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Michigan's Transition to a Knowledge-Based Economy 2007-2014

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MICHIGAN FUTURE INC.
A Catalyst for Prosperity

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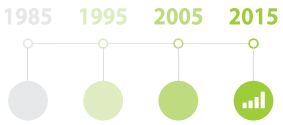


Introduction

This is the first report we have written in more than a decade that covers an expanding Michigan economy. From 2001-2007, while the national economy grew the Michigan economy contracted, falling from 18th in per capita income to 37th. It was an unprecedented decline in such a short period.

In six years Michigan went from one of the nation's most prosperous states—a status it had enjoyed for most of the 20th Century—to one of its poorest.

During the Great Recession—2008-2009—Michigan contracted steeply along with the nation. Since 2010 Michigan's economy has resumed growing again along with the nation. In fact, Michigan from 2010-2014 has been one of the nation's leaders in job growth. It ranked 7th, with job growth of 8.6 percent compared to 6.9 percent for the nation.

In terms of personal income per capita, from 2010-2013 Michigan has grown at a similar rate as the nation. The state reached a low of 38th in national ranking in 2008 and 2009 and moved to 37th in 2013. Each year from 2007-2013 Michigan's per capita ranged from 35th to 38th. If you take out government transfer payments Michigan ranked 41st in 2013 and between 38th and 42nd in each of those years.

So despite a good stretch of job growth, Michigan is now structurally one of the nation's low-prosperity states. Whether the nation's economy has expanded or contracted since 2007 Michigan has been in the bottom third of states in per capita income and bottom quarter of states if you don't include transfer payments

This report covers the period from 2007-2013. In it we explore why Michigan has become a low-prosperity state, which states are prospering and why, and what Michigan needs to do to become once again a high-prosperity state.

Our work at Michigan Future, Inc. is focused on understanding the changes occurring in the American economy and how to be successful in that economy. Our interest is in long term structural changes in the economy, rather than year to year cyclical changes. At the core of our work is the basic belief, since we were founded nearly a quarter of century ago, that globalization and technology are mega forces that are transforming the economy. The places that will do best are those that align with—rather than resist—these new realities. For Michigan that means, first and foremost, learning what made us prosperous in the past isn't working now and won't in the future.

We explore why Michigan has become a low-prosperity state, which states are prospering and why, and what Michigan needs to do to become once again a high-prosperity state.

Where do we want to go from here? Our answer: a high-prosperity Michigan–a place with a per capita personal income consistently above the national average in both national economic expansions and contractions.

Michigan Future started with the question, "Where do we want to go from here?" Our answer: a high-prosperity Michigan—a place with a per capita personal income consistently above the national average in both national economic expansions and contractions. (We use per capita personal income as our metric of economic well-being because it is the most comprehensive and reliable estimate of total income (excluding capital gains) of a community's residents.)

High prosperity is different from the most often used measure for economic success, low unemployment. We believe that the goal should be to create an economy with lots of good-paying jobs, a place with a broad middle class, where there is a realistic chance for families to realize the American Dream. Places with low unemployment rates, but also low personal income, aren't successful to us.

We started with a clean sheet. We didn't start with preconceived notions of what the right answers are. Rather we identified the most successful areas in the country and tried to figure out what distinguished them from Michigan, and what assets we most need to nurture to get where those states are.

This "go where our findings take us approach" is the foundation of every report we do. We are driven, first and foremost, to learn what is going on in the American and Michigan economy. Every time we do research for a report we learn something that we didn't know or expect. And those new findings shape what we report.

Our last report entitled "The New Path To Prosperity: Lessons for Michigan From two Decades of Economic Change" detailed what happened to the American and Michigan economies from 1990 to 2011. As detailed in that report the long term trend is clear. Over those two decades goods-producing industries saw employment declines of 14 percent and employment earnings declines of 16 percent, compared to an employment growth of 55 percent and employment earnings growth of 52 percent in private knowledge-based services.

So for more than two decades, whether the nation's economy has expanded or contracted, the American economy has been going through a profound structural transformation from an industrial to a knowledge-based economy.

In this report, because of our focus on structural, not cyclical, changes to the economy we look at the period from 2007—the year prior to the onset of the Great Recession—through either 2013 or 2014 depending on the latest available data. The report covers a period from the peak of the last national expansion through the current peak of this economic expansion.

We first provide an overview of the national, Michigan, metro Detroit and metro Grand Rapids economies. We then look at how Michigan and its two biggest metros compare to the most prosperous states and metropolitan areas.

We detail changes in employment and wages by sector; per capita income by component with an emphasis on net employment earnings; and college attainment by age.

We divide the economy into four sectors:

- Low-education attainment goods-producing (Nearly all manufacturing, construction and natural resources)
- High-education attainment goods-producing (primarily oil and gas extraction; and manufacturing in chemicals, pharmaceuticals, digital devices, aerospace, and medical equipment)
- Low-education attainment services (primarily leisure services; trade, transportation and utilities; and temporary services)
- High-education attainment services (primarily education; health care and social services; finance and insurance; information; professional services; and management of companies)

The complete list of high-education attainment goods-producing and service industries are detailed in Appendix A.)

High-education attainment industries are those where at least one-third of the employees have a four-year degree or more.

We deconstruct per capita income into three components:

- Net employment earnings (the sum of proprietors income, wages, and employer paid benefits minus social insurance taxes)
- Dividends, interest, and rent
- Transfer payments. These are payments made by government to or on behalf of individuals. They include Social Security, Medicare, Medicaid, Temporary Assistance for Needy Families, cash benefits, food stamps, veterans' benefits, tuition support like Pell grants and subsidies for college loans, the Earned Income Tax Credit, etc. The one change we made to the official statistics is that we include farm subsidies in transfer payments (not net employment earnings).

We also provide data on per capita income adjusted for non-housing cost of living. Some have suggested that per capita income understates the standard of living that Michiganders enjoy because the state and its regions have a lower cost of living than the nation. We do not adjust for housing prices because when consumers buy homes they are buying more than the house. They also are buying the place (community and neighborhood amenities, schools, safety, scenic views, etc.), none of which are discounted in the cost of housing measures. As you will see later in the report, Michigan and its regions rankings are little changed by adjusting for the cost of living.

We look at four-year degree attainment by age:

- 25 and older
- 25-34 year old
- 65 and older

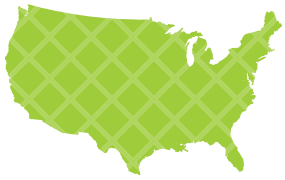
We focus on those with a four-year degree or more because of its importance to knowledge-based employers. We have found in our previous research that it is a core characteristic of high-prosperity states and regions.

We break out the last two categories because we believe they are important predictors of future prosperity. College educated 25-34 year olds are likely to be the asset that matters most to where knowledge-based services concentrate. College educated seniors, because of their affluence and longer life expectancy, will likely bring states and regions where they concentrate an important engine of economic prosperity.

For metropolitan areas we also compare college attainment for the central cities compared to the suburbs. Young college graduates in particular are concentrating in central cities. So a central city where young professionals are concentrating has become a core characteristic of the most prosperous regions.

Other key information:

Employment and wage data are for 2014. Per capita income and education attainment data are for 2013. Wage and income data are inflation adjusted using the U.S. Consumer Price Index for All Urban Consumers.



