MICHIGAN'S TRANSITION TO A KNOWLEDGE-BASED ECONOMY:
SECOND ANNUAL PROGRESS REPORT

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This is Michigan Future's second annual report on Michigan's transition to a knowledge-based economy. How well Michigan does in this transition will, in large part, determine whether we get more prosperous or poorer. As we detailed in our New Agenda for a New Michigan report, making this transition is now the most reliable path to prosperity.

(The New Agenda report and the related A New Path to Prosperity? report are available at michiganfuture.org.)

This report covers the period from 2001-2007. It provides a complete picture of the entire national economic expansion, from the trough in 2001 through the peak in 2007. Obviously the economy has changed a great deal since 2007, from expansion to likely the most severe downturn since the Great Depression. When the next expansion begins two of the most important drivers in this expansion almost certainly will not be repeated: the housing bubble and highly leveraged financial services.

That, of course, raises the question "how relevant is the experience from 2001-2007 to the nation and Michigan of today and tomorrow?" Michigan Future will track the answer in detail in future annual reports. But to get a sense of where the economy is going in this downturn we looked at national data from the Bureau of Labor Statistics monthly employment report.

What we found is stunning. The trends that we have written about in our previous reports have accelerated in the downturn. As depicted in Figure 1, between when the recession began in December 2007 through January 2009, low education attainment industries (primarily manufacturing, construction, retail and hospitality) have suffered job losses of 3,735,000, while the high education attainment industries have added 163,000 jobs. (High education attainment industries didn't peak until August 2008 and have since lost 247,000 jobs.)

Figure 1: Employment in the United States, January 2007 to January 2009, High Education and Low Education Attainment Industries
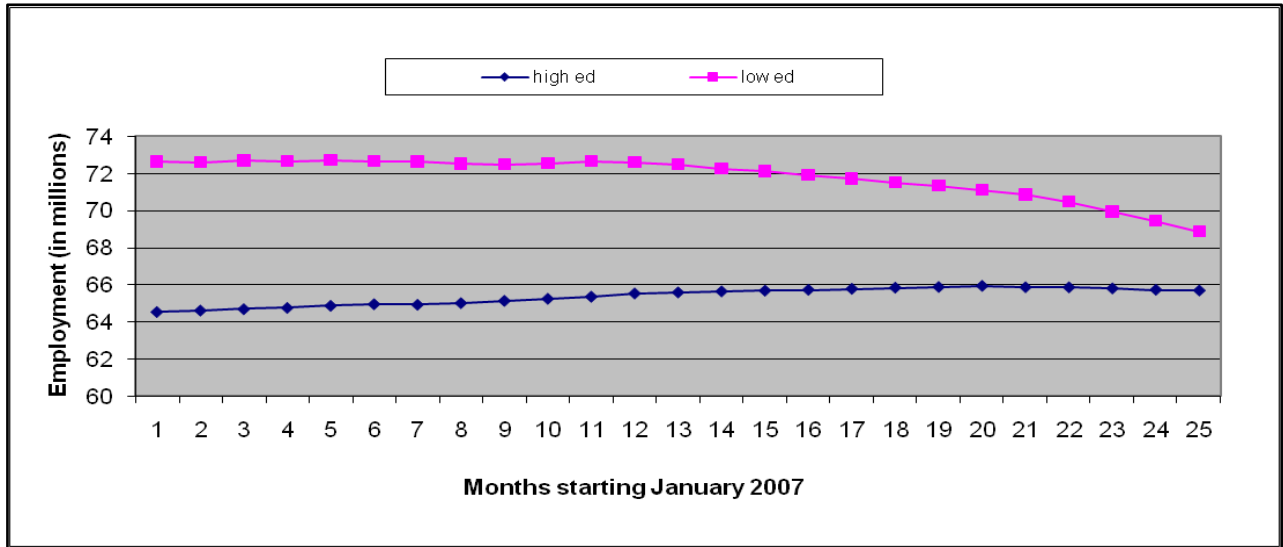
Using the same data base, we looked at the long term trend. From January 1990 (also a recession year) to January 2009 low education attainment industries employment rose 15.7 percent compared to 32.4 percent in the high education attainment industries. So for two decades – whether the nation's economy is expanding or contracting – the American economy has been going through a profound structural transformation from an industrial to a knowledge-based economy. We are confident that when the current severe downturn ends knowledge-based industries will continue to be where job growth is the strongest and average wages are the highest.

What made Michigan prosperous in the past is no longer a path to prosperity. **The knowledge-based economy is now the path to prosperity for Michigan.**

There are some hard truths that Michiganians needs to confront:

- Michigan's prosperity last century was built primarily on good-paying, low skill jobs. Those jobs are gone forever.

- The auto industry will never again be the major engine of prosperity in Michigan. If – and it's a big if – the domestic auto industry survives the current downtown, it will be substantially smaller, employ far fewer and will pay its workers less with fewer benefits.
- The decline in autos is part of an irreversible new reality that manufacturing (work done in factories) is no longer a sustainable source of high paid jobs. Nor is it a

source of future job growth. Manufacturing makes up about 10 percent of the American workforce today and is declining. Its average wage nationally is about $35,000. Michigan factory work in the future will pay around the national average. So whether it's traditional Michigan industries like autos and furniture or new industries like alternative energy, factory jobs will not be a source of new high paid jobs for Michiganians.

- The other industries that are widely believed to be drivers of the Michigan economy – farming and tourism – are also not a source of lots of good-paying jobs. Less than two percent of Michiganians work on a farm and on average is not high paying. And tourism, although a likely source of job growth, is a very low wage industry.

To be clear, we are not advocating that Michigan abandon these industries. They are and will be important parts of the Michigan economy, especially in rural communities, and as such deserve support. But, they are not a path to high prosperity or a broad middle class. If the Michigan economy of the future is built on a base of factory, 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 get poorer compared to the nation. As the data in this report makes clear the new path to prosperity is the broad knowledge-based economy.

