 jobs in Michigan, off nearly 57,700 from the 2007 annual average. Automotive production industries contributed 156,620 of those jobs, while related sectors generated employment of 229,351.
- Automotive production and related industries accounted for an 11.6 percent share of Michigan’s total private employment in the 4th quarter of 2008.
- Losses were concentrated in automotive production industries, in which employment declined 40,300 over the year. Related industry employment, which out-numbers automotive production employment by a ratio of three to two, fared relatively better, dropping by 17,400 jobs.
- Automotive production and related industries have lost a quarter of total workforce since 2003, with a 13 percent loss coming in the last year alone. These job cuts have been a strain on total private employment in Michigan, which is off 3.4 percent from the 2007 annual average. Employment that is not related to automotive production declined just 2 percent over the year.
- A handful of related industries were hit particularly hard over the year. *Special Die and Tool, Die Set, Jig, and Fixture Manufacturing* lost an estimated 7.1 percent of its workforce. *Cutting Tool and Machine Tool Accessory Manufacturing* dropped by an additional 4.8 percent, while *Testing Laboratories* and *Engineering Services* recorded losses of 5.7 percent and 2.6 percent, respectively. A lone bright spot was in the area of *Wholesale Trade Agents and Brokers*, which added three percent over the year.

Motor Vehicle Production

- Declining sales and large-scale restructuring among domestic nameplate automakers and suppliers had a major impact on Michigan's economy in the first half of 2009. In June of this year, employment in transportation equipment manufacturing was off over 43 percent from the same month a year ago, driven largely by production cuts. Over the same year, total vehicle production in Michigan declined by 111,800 units to just 62,900, a 64 percent reduction. According to Ward's Auto, U.S. sales of light vehicles declined 30.5 percent.
- Many expect that the impending national economic recovery may help prop up struggling automakers and suppliers. Anticipating elevated sales in the coming months, Ford Motor Co. has recently revised projected 3rd quarter production upward. In a move slated to save roughly 1,200 jobs, the General Motors Corp. recently selected its Orion Township facility over out-state competition for the assembly of new light, fuel-efficient vehicles.

Michigan Automotive Production & Transportation Equipment Manufacturing Employment
(Not seasonally adjusted) June 2008 – June 2009

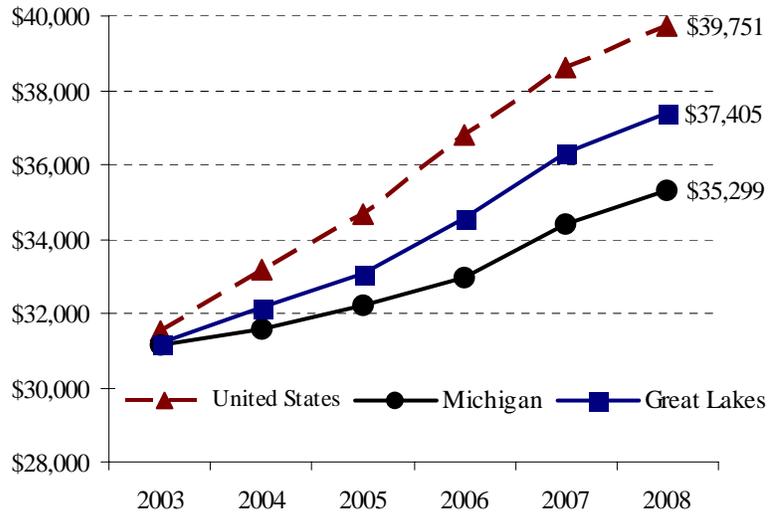


Sources: Ward's Automotive Group, Census Bureau Annual Survey of Manufacturers (NAICS 3362-3363), DELEG

Per Capita Personal Income

- Continued restructuring of the domestic auto industry and a depressed housing market had significant negative impact on the state's economy and business climate in 2008. As a result of these developments and rising unemployment statewide, Michigan's per capita personal income grew by 2.5 percent in the past year, lagging the national rate of gain of 2.9 percent.
- Between 2003 and 2008, state per capita income rose at only half the rate of the U.S. (13.3 percent vs. 26.1 percent), resulting in a widening gap between Michigan and the nation. In 2003, per capita personal income was roughly the same for both areas, but by 2008, Michigan's income had fallen to 11.2 percent below the national average of \$39,751. (This data is not inflation adjusted.)
- Compared to other individual states and the Great Lakes region as a whole, Michigan has struggled in terms of per capita income. In 2003, the state was 20th in the nation at \$31,145, but Michigan's ranking fell to 35th by 2008. Michigan ranked last among all states in terms of per capita income growth between 2003 and 2008.