The American Economy

JOBS AND WAGES

Table 1 displays the changes in employment and average real wages by sector from 2007-2014. By the end of 2014 the country had made up the losses incurred during the Great Recession, with both employment and average real wages up about one percent.

Although the aggregate statistics look basically the same in 2007 and 2014, the distribution between sectors is quite different. Clearly the predominant trends are the decline in goods-producing employment along with the rise in service sector employment. **Maybe most importantly, the ongoing rise in high-education attainment services or knowledge-based services (we use the terms interchangeably in the report) has become the core of good-paying jobs.**

High-education attainment services is the only one of the four sectors to both add jobs and enjoy an increase in average real wages since 2007. High-education attainment services now account for 54 percent of all wages paid by employers across the country.

High-education attainment services were also from 1990 to the onset of the Great Recession the sole sector with both employment and employment earnings per capita growth. So the post-Great Recession American economy structurally has not changed. The American economy is increasingly service-providing, not goods-producing. And the combination of job growth and higher wages increasingly is centered in knowledge-based services.

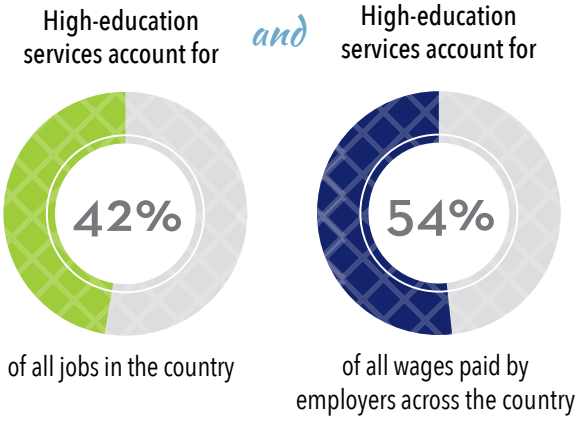
TABLE 1

	EMPLOYMENT 2007	EMPLOYMENT 2014	2007 AVERAGE WAGE IN 2014 DOLLARS	2014 AVERAGE WAGE
UNITED STATES				
Total	**135,367,544**	**136,604,549**	**$50,760**	**$51,361**
Low-Education Goods	20,700,335	18,010,854	$52,803	$54,094
High-Education Goods	2,764,208	2,557,624	$95,561	$103,075
Low-Education Services	58,059,242	59,277,993	$34,028	$33,298
High-Education Services	53,843,760	56,758,079	$65,716	$67,028

It is important to note that manufacturing is defined as work done in factories. The pre-and post-production work of manufacturing enterprises (engineering, design, logistics, marketing, management, etc.) are part of knowledge-based services, primarily in management of companies and professional services.

It's also important to note that the high-education attainment industries are highly diversified across the economy. They are not narrowly focused in industries commercializing new technologies. They are concentrated in, but not limited to, six broad sectors of the economy: information; finance and insurance; professional and technical services; management of companies; health care; and education. In fact, health care and education account for 44 percent of the employment in the knowledge-based economy in the U.S. and 47 percent in Michigan.

Across the country, many states and regions are focusing their economic development efforts on goods-producing industries and/or on a few technology-based industries (primarily information technology, the life sciences, alternative energy and green and blue technologies), based on the belief that these are the drivers of future growth. The data lead us to believe that policies that focus on attracting or growing either goods-producing industries or new technologies are unlikely to be the best economic growth strategy.



The data lead us to believe that policies that focus on attracting or growing either goods-producing industries or new technologies are unlikely to be the best economic growth strategy.

PERSONAL INCOME

Table 2 displays the changes in personal income per capita by component from 2007-2013, adjusted for inflation. It was up just $44 or 0.1 percent.

What stands out is the rise in transfer payments as a share of how Americans earn their living. Transfer payments per capita, adjusted for inflation, grew by $1,200 from 2007 to 2013 and its share of total per capita income increased from 14 to 17 percent.

Contrast that to net employment earnings per capita—the predominant engine of long-term, sustainable growth in the standard of living—which declined by more than $800. Its share of total per capita income fell from 66 to 64 percent.

For the country to do well—to become more prosperous—those trends will have to be reversed. Slowly growing, let alone declining, net employment earnings per capita, combined with rapid growth in transfer payment income is not a sustainable path to a rising standard of living. In fact, it is an on-coming freight train.

COLLEGE ATTAINMENT

The proportion of adults 25 and older with a four-year degree in 2013 was 29.6 percent. For those aged 25-34 it was 32.9 percent. Young adults today are far better educated than previous generations—in 2005 only 29.9 percent of 25-34 year olds had a bachelor's degree or more college education. But, the age group with the most rapid growth in the share of its population with a bachelor's degree is those aged 65 and older. In 2005, only 18.4 percent of this population group had a bachelor's degree or more, now it is 24.1 percent.

TABLE 2

	2007 PER CAPITA INCOME IN 2013 DOLLARS	2013 PER CAPITA INCOME
UNITED STATES		
Total	**$44,721**	**$44,765**
Net Employment Earnings excluding Govt Farm Payments	$29,476	$28,644
Dividends, Interest, Rent	$8,775	$8,448
Transfers including Govt Farm Payments	$6,470	$7,673

THE MICHIGAN ECONOMY

JOBS AND WAGES

Michigan from 2010-2014 has been one of the nation's leaders in job growth. The state ranks 7th nationally with job growth of 8.6 percent compared to 6.9 percent for the nation over that period.

Table 3 displays the changes in employment and average real wages by sector from 2007 to 2014. As you can see despite Michigan's relatively strong job growth since 2010 the state still trails the nation over the period 2007-2014. Over that period, Michigan suffered a job loss of 2.0 percent compared to a gain of 0.9 percent for the country.

Not only did Michigan lose jobs from 2007 to 2014, average wages were also down 2.1percent in the state compared to a gain of 1.2percent in the nation.

Just like in the nation, Michigan employment and wage performance differs between the four sectors. Employment in the goods-producing industries declined by 7.5 percent (job losses of 8 percent in the low-education goods producing industries partially offset by job growth of 0.9 percent in the much smaller high-education goods producing industries).

In contrast employment in the service industries only declined by 0.7 percent; 0.1 percent in low-education services and 1.3 percent in high-education services. (Note that the entire decline in the high-education services sector was due to the loss of jobs in the government sector in Michigan between 2007 and 2014.)

Not only did Michigan lose jobs from 2007 to 2014, average wages were also down 2.1 percent in the state compared to a gain of 1.2 percent in the nation.

In terms of wages, the only sector to see rising real wages in Michigan (as well as the nation) was the high-education attainment services sector, with real wage growth of 1.1 percent over this period. Note, however that wages in the high-education attainment sector are substantially lower in Michigan compared to the nation: $61,000 annually in Michigan; $67,000 for the nation.

Another important difference between Michigan and the nation is that the average wage in the low-education goods-producing sector is much higher in Michigan ($61,000 compared to $54,000). In Michigan, the low-education goods-producing industries pay about the same as the high-education attainment services industries; in the nation the high-education services industries pay about $13,000 a year more than the low-education goods-producing sector.

High-education attainment services now account for 49 percent of all wages paid by Michigan employers compared to 54 percent nationally.