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 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.

Our New Agenda framework

The development of our new agenda started with the question "where do we want to go from here?" Our answer: a high prosperity Michigan. A place with a per capita income consistently above the national average in both national economic expansions and contractions.

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. There are many areas across the country with low unemployment, but low incomes. That isn't success to us.

Table 1 compares Alabama and Minnesota, two states with virtually identical unemployment rates. If unemployment is your goal, they are equally successful. But, if your goal is income, the choice is clear. You want to be like Minnesota.

Table 1: Alabama – Minnesota comparison

	per capita Income, 2007	unemployment (1/2009)	poverty rate (2007)	four year degrees (2007)
US	$38,564	7.6%	13.0%	27.46%
Alabama	$32,401	7.8%	16.6%	21.39%
Minnesota	$40,969	7.6%	9.5%	30.95%
Michigan	$34,342	11.6%	13.9%	24.72%

Michigan enjoyed high per capita income for most of the last century. As recent as 2000 we were 16th in per capita income. Now we are consistently below the national average in both upturns and downturns. In 2007 we were 11 percent below the national average. This is the lowest Michigan has been since the federal government started collecting data in 1929.

We use per capita income as our metric of economic well being because it is the most comprehensive and reliable estimate of income of a community's residents. It includes all wage, dividend, self-employment and interest income as well as transfer payments. It also includes employer and government payments for health care and retirement. It does not include capital gains.

We then asked "what characterizes those areas across the country with high prosperity?" We found that almost all states with the highest per capita income:

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

Our basic conclusion: What most distinguishes successful areas from Michigan is 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. States and regions 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.

Rich Karlgaard, publisher of Forbes magazine, summed it up best:

Best place to make a future Forbes 400 fortune? Start with this proposition: The most valuable natural resource in the 21st century is brains. Smart people tend to be mobile. Watch where they go! Because where they go, robust economic activity will follow.

In this report we want to (1) see if this pattern continues to hold true across the country and (2) measure how well Michigan and its largest metropolitan areas are doing in each of these areas.

We collected data for states and the 54 metropolitan areas with population of one million or more plus Lansing and Madison, Wisconsin. We think it's important to understand the characteristics of those places with high prosperity before we explore the performance of Michigan and its largest region.

The knowledge-based economy

Before we explore the data, we should define what we mean by knowledge-based industries. We define the knowledge-based part of the economy as those industries where the proportion of employees with a bachelors degree or more is at least 30 percent (110 percent of the national average of adults with a bachelors degree or more).

For this report we apply this standard to NAICS industries at the six digit level. Where applicable we combine public and private sector workers into a single industry. This is what we mean by high education attainment industries and knowledge-based industries. We use the terms interchangeably. (The procedure we use in determining high education industries is detailed in the end notes.)

It is important to note that workers in management as well as pre- and post-production occupations in such important Michigan industries as motor vehicles, office furniture and chemicals are no longer considered part of the manufacturing industry. They are now accounted for in the knowledge-based industries, primarily in management of companies and professional and technical services.

The high education attainment industries are listed at the end of this report. As you can see in figure 2 national employment in the high education 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, five broad sectors of the economy: information; finance and insurance; professional and technical services (including management of companies); health care and education. In fact, health care and education, which dominated job growth during the 2001-2007 expansion, account for nearly 40% of the employment in high education attainment industries.

Across the country, states and regions are focusing their economic development efforts on a few technology-based industries based on the belief that these are the drivers of future growth. Primarily information technology, the life sciences, alternative energy and/or green technology.

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Figure 2: 2007 US Employment in High Education Attainment Industries
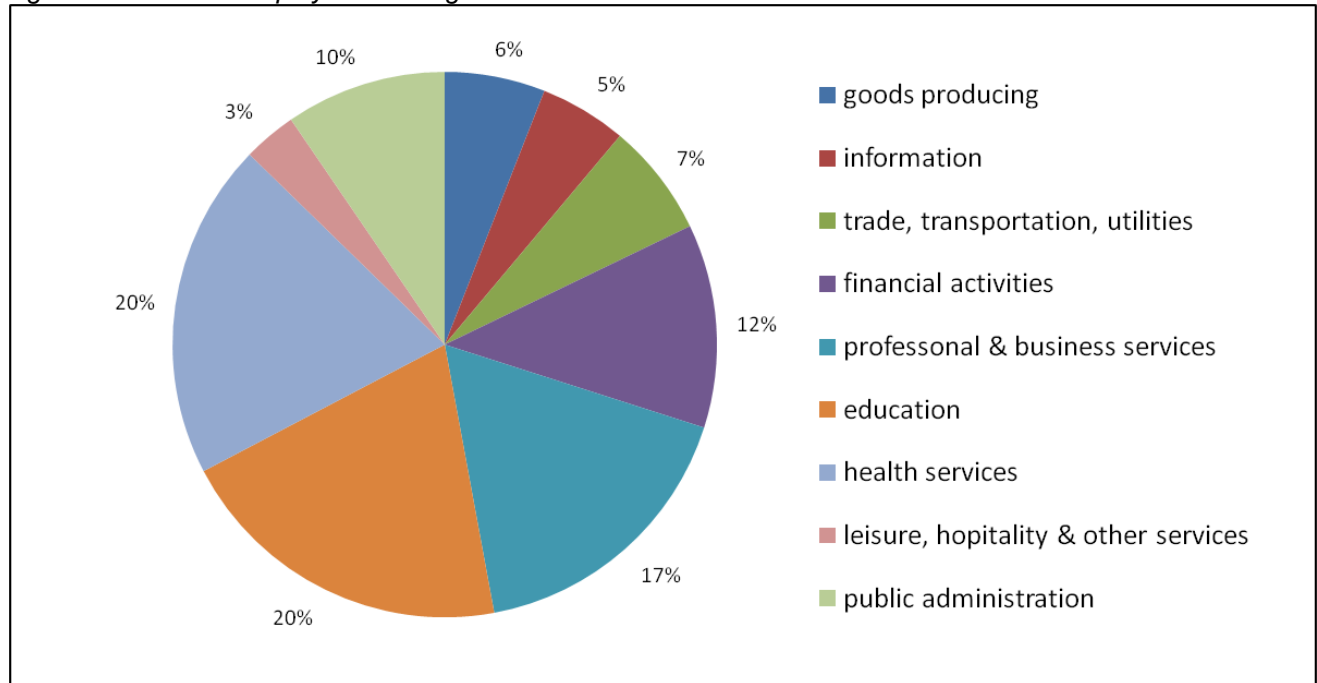
The data lead us to believe that this narrow focus on new technologies is unlikely to be the best economic growth strategy. That's because it is the broad knowledge-based economy where most of the good-paying job growth is occurring in the American economy. The high education attainment industries we have identified in 2007 were 44 percent of national employment and 58 percent of the wages earned by American workers. The average wage in these industries is nearly $59,000 as compared to just above $33,000 in all other industries.