Per Capita Personal Income, 2003 to 2008



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

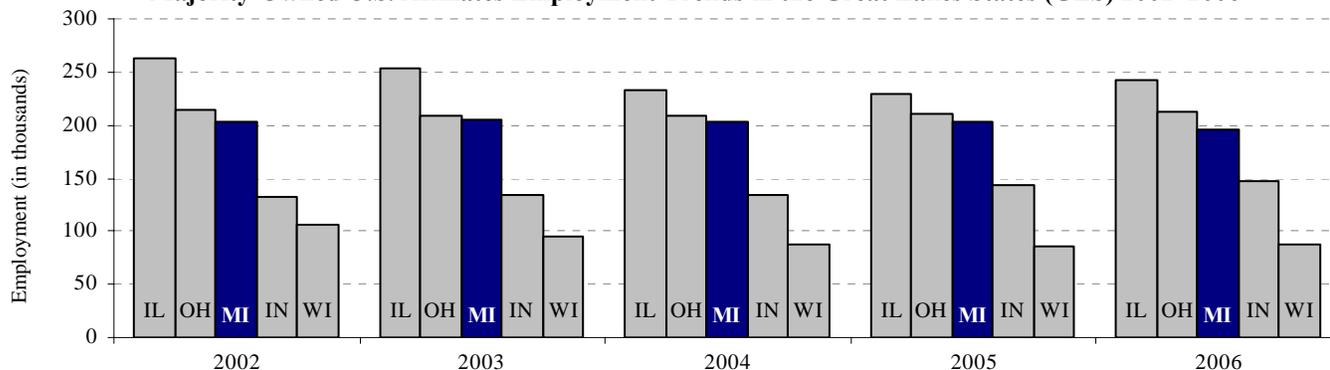


—For this publication the Great Lakes states are defined as: Illinois, Indiana, Michigan, Ohio, and Wisconsin.

Globalization Indicator: Employment by Foreign Affiliates

Investment by foreign affiliates (Foreign Direct Investment (FDI)) not only creates new jobs (insourcing), but also initiates innovative techniques, management strategies and workforce practices. Employment by Majority-Owned Nonbank U.S. Affiliates (MOUSA), an element of FDI, as a percent of total private payroll employment has been stable in Michigan from 2002–2006, the period for which the latest official data is available. Jobs by brand new investments or Greenfield Investments, which is another part of FDI, is also being tracked globally by a private company. Both these foreign investment jobs data show that Michigan has ranked among the top 10 states nationally in the number of jobs created by foreign investment.

Majority-Owned U.S. Affiliates Employment Trends in the Great Lakes States (GLS) 2002–2006



Source: Bureau of Economic Analysis Data¹

- Foreign investors (MOUSA) employed 195,500 Michigan workers in 2006 and accounted for 5.3 percent of the state’s total private-payroll employment. Michigan ranked 3rd among the Great Lakes States and 9th nationally in the total number of MOUSA related jobs.
- The manufacturing sector in Michigan provided 61 percent of the state’s total FDI employment in 2006, ranking first among Great Lakes States and third nationally. Nationally, 39 percent of FDI jobs were in manufacturing in 2006.
- As a percent of total manufacturing employment, MOUSA rose from 16.9 percent in 2002 to 18.2 percent in 2004. This percentage has remained stable over the last two years (2004–2006).
- Between 2002 and 2006, FDI employment in the nation declined by 1.7 percent, with employment in manufacturing related FDI falling by 11.3 percent. In Michigan, FDI employment dropped by 3.6 percent, while manufacturing related jobs fell by 7.5 percent. Among the Great Lakes states this was the third largest reduction, with higher rates of decline in Illinois and Wisconsin.