TABLE 3

	EMPLOYMENT 2007	EMPLOYMENT 2014	2007 AVERAGE WAGE IN 2014 DOLLARS	2014 AVERAGE WAGE
MICHIGAN				
Total	**4,179,144**	**4,093,649**	**$49,503**	**$48,447**
Low-education Goods	771,324	709,619	$64,103	$60,897
High-education Goods	48,650	49,104	$69,861	$68,943
Low-education Services	1,727,838	1,725,368	$32,305	$31,145
High-education Services	1,631,332	1,609,558	$60,209	$60,879

PERSONAL INCOME

Table 4 details the change in per capita income by component in Michigan from 2007-2013. Michigan experienced a decline in real per capita income of 0.3 percent compared to a 0.1 percent increase nationally.

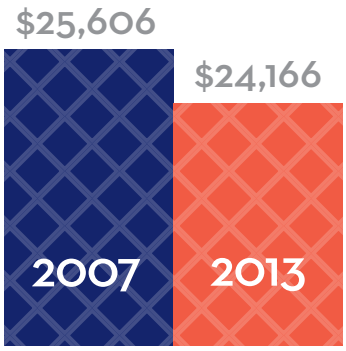
What stands out is the rise in transfer payments per capita—even more so than the nation. Transfer payments per capita, adjusted for inflation, grew by nearly $1,600 from 2007-2013 and its share of total per capita income increased from 18 to 22 percent.

Contrast that to net employment earnings per capita—the predominant engine of long-term, sustainable growth in the standard of living—which declined by over $1,400. Its share of total per capita income fell from 65 to 62 percent.

Transfer payments per capita grew about $400 more than the nation. Net employment earnings per capita declined about $600 more than the nation.

For Michigan to do well—to become more prosperous—those trends will have to be reversed. **Slowly growing, let alone declining, net employment earnings per capita, combined with rapid growth in transfer payment income cannot provide a rising standard of living.**

Michigan net employment earnings per capita declined by over $1,400



2013 Dollars

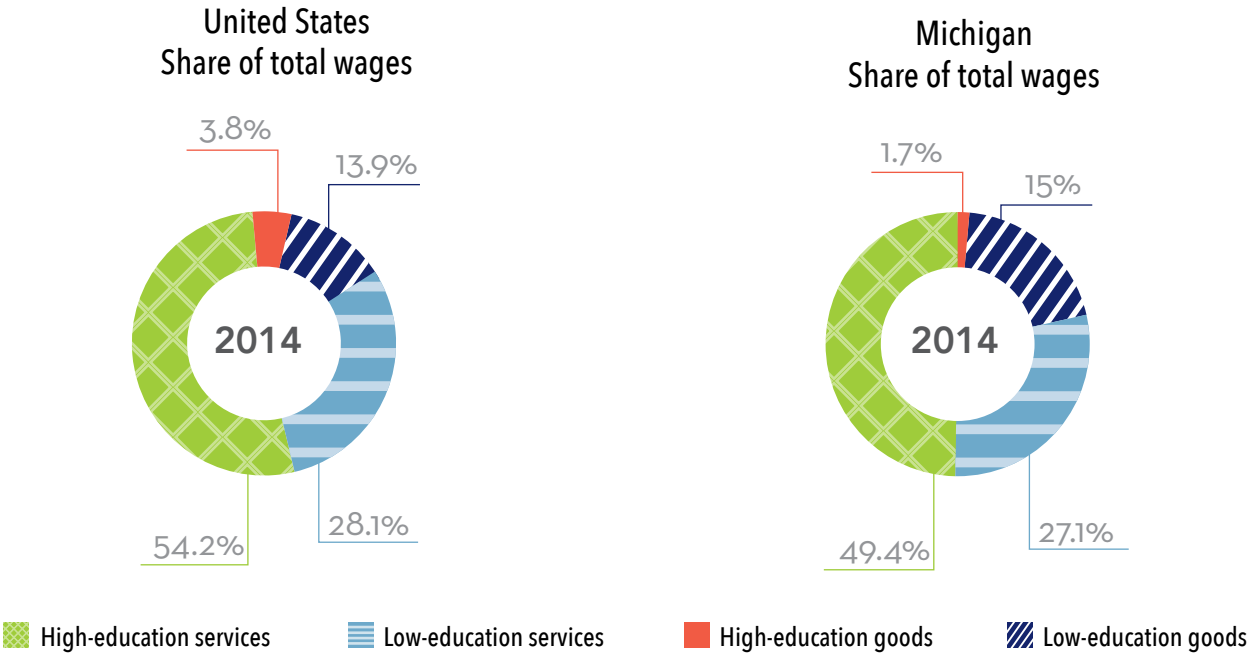
TABLE 4

	2007 PER CAPITA INCOME IN 2013 DOLLARS	2013 PER CAPITA INCOME	PER CAPITA 2013 ADJUSTED FOR NON-HOUSING COST OF LIVING
MICHIGAN			
Total	**$39,159**	**$39,055**	**$40,047**
Net Employment Earnings excluding Gov Farm Payments	$25,606	$24,166	$24,780
Dividends, Interest, Rent	$6,678	$6,431	$6,594
Transfers including Gov Farm Payments	$6,876	$8,458	$8,673

COLLEGE ATTAINMENT

In 2013, the proportion of adults 25 and older in Michigan with a four-year degree was 26.9 percent. For those aged 25-34 it was 30.7 percent. And, as in the U.S., both age groups have become much better educated in recent years. In 2005 24.7 percent of those 25 and older had a college degree and 28.2 percent of those aged 25 to 34.

But the age group with most rapid growth in the share of its population with a bachelor's degree is those aged 65 and older. In 2005, only 15.4 percent of this population group had a bachelor's degree or more, now it is 21.5 percent. In fact, between 2005 and 2013, the number of people with a bachelor's degree who were aged 65 and older increased by 136,000 in Michigan, more than 10 times the increase in the number of people aged 25 to 34 with a bachelor's degree (11,000). Obviously very few people over age 65 earn a degree. What is happening is that the relatively well-educated baby boomer generation is aging into the over 65 cohort, and the earlier, less educated cohorts are dying off. Also, within any particular cohort better-educated individuals tend to live longer than their less educated peers, so over time all cohorts are naturally becoming better educated.



MICHIGAN COMPARED TO THE NATION

Table 5 compares Michigan to the nation on the key measures of success in terms of jobs and wages, personal income and college attainment.

What stands out is that in the fifth year (2014) of a national expansion—and an even stronger domestic auto industry recovery—Michigan, on nearly all the metrics, is a national laggard. Gone are the days when the auto industry—still the prime engine of the Michigan economy—could propel Michigan to being one of the most prosperous states as was true for most of the 20th Century.