Maybe most importantly, the high education attainment industries had job growth in America from 2001-2007 almost twice the low education attainment industries: 6.19 percent as compared to 3.14 percent. The high education attainment industries accounted for 60 percent of the new jobs during the expansion.

What we found: state data

In Table 2 we present data for Michigan and the top ten states in 2007 for per capita income. Table 3 has the same data for the six Great Lakes states. (Appendix A has all the data we collected for states. The end notes list the sources for our data.)

Table 2: Performance of Ten States with the Highest Per Capita Income in 2007, and Michigan

state	pcpi 07	%ch pcpi 01 to 07	% wages hied ind 07	%bach+ 07	%hh under $25k 07	%hh $75k plus 07
United States	$38,564	26.13%	58.00%	27.46%	23.96%	31.84%
Connecticut	$54,984	27.98%	64.01%	34.66%	17.54%	44.10%
New Jersey	$49,238	25.64%	63.45%	33.86%	17.53%	45.17%
Massachusetts	$49,142	26.41%	66.42%	37.90%	20.52%	42.01%
Wyoming	$47,038	54.90%	44.78%	23.35%	21.72%	31.95%
New York	$46,664	30.93%	69.98%	31.71%	24.15%	35.37%
Maryland	$46,646	30.82%	64.26%	35.25%	16.02%	45.40%
California	$41,580	26.45%	61.00%	29.50%	20.10%	39.56%
Virginia	$41,561	27.84%	62.98%	33.56%	19.20%	38.95%
New Hampshire	$41,444	22.25%	59.32%	32.51%	16.44%	40.51%
Washington	$41,062	27.12%	57.98%	30.27%	20.25%	35.28%
Michigan	**$34,342**	**14.73%**	**51.29%**	**24.72%**	**25.24%**	**29.01%**

Table 2 clearly shows, with one exception, that high prosperity states continue to be characterized by high concentrations in knowledge-based industries as well as the proportion of adults with four-year degrees or more. The exception is Wyoming, whose path to prosperity is based predominantly on high energy prices.

Eight of the nine are above the national average in share of wages from high education attainment industries and all are above the national average in the proportion of adults with bachelors degrees or more. For both metrics, seven of the nine are in the top ten states. (Washington is 11th and California 13th in adults with a four-year degree. New Hampshire is 11th and Washington 16th in knowledge-based industries concentration.)

Michigan, on the other hand, lags the national average in all the metrics, substantially behind the nine high prosperity high knowledge-based states.

Although seven grew faster than the nation, it is interesting to note that the nine high prosperity/high knowledge-based states are not at the top in terms of per capita income

growth from 2001-2007. Growth rates are a traditional way to measure success. Most assume that they are predictive of future results. It will be interesting to watch as we go forward whether the 2001-2007 per capita growth rates are reflective of a long-term trend away from the patterns we have identified.

Our best guess is that the proportion of adults with a bachelors degree or more is a far better predictor of future prosperity. In a flattening world, human capital will continue to grow in value. Per capita income growth rates, on the other hand, even over a period as long as six years, are likely to be more reflective of cyclical events than long-term structural trends.

A good example of how current growth rates may not be a reliable indicator of future prosperity can be seen in the performance of the Silicon Valley economy over the last few years. In last year's report, the San Jose/San Francisco metropolitan area ranked next to last in per capita income growth. We wrote in that report that we would bet a lot that the region's economy is going to do well in the future. Two years later, the San Jose/San Francisco metropolitan area now has a per capita income growth rate above the national average.

We include data on share of households with income below $25,000 and share of households with income $75,000 and more. We do this to measure whether a knowledge-based economy is generating a broad middle class.

There is widespread concern that the decline of good-paying manufacturing jobs will mean the days of a mass middle class in America are coming to an end. There are many who believe that those who own and/or lead enterprises, the most talented athletes and entertainers and those with advanced degrees will be the winners, while the rest of us see a declining standard of living.

We wrote in our New Agenda report that far more likely is a change in the nature of good-paying jobs, not their decline. That middle class employment in the future will come primarily in the high education attainment industries. This is consistent with America's past. As the American economy has evolved, the nature of good-paying work has changed. But the pattern is that as we get more productive, our per capita income goes up.

Nearly 32 percent of American households in 2007 have incomes of $75,000 and more. (Median household income is around $50,000.) Each of the nine states with both high per capita income and high concentrations in knowledge-based industries are in the top twelve in

the nation in proportion of households with income of $75,000 or more. And all but New York have a smaller proportion than the nation of households with incomes $25,000 or less. So in the states where the knowledge-based economy is strongest, there are proportionately more higher income and fewer lower income households than the nation.