Composition of Employment by MOUSA: By Sector, Value and Geography

Michigan Employment by MOUSA and Payroll Employment Comparison: Percent change (2002–2006)							
	All Industries	Manufacturing	Wholesale trade	Retail trade	Information	Real estate and rental and leasing	Prof., Sci., and tech. services
FDI related	-3.6	-7.5	55.3	-13.7	-35.7	-28.6	10.9
Payroll Employment	-3.7	-14.8	-2.7	-6.5	-10.4	-1.4	-4.9
*Financial sector is not included							

- The sector breakdown of employment by MOUSA shows that over the period 2002–2006, Michigan was attractive to foreign investors in the wholesale trade and professional scientific and technical services sectors. Gross Property, Plant, and Equipment (PPE) investment follows this trend in employment, with Wholesale Trade’s percentage of PPE increasing from 5.6 percent in 2002 to 7.4 percent in 2006.

- Geographically, Europe provides the most jobs to Michigan’s economy. Europe’s absolute role has declined, however, (2002–2006) from 145,400 to 141,400. The importance of the Asia and Pacific countries increased from 25,600 in 2002 to 29,900 in 2006 (+16.8 percent).

Source: Bureau of Economic Analysis Data

Michigan New Greenfield Investments

This table shows Michigan’s ranking based on new announcements of job creation targets as reported in news media and tracked by a private source.² This data, though timely, is not official and is subject to change based on economic conditions. However, it can be viewed as an indicator of the potential for new Greenfield job creation by foreign investors in Michigan as compared to other states.

	GLS Rank	National Rank	Jobs Expected	Projects
2006	1	1	4,400	24
2007	3	8	2,445	38
2008	1	4	2,207	35