Gone also are the days when manufacturing jobs could be the base for a high-prosperity state, one with a mass middle class. Michigan manufacturing employment—which is the core of the goods-producing industries—has fallen from 891,000 in 2000, to 621,000 in 2007 and to 577,000 in 2014, even after the addition of about 112,000 factory jobs since the end of the Great Recession in 2009. Despite a huge recovery from near collapse of the domestic auto industry in 2009, employment in manufacturing in 2014 was still well below 2007 levels. Factory jobs now account for 14 percent of the Michigan workforce, down from more than 19 percent in 2000, and 15 percent in 2007

TABLE 5

CATEGORY	RANK OF 50	SHARE OF U.S.
PERSONAL INCOME PER CAPITA		
Income Per Capita, 2013	37	87.2%
Income Per Capita Adjusted Non-Housing COL, 2013	38	89.5%
Net Employment Earnings Per Capita, 2013	38	84.4%
Transfer Payment Income Per Capita, 2013	10	110.2%
Dividend, Interest & Rent Per Capita, 2013	41	76.1%
EMPLOYMENT AND WAGES		
Employment to Population Share, 25 to 64, 2013	42	95.8%
Average Wage, 2014	19	94.3%
High-education Services Share of Total Wages, 2014	26	91.1%
EDUCATION ATTAINMENT		
Bachelors or more Share of Population 25 and older, 2013	33	90.8%
Bachelors or more Share of Population 25 to 34, 2013	29	93.5%
Bachelors or more Share of Population 65 and older, 2013	33	89.4%


SHINOLA
Argonite-1069
DETROIT
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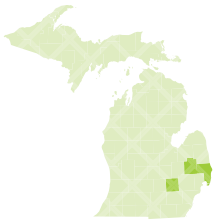
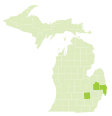


THE METRO DETROIT ECONOMY

Metropolitan Detroit is Lapeer, Livingston, Macomb, Oakland, St. Clair, and Wayne counties. Its population is nearly 4.3 million.

Since 2007, Metro Detroit has fared worse than the state, and far worse than metro Grand Rapids. Among regions with a population of one million or more it is one of the laggards from 2007-2014.



JOBS AND WAGES

Table 6 displays the changes in employment and average real wages by sector from 2007-2014. Metro Detroit suffered job losses of more than 3 percent compared to a loss of two percent for the state and a gain of slightly less than one percent for the country.

Average wages were down more than 3 percent compared to a decline of more than 2 percent for the state and a gain of a little more than one percent for the nation.

Just like in the nation employment and wage performance in metro Detroit varied between the four sectors. Although unlike the nation all four sectors suffered a net decline in jobs. Jobs in low-education goods-producing declined by 8.9 percent; high-education goods-producing by 14.4 percent; low-education service-providing by 1.0 percent; and high-education service-providing by 3.4 percent (due to the loss of jobs in the government sector).

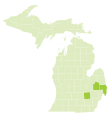
We find a very wide performance gap in wage growth between the low and high-education industries. Real wages declined by 6.5 percent in the low-education-goods-producing industries and 4.2 percent in the low-education service-providing industries, but by less than 0.1 percent in the high-education service-providing industries. Real wages grew by 0.4 percent in the high-education goods-producing industries.

Maybe most worrisome is the metro Detroit sector with the smallest job losses—low-education attainment services—is the sector with the lowest average wages by far. The loss of jobs in high-education services, compared to a gain nationally, is also a concern. However, when the government sector stops hemorrhaging jobs, we expect that the high-education service-providing industries will begin adding jobs at a relatively rapid rate.

High-education attainment services now account for 53 percent of all wages paid by metro Detroit employers compared to 54 percent nationally.

TABLE 6

	EMPLOYMENT 2007	EMPLOYMENT 2014	2007 AVERAGE WAGE IN 2014 DOLLARS	2014 AVERAGE WAGE
DETROIT MSA				
Total	**1,871,310**	**1,807,363**	**$55,967**	**$54,168**
Low-education Goods	313,816	285,956	$74,504	$69,665
High-education Goods	14,539	12,440	$68,342	$68,592
Low-education Services	759,767	752,299	$35,397	$33,903
High-education Services	783,188	756,668	$68,265	$68,222



PERSONAL INCOME

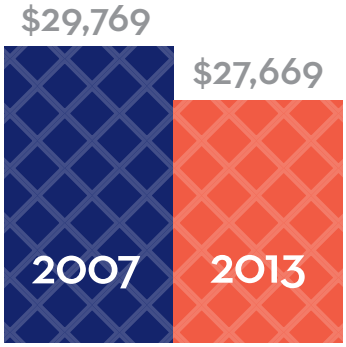
Table 7 details the change in per capita income by component in the Detroit region from 2007-2013. Metro Detroit experienced a decline in real per capita income of 2.8 percent compared to a decline of 0.3 percent in Michigan and a 0.1 percent increase nationally.

What also stands out is the rise in transfer payments per capita—even more so than the nation. Transfer payments per capita, adjusted for inflation grew by more than $1,600 from 2007-2013 and its share of total per capita income increased from 16 to 20 percent.

Contrast that to net employment earnings per capita—the predominant engine of long term, sustainable growth in the standard of living—which declined by $2,100. Its share of total per capita income fell from 67 to 65 percent.

For metro Detroit to do well—to become more prosperous—those trends will have to be reversed.

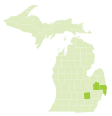
Metro Detroit net employment earnings per capita declined by over $1,400



2013 Dollars

TABLE 7

	2007 PER CAPITA INCOME IN 2013 DOLLARS	2013 PER CAPITA INCOME	PER CAPITA 2013 ADJUSTED FOR NON-HOUSING COST OF LIVING
DETROIT MSA			
Total	**$44,139**	**$42,887**	**$42,956**
Net Employment Earnings excluding Govt Farm Payments	$29,769	$27,669	$27,713
Dividends, Interest, Rent	$7,380	$6,581	$6,592
Transfers including Govt Farm Payments	$6,990	$8,637	$8,651



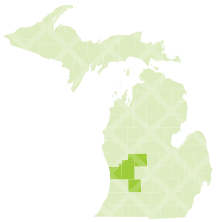
METRO DETROIT COMPARED TO THE 52 REGIONS WITH POPULATIONS OF ONE MILLION OR MORE AND THE NATION

Table 8 compares metro Detroit to the other major metropolitan regions of the nation on the key measures of success in terms of jobs and wages; personal income; and college attainment.

What stands out is that in the fifth year (2014) of a national expansion—and an even stronger domestic auto industry recovery—metro Detroit, on nearly all the metrics, is a national laggard. Gone are the days that the auto industry—still the prime engine of the Michigan economy—could propel metro Detroit to being one of the most prosperous regions as was true for most of the 20th Century.

TABLE 8

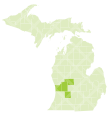
CATEGORY	RANK OUT OF 52	SHARE OF U.S.
PERSONAL INCOME PER CAPITA		
Income Per Capita, 2013	38	95.8%
Income Per Capita Adjusted Non-Housing Cost of Living, 2013	42	96.0%
Net Employment Earnings Per Capita, 2013	40	96.6%
Transfer Payment Income Per Capita, 2013	6	112.6%
Dividend, Interest & Rent Per Capita, 2013	44	77.9%
EMPLOYMENT AND WAGES		
Employment to Population Share, 25 to 64, 2013	49	96.2%
Average Wage, 2014	18	105.5%
High-education Services Share of Total Wages, 2014	33	97.2%
EDUCATION ATTAINMENT		
Bachelors or more Share of Population 25 and older, 2013	42	97.8%
Bachelors or more Share of Population 25 to 34, 2013	35	100.0%
Bachelors or more Share of Population 65 and older, 2013	46	91.1%



THE METRO GRAND RAPIDS ECONOMY

Metropolitan Grand Rapids is Kent, Barry, Montcalm and Ottawa counties. Its population is a little more than one million.

From 2007-2014 metro Grand Rapids has recovered far better than the state overall and particularly metro Detroit.



