Michigan's Transition to a Knowledge-Based Economy:

First Annual Progress Report

Lou Glazer, President, Michigan Future, Inc.

Don Grimes, Senior Research Specialist, Institute of Labor and Industrial Relations, University of Michigan

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Executive Summary

This is Michigan Future's first annual report on Michigan's transition to a knowledge-based economy. The progress we make in this transition will, in large part, determine whether once again Michigan enjoys high prosperity.

Obviously the Michigan economy has been dreadful this decade. An unprecedented seven consecutive years of job losses. At the bottom of the national rankings in both employment and per capita income. This is largely because the engine that still drives the Michigan economy is the troubled domestic auto industry. So for the foreseeable future, until the Detroit Three automakers stabilize, Michigan's economy will continue to lag the nation.

What we are working on at Michigan Future is what comes next. Our focus is on identifying a path to better position Michigan to succeed in the flattening world economy of the future. A path that will return Michigan to high prosperity, measured by per capita income consistently above the national average in both national economic expansions and contractions.

We collected data for states and the 53 metropolitan areas with population of one million or more plus Lansing and Madison. 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 industries (those where more than 30% of workers have a four-year degree or more)
- Have a high proportion of adults with a four-year degree or more
- 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.

More specifically we found:

1. Big metros are winning! The pattern is the larger the metropolitan area the higher the per capita income and the greater the concentration in both knowledge-based

industries and college educated adults. Maybe most surprising 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.

2. 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 in per capita income 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.

3. It is the broad based knowledge economy where most of the good-paying job growth is occurring in the American economy. High education attainment industries in 2005 were 41% of national employment and 54% of the wages earned by American workers. The average wage in these industries is nearly $53,000 as compared to nearly $32,000 in all other industries.

Most importantly, high education attainment industries accounted for 75% of the job growth in America from 2001-2005. All of the growth and then some came from the high education attainment industries in the education and health care sectors. The remaining high education attainment industries – including all the new technology industries that are the focus of so much state and regional efforts – lost employment.

4. 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, 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.

5. Michigan and its largest metropolitan are lagging in the transition to a knowledge-based economy. In 2006 Michigan ranked 26th in per capita income, an unprecedented drop of 10 places in a relatively short six year period. It ranked 37th in the share of wages from knowledge-based industries and 34th in proportion of adults with a bachelors degree or more.

In 2005 (latest available) metro Detroit still ranked 15th in per capita income. Of 53 metropolitan areas with populations of one million or more the Detroit region ranked 38th in knowledge-based industries concentration and 37th in college attainment. Metro Grand Rapids lagged even more. It ranked 49th in per capita income, 51st in knowledge-based industries concentration and 45th in college attainment. The story is basically the same for the Lansing region which trails substantially metropolitan Madison on most of our metrics.

Our best guess is that unless we substantially increase the proportion of college educated adults – particularly in our biggest metropolitan areas – Michigan will continue to trend downwards in the per capita income rankings towards the mid 30s.

6. There is good news! Behind the headlines of continuous job loss, Michigan had employment gains in the high education attainment industries. This despite large employment declines in the knowledge-based portion of the automotive industry. In the high education attainment industries in the education and health sectors – where most of the national job growth occurred – a gain of nearly 47,000 jobs. Almost 40,000 coming in metro Detroit and metro Grand Rapids.

Building on these gains across all the knowledge-based industries is the key to recreating a high prosperity Michigan. To us the message from the data 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 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. Which requires expanded public investments in higher education – particularly the major research universities.

• Transforming teaching and learning so that it is aligned with the realities of a flattening world.

• Developing new private and public sector leadership that has moved beyond both a desire to recreate the old economy as well as the old fights. A leadership that is clearly focused, at both the state and regional level, on preparing, retaining and attracting talent.

This is Michigan Future's first annual report on Michigan's transition to a knowledge-based economy. In our previous work we have detailed that the most reliable path to high prosperity is to be concentrated in knowledge-based enterprises. So the progress we make in this transition will, in large part, determine whether once again Michigan enjoys high prosperity.

This report is a follow up to our A New Agenda for a New Michigan report. (That report and the related A New Path to Prosperity? report are available at *michiganfuture.org*)

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 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 lots of areas across the country with low unemployment, but low incomes. That isn't success to us.

Michigan enjoyed high per capita income for the first 70 years of the last century. But after more than three decades of continuous decline compared with the nation, we are now consistently below the national average in both upturns and downturns. In 2006 we were 8% below the national average. The worst performance in our history compared to the rest of the United States, even worse than the previous low in 1933.

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 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 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, 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 53 metropolitan areas with population of one million or more plus Lansing and Madison. Because we think it’s important to understand the characteristics of those places with high prosperity, we start our review of the data looking at the nation before we explore the performance of Michigan and its largest regions.