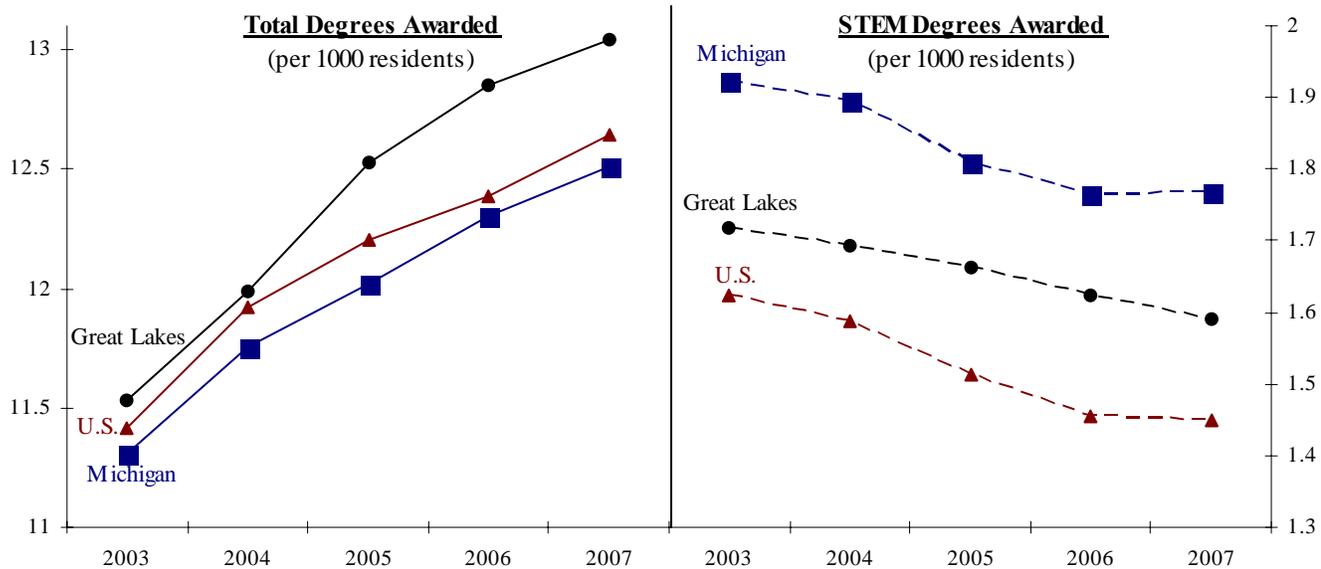
Source: fDiMarkets.com; OFII³

¹ Official Bureau of Economic Analysis survey data

² A private source: fDiMarkets.com

³ Organization for International Investment: www.ofii.org

College Graduates/ Tech Degrees



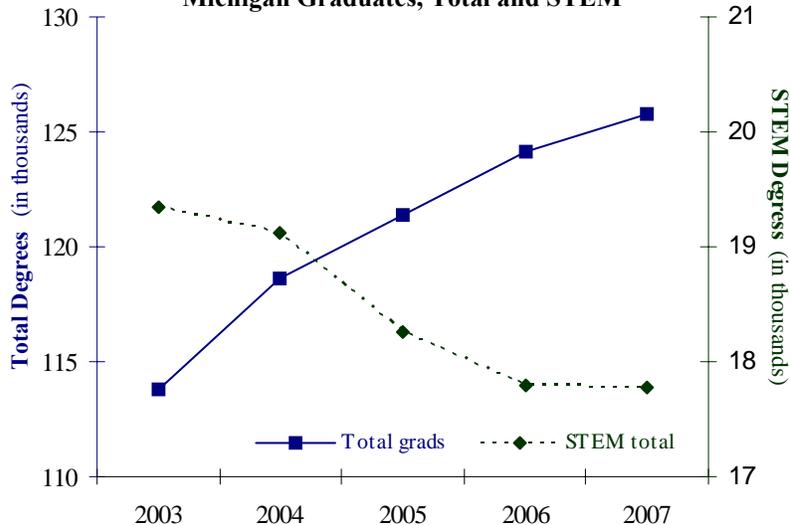
Source: IPEDS from U.S. Department of Education, U.S. Census Bureau

- In 2007, Michigan remained 8th 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 both the Great Lakes states and the U.S. average.¹ The gap between Michigan and the U.S. average has held relatively consistent since 2003 whereas the Great Lakes average has grown at a much more rapid pace.
- Michigan again ranked 7th in the United States in the number of Science, Technology, Engineering and Math (STEM) degrees conferred with nearly 17,800 in 2007. Of those, 16,200 graduated with an associate’s, bachelor’s, master’s or doctorate degree, the same number as in 2006. From 2003-2006, Michigan STEM degrees declined annually. With some stability in the number of graduates in 2006 and 2007, it is not yet clear if the number of students deciding to study the STEM disciplines has bottomed out.

The reduction in STEM degrees since 2003 in Michigan is most closely attributed to a turn-down in engineering (10 percent) and computer science (29 percent) graduates, the state’s two largest STEM disciplines. These cutbacks contributed to Michigan’s overall decline of 8 percent among STEM disciplines. STEM degrees fell nationally as well, off 7 percent over this same period.

Women are more likely than men to earn a degree, but are still much less likely to earn a degree in a STEM discipline. In Michigan, women account for over 60 percent of degrees and certificates awarded, yet they still comprise less than one in three STEM graduates. Men are now almost four times as likely as women to study a STEM discipline, and the discrepancy is getting larger every year. As a nation, the gender gap is less pronounced, with women comprising 54 percent of graduates, and receiving just over 41 percent of total STEM degrees.

Michigan Graduates, Total and STEM



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

- Men are also nearly twice as likely as women to graduate with an engineering degree. Women, on the other hand, are studying biology and medical science 3.5 times more than men.
- Nationwide, the Great Lakes region continues to be one of the highest producers of STEM degrees and certificates. The Great Lakes region led the nation in this category from 2004-2006, however, in 2007 the Mid East² region led the U.S. in STEM degrees.

¹ In the 2008 report this was defined as “college graduates”, this change in methodology has caused the data for the previous years to change from our previous study.

² The Mid East Region is defined as DE, DC, MD, NJ, NY, and PA

Executive Summary - Michigan Green Jobs Report 2009

EXECUTIVE SUMMARY

The new green economy provides Michigan a dynamic opportunity to rebuild the state's job base, attract new investment, and diversify the state's economy. We may be at a tipping point of awareness, understanding, and opportunities that a green economy can provide for Michigan's workforce, businesses, and communities.