JOBS AND WAGES

Table 9 displays the changes in employment and average real wages by sector from 2007-2014. The Grand Rapids region saw employment growth of nearly 6 percent compared to job losses for the state of 2 percent and an increase of slightly less than 1 percent for the country.

Growth in the average wage in Grand Rapids, adjusted for inflation, was nothing to shout about. Real wages declined a little more than one percent compared to a loss of about two percent for the state and a gain of a little more than one percent for the nation.

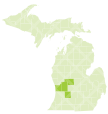
Just like the state and nation employment and wage growth in metro Grand Rapids employment varied substantially among the four sectors. Employment in low-education goods-producing industries declined by 1.5 percent compared to job gains of 11 percent in high-education goods-producing industries and of more than 9 percent in low-education attainment services and nearly 7 percent in high-education services.

In terms of wages, the only sector to see rising wages, as was true for the nation, was high-education attainment services, where wages increased by 2 percent. Wages in the high-education attainment sector, however are substantially lower in metro Grand Rapids than in Michigan or the nation: $54,000 to $61,000 to $67,000. Boosting wages in this sector needs to be a high priority for economic development officials in the Grand Rapids area if it wants to increase the aggregate income in the community.

High-education attainment services now account for 40 percent of all wages paid by West Michigan employers compared to 49 percent by all Michigan employers and 54 percent nationally.

TABLE 9

	EMPLOYMENT 2007	EMPLOYMENT 2014	2007 AVERAGE WAGE IN 2013 DOLLARS	2014 AVERAGE WAGE
GRAND RAPIDS MSA				
Total	**474,394**	**502,295**	**$44,283**	**$43,801**
Low-education Goods	119,805	118,036	$54,091	$53,839
High-education Goods	10,797	12,018	$62,602	$62,549
Low-education Services	191,179	209,028	$30,226	$29,126
High-education Services	152,614	163,212	$52,898	$53,955



PERSONAL INCOME

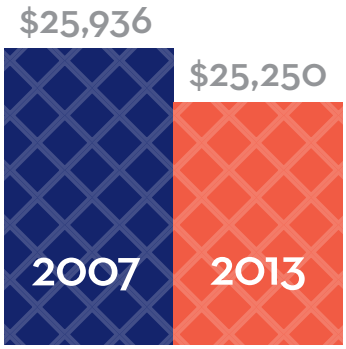
Table 10 details the change in per capita income by component in metro Grand Rapids from 2007-2013. Per capita income rose by 1.2 percent beating the nation which grew by 0.1 percent and the state which saw a decline of 0.3 percent.

Once again the rise in transfer payments per capita is notable. Transfer payments per capita, adjusted for inflation, in the Grand Rapids region grew by slightly less than $1,200 from 2007-2013 and its share of total per capita income increased from 14 to 17 percent.

Contrast that to net employment earnings per capita—the predominant engine of long-term, sustainable growth in the standard of living—which declined by almost $700. Its share of total per capita income fell from 69 to 66 percent.

For metro Grand Rapids to do well — to become more prosperous — those trends will have to be reversed.

Metro Grand Rapids net employment earnings per capita declined by almost $700



2013 Dollars

TABLE 10

	2007 PER CAPITA INCOME IN 20014 DOLLARS	2013 PER CAPITA INCOME	PER CAPITA 2013 ADJUSTED FOR NON-HOUSING COST OF LIVING
GRAND RAPIDS MSA			
Total	**$37,855**	**$38,314**	**$40,115**
Net Employment Earnings excluding Govt Farm Payments	$25,936	$25,250	$26,436
Dividends, Interest, Rent	$6,441	$6,417	$6,719
Transfers including Govt Farm Payments	$5,478	$6,647	$6,959

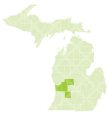
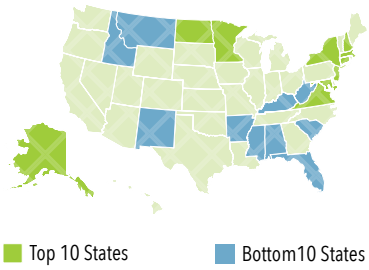


Table 11 compares the Grand Rapids region to the nations 52 regions with populations of one million or more on the key measures of success in terms of jobs and wages, personal income and college attainment.

TABLE 11

CATEGORY	RANK OUT OF 52	SHARE OF U.S.
PERSONAL INCOME PER CAPITA		
Income Per Capita, 2013	49	85.6%
Income Per Capita Adjusted Non-Housing COL, 2013	48	89.6%
Net Employment Earnings Per Capita, 2013	48	88.2%
Transfer Payment Income Per Capita, 2013	38	86.6%
Dividend, Interest & Rent Per Capita, 2013	46	76.0%
EMPLOYMENT AND WAGES		
Employment to Population Share, 25 to 64, 2013	21	103.0%
Average Wage, 2014	49	85.3%
High-education Services Share of Total Wages, 2014	52	73.8%
EDUCATION ATTAINMENT		
Bachelors or more Share of Population 25 and older, 2013	34	103.4%
Bachelors or more Share of Population 25 to 34, 2013	27	108.2%
Bachelors or more Share of Population 65 and older, 2013	29	103.6%



TOP TEN AND BOTTOM TEN STATES AND REGIONS

We emphasize net employment earnings in this report. As we mentioned earlier, employment earnings are the predominant engine of long-term sustainable growth in the standard of living

We look at net employment earnings per capita because it adjusts for those who live in one jurisdiction and work in another; it is a measure of what people who live in a particular geography earn by working. Per capita income is also calculated based on where you live, not where you work.

So the earnings data in the report is the sum of proprietors income, wages and benefits (after adjusting for social insurance taxes) per capita earned by workers in a state or region no matter where they work.

Net employment earnings is the combination of how many jobs people hold and what they are earning. This is what states and regions focus their economic development policy on—creating an environment for employees to be employed and earn a high wage.

Employment earnings are the predominant engine of long-term sustainable growth in the standard of living.

Top Ten and Bottom Ten States

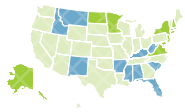


Table 12 lists the top ten states in net employment earnings. Table 13 lists the bottom 10. In our previous research we have found that there are two paths to high prosperity. One, for a small number of states, is high energy or grain (largely for ethanol) prices. Note that income derived from energy and other commodities can be highly volatile. We know that the decline in oil and agricultural prices in 2014 and 2015 will undoubtedly substantially reduce the income in the commodity states, we just don't know by how much.

The other path, which applies to most states, is that:

- **They are over-concentrated, compared with the nation, in the proportion of wages coming from knowledge-based sectors**
- **They have a high proportion of adults with a four-year degree or more**
- **They have a big metropolitan area with even higher per capita income than the state**
- **In that big metropolitan area, the largest city has a high proportion of its residents with a four-year degree or more**

As Table 12 and 13 make clear those common characteristics of high-prosperity states continues today. North Dakota and Alaska are the commodity-based states in the top ten. The other states all are top ten states in college attainment and rank from 1-18 in the proportion of wages from high-education attainment services. And as we will see below, they are anchored by one of four high-prosperity big metropolitan areas: Boston, New York, Washington D.C. or Minneapolis.

We continue to believe that per capita income is the best single measure of a state's or region's economic well-being. In tables 12 and 13 we list in the third and fourth columns per capita income rankings for the states with and without adjusting for cost of living differences excluding housing costs.