The knowledge-based economy

Before we explore the data, we should define what we mean by knowledge-based industries. In our previous reports we analyzed 19 broad sectors of the American economy. We defined the knowledge-based part of the economy as those sectors where the proportion of employees with a bachelors degree or more is about 30% (110% of the national average of adults with a bachelors degree or more).

For this report we use the same standard but apply it to all NAICS industries at the six digit level. Where applicable we combine public and private sector workers into a single industry. The result is a far more precise picture of which industries are knowledge-based. We looked at 233 industries and found 66 which meet our 110% education attainment standard. This is what we mean by high education attainment industries and knowledge-based industries. We use the terms interchangeably.

The high education attainment industries are listed in Appendix C. As you will see they are highly diversified across the economy, rather than 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; management of companies; professional and technical services; health care and education.

It is important to note 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.

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.

Our data lead us to believe this narrow focus on new technologies is unlikely to be the best economic growth strategy. That’s because it is the broad based knowledge economy where most of the good-paying job growth is occurring in the American

economy. The high education attainment industries we have identified in 2005 were 41% of national employment and 54% of the wages earned by American workers. The average wage in these industries is nearly $53,000 as compared to nearly $32,000 in all other industries.

Maybe most importantly, the high education attainment industries accounted for 75% of the job growth in America from 2001-2005. All of the growth and then some came from the high education attainment industries in the education, health care and social services sectors. The remaining high education attainment industries—including all the new technology industries that are the focus of so much state and regional efforts—lost employment.

What we found: state data

In Table 1 we present data for the top ten states in 2006 per capita income and Michigan. Table 2 has the same data for the six Great Lakes states. (Appendix A has all the data we collected for all states. Appendix A is available separately at *michiganfuture.org*. The end notes list the sources for our data.)

Table 1: Performance of Ten States with the Highest Per Capita Income in 2006, and Michigan

State	Per Capita Income 2006	Per Capita Income change 2000 to 2006	Share of wages in 2005 earned in high education attainment industries	Share of population aged 25 or more with a bachelors or more, 2006	Share of households in 2006 Income under $25,000	Share of households in 2006 Income $75,000 or more
United States	$36,629	22.739%	54.031%	26.994%	25.319%	29.724%
Connecticut	$50,787	22.423%	59.642%	33.681%	18.428%	41.881%
New Jersey	$46,328	20.765%	58.531%	33.446%	18.498%	43.165%
Massachusetts	$46,255	22.520%	61.958%	37.020%	21.707%	39.405%
New York	$43,962	25.984%	64.998%	31.169%	25.138%	33.504%
Maryland	$43,774	27.785%	59.906%	35.053%	16.085%	42.883%
Wyoming	$40,569	42.557%	44.455%	22.731%	23.336%	26.719%
New Hampshire	$39,655	18.752%	55.204%	31.935%	18.534%	37.567%
Colorado	$39,587	18.641%	56.918%	34.349%	22.088%	33.155%
Virginia	$39,564	27.277%	57.998%	32.747%	20.239%	36.365%
California	$39,358	21.258%	58.059%	28.990%	21.306%	37.325%
Michigan	**$33,784**	**14.324%**	**47.539%**	**24.485%**	**25.607%**	**27.783%**

Table 1 clearly shows, with one exception, 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.

The other nine are all above the national average in both share of wages from high education attainment industries and proportion of adults with bachelors degrees or more. For both metrics eight of the nine are in the top ten states. (California is 14th in adults with a four-year degree. New Hampshire is 13th in knowledge-based industries concentration.)

Michigan, on the other hand, lags the national average in all the Table 1 metrics, substantially behind the nine high prosperity/knowledge-based states.

It is interesting to note the consistent out-performance, compared to the nation, of the nine high prosperity/high knowledge-based states does not hold true for per capita income growth from 2000-2006.

Growth rates are a traditional way to measure success. Most assume they are predictive of future results. It will be interesting to watch as we go forward whether the 2000-2006 per capita growth rates are reflective of a long-term trend away from the patterns we have identified.

Our best guess is the proportion of adults with a bachelor's degree or more is a far better predictor of future prosperity. That, 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.

That current growth rates may not be a reliable indicator of future prosperity can be seen in the performance of Silicon Valley. As we will see later, the San Jose/San Francisco metropolitan area ranked next to last in per capita income growth (only metro New Orleans was worse) from 2000-2005. We'd bet a lot the region's economy is going to do well in the future.

We have added two new metrics from our previous reports: share of households with income below $25,000 and share of households with income $75,000 and more. We did this to measure whether a knowledge-based economy is generating a broad middle class.