Table 3: Performance of Great Lakes States

state	pcpi 07	%ch pcpi 01 to 07	% wages hied ind 07	%bach+ 07	%hh under $25k 07	%hh $75k plus 07
United States	$38,564	26.13%	58.00%	27.46%	23.96%	31.84%
Minnesota	$40,969	25.60%	60.24%	30.95%	19.84%	34.80%
Illinois	$40,919	25.76%	57.70%	29.47%	22.23%	34.54%
Wisconsin	$36,241	23.37%	48.94%	25.40%	22.58%	29.40%
Ohio	$34,509	20.74%	51.51%	24.06%	25.99%	27.14%
Michigan	**$34,342**	**14.73%**	**51.29%**	**24.72%**	**25.24%**	**29.01%**
Indiana	$33,152	20.96%	45.63%	22.07%	24.02%	26.73%

As displayed in Table 3, the same patterns hold true for the Great Lakes states. The two states above the national average in per capita income – Minnesota (12th) and Illinois (13th) – are also the only two Great Lakes states above the national average in share of wages from high education attainment industries and proportion of adults with a bachelors degree or more.

Minnesota and Illinois also have the highest proportion of households with incomes $75,000 and more and the lowest proportion of households with incomes under $25,000 of the Great Lakes states.

All six states were below the national average in per capita income growth, in part due to the region's historic high concentration in good-paying manufacturing jobs which have suffered huge declines this decade.

What we found: regional data

Economies are regional. States and municipalities are political jurisdictions, they are not economic units. State economies can best be understood as the sum of their regional economies.

This is illustrated when you look at the wide variation in economic success of metropolitan areas within the same state (some that actually spill over into surrounding states). As an example, of the regions with population of one million or more, San Jose has the highest per capita income ($57,675). In the same state Fresno ($27,719) is last. Almost all states are characterized by regions that are doing well economically and those that aren't. Regions within states also tend to have widely different sector concentrations which is a major driver of economic well being.

Appendix B has all the data we collected for the 54 metropolitan areas with populations of one million or more as well as Lansing, Madison and Michigan's smaller metropolitan areas. We focus on metropolitan areas of one million or more because this is where the knowledge-based economy and adults with a bachelors degree or more are concentrating.

Table 4: Performance of Metro Areas by Size Category (Note that a few relatively small metro areas where some of the data were missing were left of the table)

CSAs and nonCSA MSAs	Number metros	Category Population, 2007	Per Capita Income, 2007	PCI change 2001 to 2007	share wages in high ed attainment ind, 2007	share pop 25 or older, bachelors or more, 2007	share hh under $25,000, 2007	share hh $75,000 or more, 2007
United States		301,621,159	$38,564	26.13%	58.00%	27.46%	23.96%	31.84%
3.5 million or more	15	119,258,090	$44,583	25.56%	61.77%	32.44%	19.76%	39.09%
1.6 million to 3.5 million	21	46,876,282	$38,375	24.56%	56.65%	29.00%	21.81%	32.40%
1.0 million to 1.6 million	18	22,282,544	$36,505	26.49%	53.48%	26.15%	24.96%	29.31%
500,000 to 1.0 million	43	28,791,296	$34,471	26.52%	52.22%	24.83%	25.11%	28.16%
200,000 to 500,000	85	26,797,377	$33,282	27.19%	49.58%	23.88%	27.04%	26.49%
under 200,000	109	15,304,843	$31,399	26.53%	49.07%	22.89%	28.32%	24.18%

Simply put, big metros are winning! Many futurists expected the opposite. In a flat world where more and more work can be done anyplace, many predicted an economic resurgence in smaller metropolitan areas and even rural areas. The pattern as shown in Table 4 is the opposite: big metropolitan areas are where knowledge-based industries and college educated adults are concentrating.

The larger the metropolitan area, the better the performance on all of our metrics except per capita income growth. Most surprising to us is that the largest metropolitan areas not only have the highest proportion of households with incomes of $75,000 or more, but also the smallest proportion of households with incomes under $25,000.

Table 5 presents data on the top ten metropolitan areas with populations of one million or more in 2007 per capita income as well as metro Chicago and Pittsburgh, the nine county Detroit region and the seven county Grand Rapids region.

Chicago, along with Minneapolis, are the most prosperous regions among the Great Lakes states. We have added Pittsburgh as a comparison. Many find it a possible model because it is both a cold weather region as well as having gone through a restructuring (with the collapse of the steel industry) similar to what we are going through with the auto industry. Chicago ranks 13th, Pittsburgh 17th.

The data show the same patterns as for states. The high prosperity metropolitan areas are characterized by high concentrations in knowledge-based industries as well as the proportion of adults with four-year degrees or more. In last year's report (2005 data) all of the top ten were above – many substantially – the national average in both metrics. In this report two regions have entered the top 10 that don't conform to the patterns. One, Houston, can be explained. Its an economy that does well when energy prices are high. The other, New Orleans, is a mystery to us. It was last in 2005 and now its ninth. The big swings are probably primarily Katrina related.

The regions ranked 11-15 (San Diego, Philadelphia, Chicago, Miami and Dallas) all are above the national average in both metrics. So of the top 15 regions, 14 are above the national average in the proportion of adults with a four-year degree and 13 in share of wages from high education attainment industries. Thirteen of the 15 (not New Orleans and Miami) have a larger proportion of households with incomes $75,000 or more and a smaller proportion of households with incomes of $25,000 than the national average.