The only change in the top ten list in per capita income compared to net employment earnings per capita are that Minnesota (10th) would fall to 13th, replaced by Wyoming—another commodity-based state. In terms of the top ten in per capita income adjusted for non-housing cost of living three states would barely fall out—New York to 11th, Virginia 12th and Minnesota 13th and would be replaced by three commodity-based states—Wyoming, Nebraska and Iowa.

Top Ten and Bottom Ten States

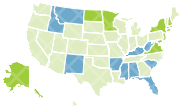


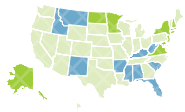
TABLE 12

	RANK NET EARNINGS PER CAPITA 2013	RANK BACHELORS DEGREE OR BETTER 25+ 2013	RANK PERSONAL INCOME PER CAPITA 2013	RANK PERSONAL INCOME PER CAPITA ADJUSTED FOR COL 2013
TOP TEN				
Connecticut	1	4	1	2
Massachusetts	2	1	2	3
New Jersey	3	5	3	5
Maryland	4	3	5	6
North Dakota	5	31	6	1
New York	6	9	4	11
New Hampshire	7	8	8	9
Alaska	8	26	9	8
Virginia	9	6	10	12
Minnesota	10	10	13	13

TABLE 13

BOTTOM TEN				
Montana	41	21	35	35
Florida	42	30	28	31
Alabama	43	44	44	43
Kentucky	44	45	45	42
Idaho	45	38	46	48
South Carolina	46	40	48	44
New Mexico	47	37	47	49
West Virginia	48	50	49	45
Arkansas	49	48	42	41
Mississippi	50	49	50	50

Top Ten and Bottom Ten States



Eight of the bottom ten states in net employment earnings per capita are also bottom ten states in per capita income and in per capita income adjusted for non-housing cost of living. The two exceptions are Montana (35th and 35th) and Florida (28th and 31st). Montana and especially Florida move up in the rankings when unearned income (dividend interest and rent and transfer payments) is added to net earnings to form personal income. They are replaced in the bottom ten states by Utah and Arizona in per capita income with and without the cost of living adjustment.

Table 14 lists the top ten regions with populations of one million or more in net employment earnings. Table 15 lists the bottom ten.

With the exception of energy-driven Houston, all of the top ten metro areas are high in college attainment and proportion of wages in knowledge-based services. In terms of per capita income the top ten remains the same except that Houston (now 11th) falls out and is replaced by Philadelphia.

All of the bottom ten regions are low in college attainment with the possible exception of Grand Rapids. Metro Grand Rapids ranks 34th out of 52 in the share of its population aged 25 and older with a bachelor's degree. Metro Grand Rapids ends up in the bottom ten metropolitan regions in terms of net earnings per capita because the average wage in the community, especially for high-education service-providing industries are very low. If we focus on personal income per capita then Miami and Jacksonville move out of the bottom ten because of their unearned income and Atlanta and Memphis fall into the bottom ten; Atlanta because of relatively low transfer payments per capita and Memphis because of relatively low capital income per capita.

With the exception of energy-driven Houston, all of the top ten metro areas are high in college attainment and proportion of wages in knowledge-based services.

Top Ten and Bottom Ten States

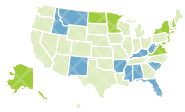


TABLE 14

AREA	NET EARNINGS PER CAPITA 2013	PERSONAL INCOME PER CAPITA 2013	INCOME PARTIAL COL PER CAPITA, 2013	HIGH-ED SERVICES AS SHARE OF WAGES, 2014	EMPLOYMENT/ POP AGED 25-64 2013	SHARE BACHELORS 25 AND OLDER, 2013	SHARE BACHELORS 25 TO 34, 2013	CITY EMPLOYMENT/ POP AGED 25-64 2013	CITY SHARE BACHELORS 25 AND OLDER, 2013	CITY SHARE BACHELORS 25 TO 34, 2013
TOP TEN										
San Jose	$49,010	$69,205	$64,030	58.7%	74.8%	46.7%	52.0%	73.7%	38.0%	41.6%
San Francisco	$47,146	$69,127	$63,840	66.4%	75.6%	45.2%	50.2%	78.7%	53.0%	69.6%
Washington	$44,241	$61,507	$56,439	70.5%	79.8%	48.7%	51.7%	80.5%	59.8%	67.4%
Boston	$42,070	$61,754	$58,883	65.0%	77.9%	44.8%	55.0%	75.7%	45.2%	64.2%
Houston	$39,058	$51,930	$51,289	43.7%	74.0%	30.9%	31.1%	74.2%	31.4%	34.8%
New York	$38,885	$59,246	$52,144	68.3%	73.7%	37.4%	46.1%	71.5%	35.7%	47.9%
Seattle	$37,816	$55,190	$53,536	58.3%	75.4%	39.4%	42.3%	80.5%	59.8%	67.4%
Baltimore	$36,647	$54,457	$51,376	60.6%	76.3%	36.8%	41.5%	66.7%	28.7%	43.1%
Denver	$36,476	$51,946	$50,946	58.4%	77.2%	40.3%	41.5%	76.2%	38.4%	44.7%
Hartford	$35,929	$55,355	$56,485	58.6%	75.3%	36.5%	43.4%	60.5%	16.2%	22.8%

TABLE 15

BOTTOM TEN										
Louisville	$26,663	$41,477	$43,286	47.5%	72.8%	27.0%	32.3%	72.1%	27.3%	32.9%
Jacksonville, FL	$25,734	$43,149	$44,959	55.1%	70.9%	28.3%	29.1%	70.9%	26.8%	30.5%
Phoenix	$25,386	$38,745	$39,162	52.3%	70.2%	29.2%	28.2%	69.5%	26.7%	26.0%
Miami	$25,353	$45,377	$45,820	58.0%	72.5%	29.3%	29.2%	69.5%	25.0%	32.6%
San Antonio	$25,351	$39,951	$41,694	52.6%	72.8%	26.7%	28.2%	72.1%	25.8%	29.1%
Grand Rapids	$25,250	$38,314	$40,115	40.0%	74.2%	30.6%	35.6%	69.5%	33.5%	42.1%
Las Vegas	$23,883	$37,457	$37,901	43.4%	70.4%	22.1%	21.1%	68.5%	21.4%	19.7%
Orlando	$23,215	$36,992	$38,523	50.7%	72.5%	29.5%	30.9%	76.9%	35.2%	39.8%
Tampa	$22,717	$40,425	$41,092	57.6%	71.0%	27.6%	29.5%	72.5%	33.1%	38.5%
Riverside CA	$20,778	$33,025	$32,563	43.0%	65.7%	20.1%	19.3%	64.4%	17.7%	17.3%

COMPARISONS TO PROSPEROUS STATES AND REGIONS

In this section we delve deeper into what distinguishes Michigan and its big metros from prosperous states and regions in net employment earnings per capita. We look at detailed data on employment and wages by our four sectors for both states and regions. In addition we look at college attainment and the employment to population ratio for the central city and suburbs of our comparison regions.

We use Minnesota and Massachusetts as our comparison states. Massachusetts is one of the top states in all economic and education metrics, while Minnesota ranks at the top in both areas among Great Lakes states.

Our comparison regions are Boston and Minneapolis—which anchor our two comparison states—and Pittsburgh and Milwaukee. While Pittsburgh and Milwaukee are thought of as Rust Belt regions, they are successfully transitioning to high-prosperity knowledge-based regions.