But what exactly is the green economy, and what is a green job? How many presently exist, and what are the prospects for growth? This report represents Michigan's first attempt to provide rigorous, empirical answers to these questions so important to our economic future.

Michigan defines **green jobs** as jobs directly involved in generating or supporting a firm's green-related products or services. The state's **green economy** is defined as being comprised of industries that provide products or services in **five areas**:

1. Agriculture and natural resource conservation;
2. Clean transportation and fuels;
3. Increased energy efficiency;
4. Pollution prevention or environmental cleanup; and
5. Renewable energy production.

The Michigan Green Jobs Study used a three-pronged methodology that included quantitative, analytical and qualitative research. The quantitative work involved a survey sent to thousands of employers to uncover private sector green job trends. **This marks the first attempt in Michigan to survey employers directly in order to measure the current number of Michigan green jobs.** The analytical work involved merging labor market information and economic intelligence with survey results to uncover industry and occupational trends. The qualitative approach involved using focus groups to enhance our understanding of green-related workforce issues.

These three research methods were integrated into the findings and conclusions contained in this report.

We plan to produce a series of reports over time to track developments in Michigan's green economy.

What we found:

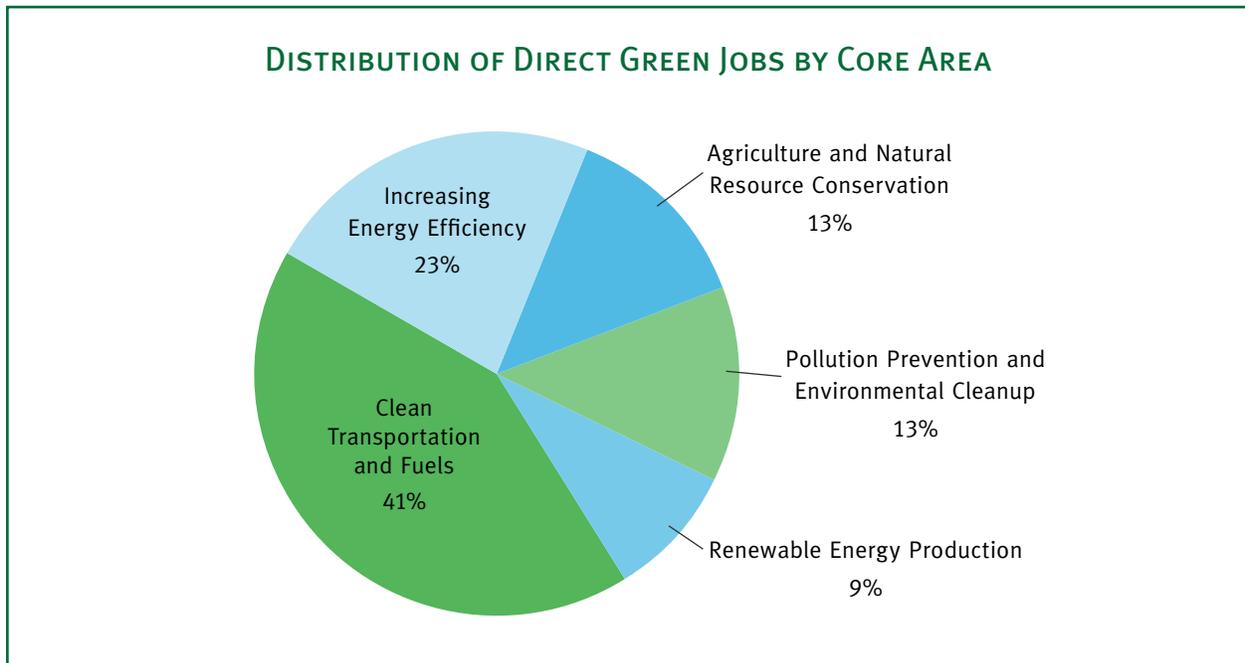
Michigan boasts 109,067 total green jobs—both direct and support positions—among private sector employers. There are 96,767 direct green jobs and 12,300 support green jobs. This is big news, but it also shows the potential for growth of the green economy. Michigan's overall private sector employment is 3.2 million; green jobs are currently 3 percent of that total.¹