Table 5: Performance of Ten Highest Income Metro Areas in the US (population of at least 1 million), Chicago, Pittsburgh, Detroit and Grand Rapids

Area	pcpi 07	%ch pcpi 01 to 07	% wages hied ind 07	%bach+ 07	%hh under $25k 07	%hh $75k plus 07
United States	$38,564	26.13%	58.00%	27.46%	23.96%	31.84%
San Jose-San Francisco-Oakland, CA (CSA)	$57,675	26.27%	69.05%	40.79%	16.24%	49.47%
New York-Newark-Bridgeport, NY-NJ-CT-PA (CSA)	$53,457	30.72%	70.58%	35.00%	20.79%	42.25%
Washington-Baltimore-Northern Virginia, DC-MD-VA-WV (CSA)	$50,638	28.37%	72.19%	41.95%	13.93%	50.50%
Boston-Worcester-Manchester, MA-RI-NH (CSA)	$48,288	26.17%	66.03%	37.01%	19.74%	42.80%
Seattle-Tacoma-Olympia, WA (CSA)	$46,596	28.27%	61.50%	34.69%	17.10%	40.79%
Hartford-West Hartford-Willimantic, CT (CSA)	$46,423	24.89%	63.82%	33.22%	18.41%	42.00%
Houston-Baytown-Huntsville, TX (CSA)	$45,826	30.66%	54.82%	27.52%	22.50%	34.91%
Denver-Aurora-Boulder, CO (CSA)	$45,421	17.99%	64.38%	37.30%	19.61%	37.87%
New Orleans-Metairie-Bogalusa, LA (CSA)	$45,364	62.64%	50.85%	25.02%	26.54%	29.82%
Minneapolis-St. Paul-St. Cloud, MN-WI (CSA)	$45,061	24.16%	62.46%	35.52%	16.48%	40.83%
Chicago-Naperville-Michigan City, IL-IN-WI (CSA)	$43,386	24.24%	58.86%	31.95%	20.05%	38.40%
Pittsburgh-New Castle, PA (CSA)	$40,539	29.80%	59.71%	27.33%	27.68%	26.84%
Detroit-Warren-Flint, MI (CSA)	**$38,549**	**14.53%**	**54.73%**	**26.94%**	**23.34%**	**33.49%**
Grand Rapids-Muskegon-Holland, MI (CSA)	**$32,613**	**17.47%**	**42.64%**	**24.61%**	**22.60%**	**27.14%**

The pattern that we found in our previous reports, that high prosperity states have big metropolitan areas with even higher per capita income, holds true. Except for Wyoming, each of the top ten states includes at least one of the top ten metropolitan areas.

So metropolitan Detroit and metropolitan Grand Rapids and, to a far lesser degree, metropolitan Lansing are the main drivers of a prosperous Michigan. In fact, it is hard to imagine a high prosperity Michigan without an even higher prosperity metropolitan Detroit.

In Table 6 we present the same data for the four county Lansing region and metropolitan Madison. We do so because mid-sized metropolitan areas with major universities (and in many cases state capitals) also are places where the knowledge-based economy is growing.

Table 6: Performance of Lansing and Madison Metro Areas

Area	pcpi 07	%ch pcpi 01 to 07	% wages hied ind 07	%bach+ 07	%hh under $25k 07	%hh $75k plus 07
United States	$38,564	26.13%	58.00%	27.46%	23.96%	31.84%
Lansing-East Lansing-Owosso, MI (CSA)	**$32,058**	**19.21%**	**60.13%**	**28.18%**	**26.19%**	**28.41%**
Madison-Baraboo, WI (CSA)	$40,974	23.98%	60.81%	38.47%	17.13%	35.66%

Clearly the Lansing region is lagging. Metropolitan Madison follows the same pattern as the other high prosperity states and regions. In many ways its performance is extraordinary. Its per capita income is exceeded by only 15 of the 54 metropolitan areas with populations of one million or more.

As we see in Tables 5 and 6, Michigan's three largest regions clearly trail the most successful metropolitan areas across the country. Building a strong knowledge-based economy in metropolitan Detroit, Grand Rapids and Lansing is the central challenge we must meet if we are to create a high prosperity Michigan.

For the first time, presented in Table 7, we have collected data on Michigan's smaller metropolitan areas. (More detailed data for each is contained in Appendix B.) Metro Kalamazoo is doing better than the rest, but is still below the national average on all the metrics, except college attainment. The others, like most smaller regions across the country, are struggling. Each low in per capita income, per capita income growth, college education attainment and share of wages from knowledge-based industries.

Table 7: Performance of Michigan's smaller metro areas

Area	pcpi 07	%ch pcpi 01 to 07	% wages hied ind 07	%bach+ 07	%hh under $25k 07	%hh $75k plus 07
United States	$38,564	26.13%	58.00%	27.46%	23.96%	31.84%
Kalamazoo-Portage, MI (MSA)	$33,239	23.15%	53.32%	30.63%	28.35%	26.83%
Niles-Benton Harbor, MI (MSA)	$32,626	22.11%	37.62%	23.46%	31.81%	24.66%
Battle Creek, MI (MSA)	$31,013	22.31%	40.70%	19.05%	30.08%	22.42%
Saginaw-Bay City-Saginaw Township North, MI (CSA)	$29,626	15.04%	46.30%	17.77%	27.65%	24.37%
Jackson, MI (MSA)	$28,996	16.58%	44.24%	17.22%	29.10%	21.99%

What we found: Michigan

Obviously the Michigan economy has been dreadful this decade. An unprecedented eight consecutive years of job losses. At the bottom of the national rankings in both employment and per capita income.

During the national expansion many referred to it as a single state recession. We believe that Michigan's experience during the 2001-2007 expansion is far better characterized as a single industry recession. Or more accurately, a single portion of an industry recession. Despite all our efforts for decades to diversify, the domestic auto industry is still the engine that drives the Michigan economy.

For the foreseeable future Michigan's economy will continue to lag the nation. With the very existence of the domestic auto industry in doubt, we are, at best, in for a few more years of decline.