Table 16 compares Michigan to Massachusetts and Minnesota on wages and employment overall and for our four sectors. What emerges most starkly is that far fewer Michiganders work.

It is hard to see how Michigan regains its status as a high-prosperity state without substantial improvement in our employment-to-population ratio. In the high wage mass production economy of the 20th century we could be a high-prosperity state even with a low employment-to-population ratio because workers made so much. But that economy is gone forever.

Also clear is that the other key to prosperity in Minnesota and Massachusetts is the number and concentration of workers in high-education attainment services. In Massachusetts that is combined with high wages across the board. Minnesota, on the other hand, achieves being a high net employment earnings state with an average wage similar to the nation overall and for all the sectors except high-education goods-producing. **The three major differences between Michigan and Minnesota, in order of importance, are the proportion of the population working, the proportion working in knowledge-based services, and a substantially higher wage in knowledge-based services.**

TABLE 16

	2007 AVG WAGE IN 2014 DOLLARS	AVG WAGE 2014	2007 JOBS PER 1,000 POP	2014 JOBS PER 1,000 POP
UNITED STATES				
Total	**$50,760**	**$51,361**	**449**	**428**
Low-ed Goods	$52,803	$54,094	69	56
Low-ed Services	$34,028	$33,298	193	186
High-ed Goods	$95,561	$103,075	9	8
High-ed Services	$65,716	$67,028	179	178
MICHIGAN				
Total	**$49,503**	**$48,447**	**418**	**413**
Low-ed Goods	$64,103	$60,897	77	72
Low-ed Services	$32,305	$31,145	173	174
High-ed Goods	$69,861	$68,943	5	5
High-ed Services	$60,209	$60,879	163	162
MINNESOTA				
Total	**$50,665**	**$51,603**	**516**	**500**
Low-ed Goods	$54,553	$54,962	80	71
Low-ed Services	$31,275	$31,784	209	203
High-ed Goods	$78,657	$86,249	15	12
High-ed Services	$66,376	$67,329	212	214
MASSACHUSETTS				
Total	**$63,075**	**$64,127**	**503**	**498**
Low-ed Goods	$63,968	$65,332	54	46
Low-ed Services	$37,832	$36,944	206	203
High-ed Goods	$109,837	$118,713	17	13
High-ed Services	$82,491	$84,107	226	236

The three major differences between Michigan and Minnesota, in order of importance, are the proportion of the population working, the proportion working in knowledge-based services, and a substantially higher wage in knowledge-based services.

Population Working

Working in knowledge-based services

Wage for knowledge-based services

Table 17 compares metro Detroit and Grand Rapids to Boston, Minneapolis, Pittsburgh and Milwaukee on wages and employment overall and for our four sectors. Boston (4th) and Minneapolis (11th) are high net employment earnings per capita metros. Both also have high college attainment and large concentrations of workers in high-education services. Pittsburgh (18th) and Milwaukee (21st) are in the next tier. They are models of regions that have moved from factory-based to increasingly knowledge-based and are reaping the benefits of that transition.

Detroit and Grand Rapids are lower tier regions in terms of net employment earnings per capita—40th and 49th out of 52 regions with populations of one million or more. But why they are ranked near the bottom differs.

Detroit, like Michigan overall, has far too few workers relative to its population. The gap of those working per thousand residents ranges from 45 compared to Pittsburgh to 106 with Boston. In addition Detroit has far fewer workers in knowledge-based services. Together you get the main causes of Detroit lagging the nation. Surprisingly only Boston has substantially higher average wages than metro Detroit. And metro Detroit has higher average wages than either metro Pittsburgh or Milwaukee, but Detroit still trails them substantially in net employment earnings.

TABLE 17

AREA	2007 AVG WAGE 14$	2014 AVG WAGE 14$	2007 JOBS PER 1000 POP	2014 JOBS PER 1000 POP
DETROIT MSA				
Total	$55,967	$54,168	428	421
Low-ed Goods	$74,504	$69,665	72	67
Low-ed Services	$35,397	$33,903	174	175
High-ed Goods	$68,342	$68,592	3	3
High-ed Services	$68,265	$68,222	179	176
GRAND RAPIDS MSA				
Total	$44,283	$43,801	483	489
Low-Ed Goods	$54,091	$53,839	122	115
Low-Ed Services	$30,226	$29,126	195	203
High-Ed Goods	$62,602	$62,549	11	12
High-Ed Services	$52,898	$53,955	155	159
BOSTON MSA				
Total	$68,295	$69,427	536	527
Low-Ed Goods	$67,846	$68,730	50	43
Low-ed Services	$39,295	$38,145	210	206
High-ed Goods	$113,261	$119,659	20	17
High-ed Services	$88,623	$90,987	256	261
MILWAUKEE MSA				
Total	$49,392	$48,915	539	509
Low-ed Goods	$59,131	$59,698	101	85
Low-ed Services	$30,223	$29,788	215	209
High-ed Goods	$76,834	$81,257	10	8
High-ed Services	$62,833	$62,480	214	207
MINNEAPOLIS MSA				
Total	$56,261	$56,337	541	514
Low-ed Goods	$61,041	$60,600	72	61
Low-ed Services	$33,929	$33,865	215	205
High-ed Goods	$82,739	$90,937	18	16
High-ed Services	$73,165	$72,773	236	232
PITTSBURGH MSA				
Total	$48,991	$50,941	465	466
Low-ed Goods	$57,454	$59,054	62	57
Low-ed Services	$31,516	$31,785	195	196
High-ed Goods	$69,910	$81,033	7	7
High-ed Services	$62,672	$65,988	200	205

The causes of metro Grand Rapids being near the bottom in net earnings per capita are quite different than metro Detroit. It has far more workers per thousand residents than Detroit: 489 in Grand Rapids, 421 in Detroit. It has more than metro Pittsburgh as well, although trailing the other three comparison regions. Even more than metro Detroit, metro Grand Rapids is substantially under concentrated in workers in knowledge-based services.

But the main reason for metro Grand Rapids lagging other regions across the country is very low wages. It has the lowest wages overall and in each of our four sectors of all the comparison regions and metro Detroit. The closest region to it of our comparison regions is Milwaukee where average wages are around $5,000 higher overall and more than $10,000 higher in high-education attainment services.

In our past reports we have written "The evidence is that the most successful regions across the country are those where both the suburbs and central cities are prospering." The data in table 18 provides further evidence that a vibrant central city is a key ingredient to regional prosperity.

In general, central city residents between the ages of 25-64 are only slightly less likely to be working than their suburban peers, except for Detroit where the central city residents are much less likely to be employed. So central city residents are an important component of a region's workforce. Even more significant, central city residents except for Detroit and Milwaukee are more likely to have a college degree than suburban residents. This is particularly true for those between the ages of 25-34. It is notable that the city of Grand Rapids is doing very well on these metrics, especially the share of the population aged 25 to 34 with a college degree.

The main reason for metro Grand Rapids lagging other regions across the country is very low wages. Detroit lags the nation because it has too few workers relative to its population.