Employer Survey Results

Through the employer survey, we categorized direct green jobs in Michigan into five core areas. The Clean Transportation and Fuels area comprises just over 40 percent — close to 40,000 jobs — of all green jobs. Nearly one quarter of green jobs were attributable to the Energy Efficiency core area, and most of the positions were associated with the state's construction industry. This distribution reflects Michigan's large automotive and construction sectors. Green jobs were most common in these specific industries: *Transportation Equipment Manufacturing (25,780 jobs)*, *Professional, Scientific, and Technical Services (22,178 jobs)*, *Specialty Trade Contractors (9,825 jobs)*, and *Construction of Buildings (3,571 jobs)*.

¹ As of February 2009, seasonally unadjusted private jobs for Michigan totaled 3,227,600 according to data from the Michigan Department of Energy, Labor & Economic Growth, Bureau of Labor Market Information and Strategic Initiatives, Current Employment Statistics program.

Executive Summary - Michigan Green Jobs Report 2009



Source: Michigan Department of Energy, Labor & Economic Growth

From an occupational perspective, over 70 percent of direct green workers fall into three broad categories:

- Production occupations (28 percent)
- Engineering occupations (24 percent)
- Construction occupations (19 percent)

Over one-third of the positions in the Clean Transportation and Fuels Core area were engineers, and a large portion of the remainder were production positions such as assemblers or machinists. In Energy Efficiency, the two most common occupations were related to construction: *HVAC installers* and *General maintenance workers*. *Farmworkers* made up a quarter of green jobs in Agriculture and Natural Resource Conservation, while various kinds of engineers and environmental specialists were important in the Pollution Prevention and Environmental Cleanup core area. The Renewable Energy Production core area has the most diverse mix of green occupations, employing engineers, technicians, mechanics, and production staff.

The survey asked employers to outline their expected hiring needs for the next two years. Growth occupations most frequently cited include engineers, skilled trades, and certain technical specialist job titles. The occupations cited span a variety of education and skill levels.

Despite the need for some specialized green skills, employers in the focus groups stressed that workers still need the basics. Green skills are an overlay of new skills and knowledge; and learners cannot access the new knowledge without the requisite foundation. **Skills in science, technology, engineering and math will be important, and positions with these skills may be most difficult to fill.** Nearly 70 percent of employers in the survey said training their green-related workers would be workplace-based as they looked to upgrade or enhance current workers' knowledge. This finding reinforces the importance of career ladders for current and incoming workers.

Executive Summary - Michigan Green Jobs Report 2009

Green Related Industry Trend Analysis

To gather additional information not captured by the employer survey, Michigan identified over 100 industries considered to be green related. Not all jobs in these industries are green jobs, but these are sectors that could potentially benefit from an expansion of the Michigan green economy. Green related industries have recorded job losses since 2004, like the rest of the Michigan economy, but several specific green related industries have added jobs: *Semiconductor Manufacturing, Recyclable Material Wholesalers, and Environmental Consulting Services.*

A handful of detailed green-related sectors in Michigan are not only relatively highly concentrated in terms of jobs, but also managed to record employment growth from 2004 to 2008. *Process & logistics consulting* firms, which offer operating advice and assistance in areas such as manufacturing operations improvement, productivity, production planning, and quality assurance, were 44 percent more concentrated in Michigan than in the United States in the second quarter of 2008. Employment in this industry was up nearly four percent since 2004. Firms in the business of *Industrial design services* have also recorded employment expansion since 2004, and are highly concentrated in the Michigan economy. Taken as a whole, the green-related industries selected for this study comprise a higher share of total jobs in Michigan than is true of the national economy.

Not all jobs in these green-related sectors are currently generated by the green economy. *However, if green business expands in the state, many existing Michigan firms in these sectors could have the expertise to diversify into green business activities.*

Green Related Firm Trends

Michigan analyzed a small sample of 358 green related firms' trends over a three year period to shed light on potential employment trends. While findings from this analysis are intriguing, they are indicators only and cannot be generalized to the health of all green-related firms in Michigan given the sample size. Firms in the **Renewable Energy Production** cluster added nearly 1,900 jobs from 2005 to 2008, a growth rate of 30 percent. This finding is an indicator that firms in this cluster are the most likely to experience job growth, even though they represent less than 10 percent of the overall green jobs in Michigan. Renewable Energy Production includes areas like wind and solar manufacturing and installation.