What we are working on at Michigan Future is what comes next. Our work is designed to identify what a high prosperity Michigan economy looks like when the domestic auto industry is no longer the preeminent engine of economic success. Our goal: Michigan on a path that will better position its citizens to succeed in a flattening world economy.

The national data we have just reviewed makes clear that 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 bachelors degree or more.

In 2000, at the end of the boom years, Michigan still ranked 16th in per capita income. We were 34th in bachelors 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 2007 Michigan ranked 33rd in per capita income, an unprecedented drop of 17 places in a relatively short seven year period.

In Table 8 we present an overview of the data we previously presented for Michigan and its two largest regions. All rank low in share of wages from high education attainment industries and the proportion of adults with a bachelors degree or more.

Metropolitan Detroit is declining rapidly. Its per capita income was 15th in 2005, now 25th. Metropolitan Grand Rapids – which many believe is Michigan's most successful region – is declining from very low levels. It was 49th in 2005, now 51st. It's in the bottom five in all metrics except education attainment. As we saw in Table 6, the story is basically the same for the Lansing region which trails substantially metropolitan Madison on most of our metrics.

Table 8: Ranking, of Michigan, Detroit and Grand Rapids among their peers (1 is highest, 50 or 54 is lowest)

Area	Per Capita Income, 2007	%change PCI 2001-07	share wages high ed ind 2007	share pop 25+ with bach+, 2007
Michigan	33	50	36	34
Detroit-Warren-Flint, MI (CSA)	25	53	37	36
Grand Rapids-Muskegon-Holland, MI (CSA)	51	50	53	44

In last year's report we wrote that our best guess was that unless we substantially increased the proportion of college educated adults in Michigan – particularly in our biggest metropolitan areas – the state would continue to trend downwards in the per capita income rankings towards the mid 30s. That prediction came true in one year. Unfortunately, with the continuing decline of the domestic auto industry, its almost a certainty that Michigan, in the next few years, fall to the bottom ten in the nation. This is a stunning collapse of what historically was one of the most prosperous states in the nation.

Our basic belief: over the long-term Michigan's and its regions' per capita income will be consistent with their rankings in the proportion of adults with a four-year degree or more.

In addition to the data on per capita income, we have collected data on employment – the traditional measurement for economic growth. In Table 9 we present employment growth from 2001-2007 for the US, Michigan and its three largest metropolitan areas.

We have divided the economy between the high education attainment industries and other industries. The data clearly shows the preeminence of the high education attainment industries in employment growth. Michigan lagged the nation substantially.

Table 9: Employment Change by Educational Attainment, U.S., Michigan, and Michigan Metro Areas

Industry Group	United States	Michigan	Detroit CSA	Grand Rapids CSA	Lansing CSA
Employment Change, 2001-2007					
All Industries	5,730,441	-297,553	-203,863	-12,044	-10,950
(percent)	4.42%	-6.65%	-8.32%	-2.02%	-4.65%
High Education Attainment Industries	3,454,636	-18,655	-11,553	9,594	161
(percent)	6.19%	-1.06%	-1.13%	4.89%	0.14%
Low Education Attainment Industries	2,313,572	-288,664	-192,074	-22,199	-11,118
(percent)	3.14%	-10.68%	-13.46%	-5.55%	-9.00%

Last in both overall employment growth and employment growth in high education attainment industries. Michigan and its three largest metropolitan areas all suffered heavy job loss in the low education attainment industries. This includes the severe loss of manufacturing jobs – particularly in the domestic automotive industry.

Beneath the headlines of continuous job loss, it is important to note that the national pattern of better performance in the high education attainment industries holds true for Michigan as well. Employment in the low education attainment industries fell off a cliff: down an astonishing 10.7 percent in a national expansion. In the high education attainment industries the loss was 1.1 percent. That there is a loss of jobs in the knowledge-based industries we believe is primarily due to the decline in employment in the knowledge-based portions of the domestic auto industry.

All three of Michigan's largest metropolitan areas saw job losses during the national expansion. Of the three, metro Grand Rapids fared best. The smallest – but still substantial – loss in the low education attainment industries combined with solid employment growth in the high education attainment industries. Metro Lansing basically held constant in the high education industries and saw big declines in the low education attainment industries. Metro Detroit – the epicenter of the domestic auto industry – lagged on all metrics.

In Table 10 we look at average wage data by industry category. The pattern: good-paying work is concentrating in the high education attainment industries nationally and in Michigan. Nationally the knowledge-based industries wages are more than $25,000 above the low education attainment industries.

Table 10: Average Wage by Industry Educational Attainment, U.S., Michigan, and selected Michigan metro areas, 2007

Industry Group	United States	Michigan	Detroit CSA	Grand Rapids CSA	Lansing CSA
All Industries	$44,457	$43,357	$48,299	$38,191	$40,006
High Education Attainment Industries	$58,915	$53,377	$58,704	$46,212	$48,210
Low Education Attainment Industries	$33,173	$36,159	$39,773	$33,716	$31,823

Michigan's low education attainment industries – which include manufacturing – have wages nearly 10 percent above the national average. We believe this is unsustainable. The good-paying, low skill jobs which have been the backbone of middle class Michigan will almost surely continue to decline.

By comparison in the high education attainment industries, Michigan's wages are 9 percent below the national average. And, is even lower than that in metro Grand Rapids and Lansing. Our best guess is that the higher average wages in the high education attainment industries in metro Detroit is concentrated in the knowledge-based parts of the auto industry. Also, we think, it is likely that metro Detroit wages in the other high education attainment industries are below that of most big metropolitan areas.

Higher wages have been a competitive disadvantage for Michigan in retaining manufacturing jobs. Lower wages in the knowledge-based sectors of the economy – where most of the job growth and good-paying jobs are – could be a competitive edge for Michigan.