TABLE 18

AREA	METRO EMP/POP 25-64	CENT CITY EMP/POP 25-64	SUBURBS EMP/POP 25-64	METRO %BACH 25+	CENT CITY %BACH 25+	SUBURBS %BACH 25+	METRO %BACH 25-34	CENT CITY %BACH 25-34	SUBURBS %BACH 25-34
Detroit MSA	69.3%	49.5%	72.8%	29.0%	13.0%	31.8%	32.9%	13.2%	37.0%
Grand Rapids MSA	74.2%	69.5%	75.3%	30.6%	33.5%	30.0%	35.6%	42.1%	33.4%
Boston MSA	77.9%	75.7%	78.3%	44.8%	45.2%	44.7%	55.0%	64.2%	52.4%
Milwaukee MSA	75.9%	68.8%	80.1%	33.2%	23.2%	38.6%	39.3%	30.2%	47.2%
Minneapolis MSA	80.7%	76.4%	81.8%	39.3%	43.9%	38.2%	43.8%	49.1%	41.7%
Pittsburgh MSA	73.7%	72.6%	73.9%	32.2%	39.7%	31.2%	44.2%	56.0%	41.5%

LESSONS WORTH LEARNING

For most of the 20th Century Michigan enjoyed the benefits of being the center of the auto industry. And that industry's near collapse the past decade is something no other state suffered through. It was a major part of what mired Michigan—and no other state—in a decade long recession.

There was nothing Michigan could have done to avoid the severe downturn of the domestic auto industry. But we can learn some clear lessons from states like Massachusetts and Minnesota and regions like Boston, Minneapolis, Pittsburgh and Milwaukee on how to return to prosperity and become a place with a broad middle class.

The answer lies in increasing employment earnings. Growing employment earnings is the only sustainable path of long-term improvement in economic well-being. The metric reflects both the number of folks working (more jobs) and their compensation—both wages and benefits (better jobs).

The underlying story is the decline of the goods-producing economy. Goods-producing industries, particularly manufacturing, nationally are employing a much smaller percentage of the American workforce, causing steep declines in real employment earnings per capita from that sector. At the same time, knowledge-based services are growing—both in employment and real employment earnings.

The data are clear: The absolute and relative increase in employment earnings per capita in knowledge-based services is a combination of strong job growth and the fact that the sector is now the high wage sector of the American economy. Knowledge-based services now are the center of mass middle class American jobs.

Jobs in goods-producing industries—particularly manufacturing—are experiencing a long-term structural decline that almost certainly is irreversible. The sector no longer is the source of mass middle class jobs—because low-education goods-producing industries wages and benefits no longer carry the premium they did decades ago compared to the rest of the economy, and because the sector will continue to employ a far smaller proportion of the American economy, despite temporary business cycle-related employment gains.

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As goods-producing work has declined what has grown are services, both in absolute and relative terms. This is particularly true in what we call knowledge-based services: education; health care and social assistance; information; finance and insurance; professional services, and management of companies.

We are confident that, primarily due to the ongoing force of globalization and technology, the American economy will become more and more service, rather than goods-producing, based. And, in that economy, knowledge-based services are where average wages are the highest and wage growth will be the strongest.

Not withstanding the current auto recovery driven manufacturing rebound here in Michigan, the long term trends are clear: The defining characteristic of those places with the most prosperous economies today—and almost certainly even more so in the future—is their concentration in the knowledge-based sectors of the economy. The only exceptions have been and likely will be those states with commodity-based economies, particularly energy-related commodities.

To be clear, we are not advocating that Michigan abandon goods-producing industries. They are and will be important parts of the Michigan economy, especially in smaller regions and rural communities, and as such deserve support. But they are not a path to high prosperity or a broad middle class.

Nor is tourism, the other anchor of what has been thought of as the most important industries in Michigan. It is characterized by job growth, but low wages. The new reality is if the Michigan economy of the future is built on a base of factories, farms, and tourism, we will be a low prosperity state.

The world has changed fundamentally. We either adjust to the changes or we will continue to be poor compared to the nation.

As the data in this report make clear, the new path to prosperity is the broad knowledge-based service industries. High prosperity is occurring chiefly in those places where knowledge-based enterprises across many sectors are concentrating. They are concentrating in areas with a high proportion of adults with a bachelor's degree or more.

Our basic conclusion: What most distinguish successful areas from Michigan are their concentrations of talent, where talent is defined as a combination of knowledge, creativity, and entrepreneurship. Quite simply, in a flattening world where work can increasingly be done anyplace by anybody, the places with the greatest concentrations of talent win.

Human capital is the asset that matters most to knowledge-based enterprises. Governor Snyder summed it up best when he wrote in his Developing and Connecting Michigan Talent special message: "In the 20th century, the most valuable assets to job creators were financial and material capital. In a changing global economy, that is no longer the case. Today, talent has surpassed other resources as the driver of economic growth."

Michigan's fundamental economic challenge is that we rank 33rd in the proportion of adults with a four-year degree. States without concentrations of talent will have great difficulty retaining or attracting knowledge-based enterprises, nor are they likely to be the place where new knowledge-based enterprises are created.

In 2000, at the end of the boom years, Michigan still ranked 18th in per capita income. We were 34th in bachelor's degree attainment. In many ways, 2000 marked the end of an era when you could have high prosperity with low-education attainment. No more. In 2013, Michigan ranked 37th in per capita income and 33rd in the proportion of adults with a four-year degree or more.

Michigan has lagged in its support of the assets necessary to develop the knowledge-based economy at the needed scale. Building that economy is going to take a long time, and it will require fundamental change. But we believe it is the only reliable path to regain high prosperity.

The choice we face is, do we do what is required to build the assets needed to compete in the knowledge-based economy or do we accept being a low prosperity state?

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HIGH-EDUCATION GOODS INDUSTRIES

APPENDIX A

High-education Goods-Producing Industries

Timber and Forest Nursery (1131 and 1132)

Oil and Gas Extraction (211)

Basic Chemical, Pharmaceutical, and Other Chemical Manufacturing (3251, 3254, and 3259)

Computer and Electronic Product Manufacturing (334)

Aerospace Product and Parts Manufacturing (3364)

Medical Equipment and Supplies Manufacturing (3391)

High-education goods industries

Commercial Equipment, Druggists, Apparel, Chemical, and Electronic Markets, Agents and Brokers Wholesale Trade (4234, 4242, 4243, 4246, and 425)

Pharmacies and Drug Stores, Electronic Shopping and Auctions Retail Trade (44611, 454111, and 454112)

Air Transportation (481)

All of Information Services (51) except for Motion Picture and Video Exhibition (51213) and Wired Telecommunication Carriers (5171)

All of Finance and Insurance (52) except Savings Institutions and Credit Unions (52212 and 52213)

Real Estate and Lessors of Non-Financial Intangible Assets (531 and 533)

All of Professional and Technical Services (54)

All of Management of Companies and Enterprises (55)

Office Administrative Services and Travel Arrangement (5611 and 5615)

All of Education Services (61)

All of Ambulatory Health Care Services (621) except for Home Health Care Services (6216)

Hospitals (622)

Individual and Family Social Services and Emergency Relief Services (6241 and 6242)

Performing Arts and Spectator Sports and Museums, Zoos, and Parks (711 and 712)

All of Membership Organizations (813) and Associations except Labor Unions (81393)

All of Public Administration (92) except Tribal Governments (92115), Other general government support (92119), and Police Protection, Correctional Institutions, Parole Offices, Fire Protection, and Other Justice and Safety (92212, 92214, 92215, 92216, and 92219)

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