The sample also suggests that green-related firms may be a significant source of entrepreneurial activity. Of the 358 sample firms, 70 appear to have been newly created since 2005, creating 600 jobs – a much higher rate of startups than is seen in the overall Michigan economy. In all, the sample firms added more than 2,500 jobs, an impressive employment expansion of 7.7 percent (the total Michigan average was negative 5.4 percent). This small segment of the green economy far outpaced employment trends for the Michigan economy as a whole.

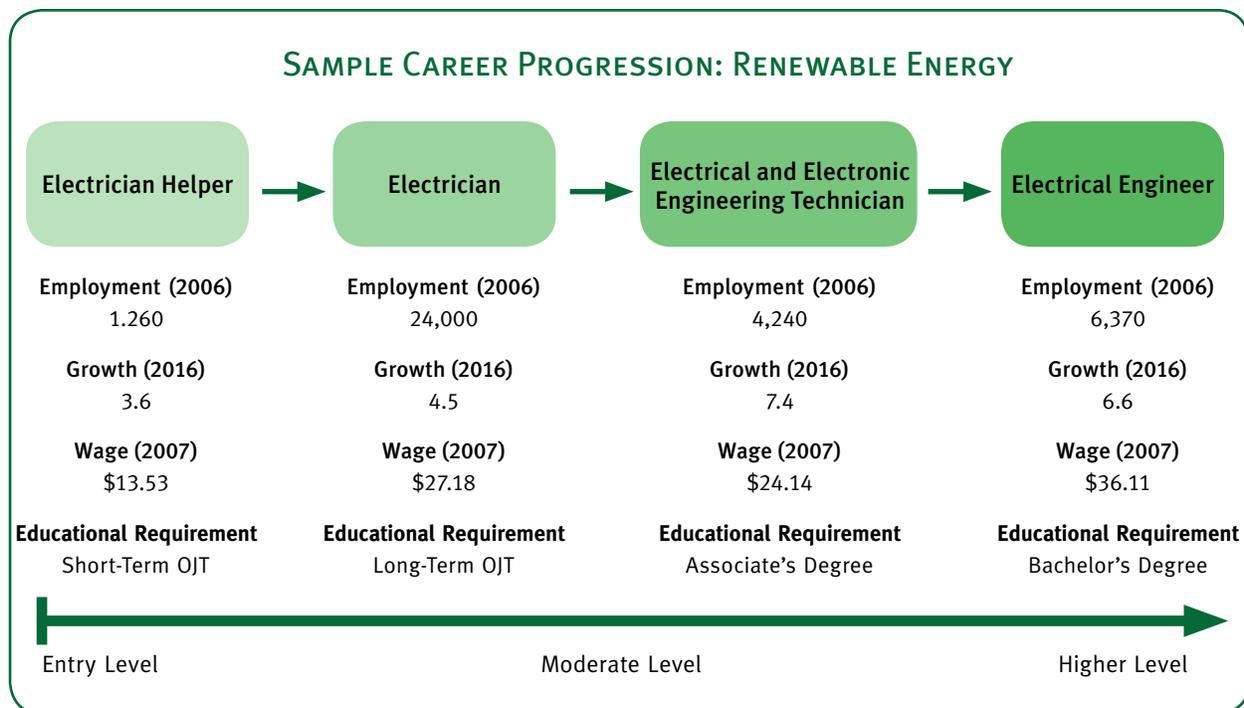
Occupational Trends

Green jobs can be found across the spectrum of broad occupational categories, such as professional workers with specific skill sets directly needed by green-related firms; production, maintenance, and transportation occupations; critical occupations for small start-up green-related firms, such as sales engineers or technical sales representatives; and jobs in teaching or training that will be needed to prepare

GREEN JOBS IN MICHIGAN—

The opportunity to create new Michigan jobs rests overwhelmingly with the clean energy, green-collar economy. We know the combination of these targeted efforts, coupled with the determination of Michigan's workers' to embrace the green economy, will help transform our state.