What we found: retaining and attracting talent

We quoted Rick Karlgaard earlier. His central insight is that where smart people choose to live and work, robust economic activity will follow. This means that retaining and attracting talent becomes the key to building a high prosperity economy. In this final section we will look at metrics on where talent is concentrating.

As we saw in Table 4, talent is concentrated in the nation's largest metropolitan areas. In our previous work, we found that high prosperity metropolitan areas have their largest city with a high proportion of its residents with a bachelors degree or more. In Table 11 we present data on college attainment for the top 10 regions, the three high prosperity Great Lakes regions, Pittsburgh and Michigan's three largest regions and the largest city in each region.

Table 11: Educational Attainment in Selected Metro Areas and their Primary Central City

Area Name	Per Capita Income, 2007	Metro Area Bach +, 2007	Central City Bach +, 2007
San Jose-San Francisco-Oakland, CA (CSA)	$57,675	40.79%	34.72%
New York-Newark-Bridgeport, NY-NJ-CT-PA (CSA)	$53,457	35.00%	32.87%
Washington-Baltimore-Northern Virginia, DC-MD-VA-WV (CSA)	$50,638	41.95%	47.48%
Boston-Worcester-Manchester, MA-RI-NH (CSA)	$48,288	37.01%	40.34%
Seattle-Tacoma-Olympia, WA (CSA)	$46,596	34.69%	53.48%
Hartford-West Hartford-Willimantic, CT (CSA)	$46,423	33.22%	12.95%
Houston-Baytown-Huntsville, TX (CSA)	$45,826	27.52%	27.56%
Denver-Aurora-Boulder, CO (CSA)	$45,421	37.30%	38.69%
New Orleans-Metairie-Bogalusa, LA (CSA)	$45,364	25.02%	28.97%
Minneapolis-St. Paul-St. Cloud, MN-WI (CSA)	$45,061	35.52%	42.02%
Chicago-Naperville-Michigan City, IL-IN-WI (CSA)	$43,386	31.95%	29.58%
Pittsburgh-New Castle, PA (CSA)	$40,539	27.33%	32.00%
Madison-Baraboo, WI (CSA)	$40,974	38.47%	50.40%
Detroit-Warren-Flint, MI (CSA)	**$38,549**	**26.94%**	**11.82%**
Grand Rapids-Muskegon-Holland, MI (CSA)	**$32,613**	**24.61%**	**26.25%**
Lansing-East Lansing-Owosso, MI (CSA)	**$32,058**	**28.18%**	**24.32%**

Except for Hartford the pattern of high education attainment in the largest city of high prosperity regions holds true. Detroit's low concentration is particularly worrisome. Quite simply, vibrant central cities matter!

Most college educated households, like the rest of America, live in the suburbs. But a larger proportion of college educated households – mainly those without children – are choosing

to live in central city neighborhoods. This is particularly true for the most mobile segment of the population – young college graduates without children. What is different over the past decade or so is that suburban growth in high prosperity metropolitan areas is now accompanied by growth in their central cities. The evidence is that the most successful regions across the country are those where both the suburbs and central cities are prospering.

We conclude with a look at data on people moving from state to state and to the US from another country. With the advent of the Census Bureau's American Community Survey, annual data is now available on people who moved from one state to another or from another country. For the first time, in 2007 the data provides information both for those moving in and out. (So the data in Table 12 are the total of those moving in from another state or a foreign country minus those moving out to another state.)

There are some limitations in the data. It accounts for all adults 25 and older – whether they are working or not. And there isn't data on young movers – a particular emphasis for many because they are so mobile. Also for metropolitan areas that are in more than one state, the data counts as movers those who move across state lines, but still in the same metropolitan area. Which exaggerates the movers in those regions compared to other regions which are exclusively in one state.

Michigan from 2006-2007 was next to last in net movers (only New York State lost more) and last in net college educated movers. In total we had a net out migration of more than 15,000 adults, roughly 5,500 with a four-year degree or more.

From 2006 to 2007 there were roughly two million individuals with a bachelors degree or more who moved from one state to another or from another country. Of those, 69.3 percent moved to a metropolitan area with populations of one million or more. These big metros account for 62.5 percent of the national population and 57.4 percent of movers without a four-year degree. More evidence of the trend of talent increasingly concentrating in big metros.

Table 12: Net movers into Ten Metro Areas with the Highest Per Capita Income (population of 1 million or more), Chicago, Pittsburgh, Madison,Detroit and Grand Rapids

Area Name	Net Movers (all), 2006 to 2007	Net Movers (bachelors +) 2006 to 2007
San Jose-San Francisco-Oakland, CA (CSA)	36,219	20,204
New York-Newark-Bridgeport, NY-NJ-CT-PA (CSA)	-28,401	10,170
Washington-Baltimore-Northern Virginia, DC-MD-VA-WV (CSA)	21,614	23,361
Boston-Worcester-Manchester, MA-RI-NH (CSA)	11,238	11,828
Seattle-Tacoma-Olympia, WA (CSA)	41,801	22,725
Hartford-West Hartford-Willimantic, CT (CSA)	1,587	683
Houston-Baytown-Huntsville, TX (CSA)	55,217	21,232
Denver-Aurora-Boulder, CO (CSA)	9,143	4,690
New Orleans-Metairie-Bogalusa, LA (CSA)	8,688	-554
Minneapolis-St. Paul-St. Cloud, MN-WI (CSA)	6,206	3,616
Chicago-Naperville-Michigan City, IL-IN-WI (CSA)	9,519	11,656
Pittsburgh-New Castle, PA (CSA)	900	2,294
Madison-Baraboo, WI (CSA)	-1,599	-923
Detroit-Warren-Flint, MI (CSA)	**-14,699**	**-6,320**
Grand Rapids-Muskegon-Holland, MI (CSA)	**2,848**	**657**
Lansing-East Lansing-Owosso, MI (CSA)	**664**	**244**

In Table 12 we look at the data on net movers for the ten big regions with the highest per capita income as well as metropolitan Chicago, Pittsburgh, Madison and Michigan's three largest regions. (Data on movers is part of Appendices A and B for states and the 61 regions we collected data for.)