Executive Summary - Michigan Green Jobs Report 2009



the future green-related workforce. Green-related occupations with above average expected job growth rates include engineering, professional and mid-skill mechanic and laborer positions. Careers in green-related occupations exist at all levels of educational attainment. This sample career progression in the renewable energy area illustrates the job potential in green.

Green-related industries hold the potential for workers to earn above average wage rates. Thirteen of the top 15 broad industries in terms of green jobs paid more than the private sector average weekly wage of \$811, while ten were well above this average (at least \$100 per week more). Furthermore, eight of the top 15 green industries paid more than \$1,000 per week, or over \$50,000 per year.

What the Future Holds: The opportunity to create new Michigan jobs rests overwhelmingly with the clean energy, green-collar economy. With our advanced manufacturing expertise, our depth of engineering talent, and our local access to original equipment manufacturers (OEMs) and suppliers, we are poised to create tens of thousands of good-paying green jobs for Michigan workers. In the renewable energy sector, Michigan has the potential to become a regional and global powerhouse in wind turbine

manufacturing with Michigan's engineering expertise and modernized machining. Investments in energy efficiency represent a major opportunity for Michigan to create jobs, save money, and reduce our reliance on fossil fuels. By replacing traditional fossil fuel energy, Michigan's energy efficiency program will save Michigan over \$3 billion in electricity costs over the next 20 years. Advanced energy storage, and in particular the production of lithium ion batteries for cars, holds enormous potential for job creation in Michigan. Michigan is rapidly becoming a center for advanced energy storage innovation aimed at, among other things, electrifying the automobile.

We know the combination of these targeted efforts, coupled with the determination of Michigan's workers to embrace the green economy, will help transform our state.

FOR MORE INFORMATION—

BUREAU OF LABOR MARKET INFORMATION
& STRATEGIC INITIATIVES
LABOR MARKET ANALYSIS SECTION
3032 W. GRAND BOULEVARD, SUITE 9-100
DETROIT, MI 48202
(313) 456-3100
WWW.MICHIGAN.GOV

Appendix

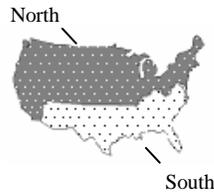
State Comparison Groupings



Great Lakes States

Illinois
Indiana
Michigan
Ohio
Wisconsin

Source: DELEG



North States:			South States:	
California	Massachusetts	North Dakota	Alabama	North Carolina
Colorado	Michigan	Ohio	Arizona	Oklahoma
Illinois	Minnesota	Oregon	Arkansas	South Carolina
Indiana	Missouri	Pennsylvania	Florida	Tennessee
Iowa	Nebraska	South Dakota	Georgia	Texas
Kansas	New Hampshire	Utah	Kentucky	Virginia
Maine	New Jersey	Washington	Louisiana	West Virginia
Maryland	New York	Wisconsin	Mississippi	

Source: DELEG

College Graduations/Tech Degrees

Science, Technology, Engineering and Math (STEM) Degrees - CIP Codes	
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)

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 Manufacturing
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; and Screw, Nut, and Bolt Manufacturing	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, and Life Sciences (except Biotech)
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

Bureau of Labor Market Information & Strategic Initiatives

Cadillac Place

3032 West Grand Blvd. Suite 9-100

Detroit MI 48202

Phone: (313) 456-3100

Fax: (313) 456-3150

www.michigan.gov/lmi

This report was prepared by the staff of the Bureau of Labor Market Information & Strategic Initiatives of the Department of Energy, Labor & Economic Growth. Substantial contributions were made by:

Jeffrey Anderson

Jacob Bisel

Robert Hayes

Ron McGraw

Aneesa I. Rashid

Mark Reffitt

James Rhein

Wayne Rourke

Rick Waclawek

Bruce Weaver

Michael Williams



DELEG is an equal opportunity employer/program. Auxiliary aids, services and other reasonable accommodations are available upon request to individuals with disabilities.