What stands out is the difference between college educated and non college educated movers. First college educated adults are about 27 percent of the population, but are about 38 percent of the movers. Second they move to different places. Except for Hartford and New Orleans, the high prosperity metropolitan areas are places that are substantially adding to already large concentrations of college educated adults. And in most cases college educated movers account for more than half of their net in migration. In metro New York, Washington, Boston as well as Chicago and Pittsburgh – all of which did well in attracting college educated adults – there was a net out migration of non college educated adults.

A path to a high prosperity Michigan

To us the clear message from the data we have just reviewed is that the key to economic growth is talent. Quite simply, in a flattening world, economic development priority one is to prepare, retain and attract talent.

There are no quick fixes, the Michigan economy is going to continue to lag the nation for the foreseeable future. But there is a path back to high prosperity. As is laid out in our New Agenda report, we believe the framework for action is:

- Building a culture aligned with (rather than resisting) the realities of a flattening world. We need to far more highly value learning, an entrepreneurial spirit and being welcoming to all.

- Creating places where talent – particularly mobile young talent – wants to live. This means expanded public investments in quality of place with an emphasis on vibrant central city neighborhoods.

- Ensuring the long-term success of a vibrant and agile higher education system. This means increasing public investments in higher education. Our higher education institutions – particularly the major research institutions – are the most important assets we have to develop the concentration of talent needed in a knowledge-based economy.

- Transforming teaching and learning so that it is aligned with the realities of a flattening world. All of education needs reinvention. Most important is to substantially increase the proportion of students who leave high school academically ready for higher education.

- Developing new public and, most importantly, private sector leadership that has moved beyond both a desire to recreate the old economy as well as the old fights. Michigan needs a leadership that is clearly focused, at both the state and regional level, on preparing, retaining and attracting talent so that we can prosper in the global economy

High education attainment industries

1131	Timber tract operations
1132	Forest nursery and gathering forest products
211	Oil and gas extraction
2211	Power generation and supply
2212	Natural gas distribution
32411	Petroleum refineries
3251	Basic chemical manufacturing
3253	Agricultural chemical manufacturing
3254	Pharmaceutical and medicine manufacturing
3256	Soap, cleaning compound, and toiletry mfg.
3259	Other chemical product and preparation mfg.
334	Computer and electronic product manufacturing
3364	Aerospace product and parts manufacturing
3391	Medical equipment and supplies manufacturing
4234	Commercial equip. merchant wholesalers
4242	Druggists' goods merchant wholesalers
4246	Chemical merchant wholesalers
425	Electronic markets and agents and brokers
443112	Radio, TV, and other electronics stores
44312	Computer and software stores
44313	Camera and photographic supplies stores
44611	Pharmacies and drug stores
451211	Book stores
4541	Electronic shopping and mail-order houses
481	Air transportation
486	Pipeline transportation
51 except 51213	Information except motion picture and video exhibition
52 except 52212 & 52213	Finance & insurance except savings institutions & credit unions
531	Real estate
533	Lessors of nonfinancial intangible assets
54	Professional and technical services
55	Management of companies and enterprises
5611	Office administrative services
5612	Facilities support services
61	Educational services
621 except 6216	Ambulatory health care except home health care services
622	Hospitals
6241	Individual and family services
6242	Emergency and other relief services
711	Performing arts and spectator sports
712	Museums, historical sites, zoos, and parks
813 except 81393	Membership associations and organizations except labor unions
921 except 92115	Executive, legislative and general except tribal government
92211	Courts
92213	Legal counsel and prosecution
fed & state 92212	federal & state government police protection

fed & state 92215	federal & state government parole offices and probation offices
fed & state 92216	federal & state government fire protection
fed & state 92219	federal & state government other justice and safety activities
923	Administration of human resource programs
924	Administration of environmental programs
925	Community and housing program administration
926	Administration of economic programs
927	Space research and technology
928	National security and international affairs

End Notes

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The information on employment and wages by industry are from the U.S. Department of Labor, Bureau of Employment Statistics, Quarterly Census of Employment and Wages http://www.bls.gov/cew/home.htm, accessed in November 2008. When the employment and wage data was masked due to publication disclosure rules, estimates were generated using procedures developed at the Institute of Labor and Industrial Relations, University of Michigan.

The basic information on which industries were identified as high-education attainment industries was derived from the 2000 Census one percent micro data sample. The Census data allocated employed individuals among 230 industries using the 1997 NAICS industry definitions. However, our industry employment data, at the six digit NAICS level, was based upon the 2002 NAICS definitions for the 2001 to 2006 data, and for the 2007 data on the 2007 NAICS definitions. These differences in the industry codes introduced a complication into our allocation procedure, for example, the 2000 Census data did not include the industry category "wholesale trade, electronic markets and agents and brokers (NAICS 425)" consequently we had to arbitrarily allocate this industry, and choose to place it in the high education attainment category. Also, in certain cases we arbitrarily allocated part of an industry to low or high education attainment based upon our judgment of the activity of that detailed industry. For example, the census data set only included information on the NAICS industry 5121 (motion pictures and video industries), but using our judgment we categorized one of its sub-industries, NAICS industry 51213 (motion picture and video exhibition) as a low education attainment industry, while categorizing the other component industries of NAICS 5121 as high education attainment industries.

Information on Population, Educational Attainment, and Income Distribution are from the U.S. Census Bureau, American Community Survey (ACS) for 2007. http://www.census.gov/acs