There is widespread concern 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 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 30% of American households in 2006 have incomes of $75,000 and more. (Median household income is around $48,000.) Each of the nine states with both high per capita income and high concentrations in knowledge-based industries are in the top eleven in the nation in proportion of households with income of $75,000 or more. And they also all 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 2: Performance of Great Lakes States

State	Per Capita Income 2006	Per Capita Income change 2000 to 2006	Share of wages in 2005 earned in high education attainment industries	Share of population aged 25 or more with a bachelors or more, 2006	Share of households in 2006 Income under $25,000	Share of households in 2006 Income $75,000 or more
United States	$36,629	22.739%	54.031%	26.994%	25.319%	29.724%
Minnesota	$38,751	21.044%	55.729%	30.426%	20.631%	33.186%
Illinois	$38,297	19.001%	54.191%	28.894%	23.434%	32.484%
Wisconsin	$34,476	20.680%	45.786%	25.132%	23.546%	27.229%
Michigan	**$33,784**	**14.324%**	**47.539%**	**24.485%**	**25.607%**	**27.783%**
Ohio	$33,217	17.770%	47.567%	22.951%	27.444%	25.393%
Indiana	$32,226	18.784%	41.738%	21.687%	26.113%	24.741%

As displayed in Table 2, the same patterns hold true for the Great Lakes states. The two states above the national average in per capita income -- Minnesota (13th) and Illinois (15th) -- 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 bachelor's 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.

That economies are regional can be best seen 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 populations of one million or more San Jose has the highest per capita income ($49,650). In the same state Fresno ($25,436) is next to 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 (available separately at *michiganfuture.org*) has all the data we collected for the 53 metropolitan areas with populations of one million or more, as well as Lansing and Madison. We focus on metropolitan areas of one million or more because they are where the knowledge-based economy and adults with a bachelor's degree or more are concentrating.

Table 3: Performance of Metro Areas by Size of Metro Area

	Category Population 2006	Per Capita Income 2005	Per Capita Income change 2000 to 2005	Share of wages in 2005 earned in high education attainment industries	Share of population aged 25 or more with a bachelors or more, 2006	Share of households in 2006 Income under $25,000	Share of households in 2006 Income $75,000 or more
United States	299,398,485	$34,471	15.508%	54.031%	26.994%	25.319%	29.724%
Metro 3.5 million or more	116,402,478	$39,601	13.531%	57.989%	32.241%	20.824%	37.158%
Metro 1.6 million to 3.5 million	42,273,333	$34,853	15.963%	52.355%	28.097%	23.036%	30.485%
Metro 1.0 million to 1.6 million	24,136,780	$33,140	15.604%	50.998%	26.630%	25.629%	27.762%
Metro under 1.0 million and non-metro	116,585,894	$28,583	18.741%	45.672%	21.207%	30.034%	22.215%

Simply put, big metros are winning! Many prognosticators 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 3 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. Maybe most surprising to us is 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 4 presents data on the top ten metropolitan areas with populations of one million or more in 2005 per capita income as well as the nine county Detroit region and the seven county Grand Rapids region.

The data clearly 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. All of the top ten are above—many substantially—the national average in both metrics.

They also all have a larger proportion of households with incomes $75,000 or more and a smaller proportion of households with incomes under $25,000 than the national average. Again the one area in which they do not consistently outperform the nation is in per capita income growth. Only three of the ten exceeded the nation’s growth rate.

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 highly likely to be 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.

Table 4: Performance of Ten Metropolitan Areas (population over 1 million) with the Highest Per Capita Income in 2005, Detroit and Grand Rapids

State	Per Capita Income 2005	Per Capita Income change 2000 to 2005	Share of wages in 2005 earned in high education attainment industries	Share of population aged 25 or more with a bachelors or more, 2006	Share of households in 2006 Income under $25,000	Share of households in 2006 Income $75,000 or more
United States	$34,471	15.508%	54.031%	26.994%	25.319%	29.724%
San Jose-San Francisco-Oakland, CA CSA	$49,650	5.351%	66.273%	40.400%	17.266%	47.265%
Washington-Baltimore-Northern Virginia, DC-MD-VA-WV CSA	$45,765	21.123%	66.099%	41.283%	14.419%	47.866%
New York-Newark-Bridgeport, NY-NJ-CT-PA CSA	$45,440	13.489%	65.664%	34.439%	21.845%	40.397%
Boston-Worcester-Manchester, MA-NH CSA	$42,715	14.662%	61.783%	38.513%	19.668%	41.913%
Hartford-West Hartford-Willimantic, CT CSA	$41,348	14.433%	59.700%	31.082%	19.010%	39.928%
Denver-Aurora-Boulder, CO CSA	$41,315	10.957%	59.487%	36.716%	20.576%	35.776%
Minneapolis-St. Paul-St. Cloud, MN-WI CSA	$40,933	14.402%	57.835%	35.147%	17.300%	39.241%
San Diego-Carlsbad-San Marcos, CA Metro Area	$40,569	23.690%	58.306%	33.347%	18.975%	38.845%
Seattle-Tacoma-Olympia, WA CSA	$40,068	11.170%	59.429%	34.835%	18.471%	37.781%
Philadelphia-Camden-Vineland, PA-NJ-DE-MD CSA	$39,859	19.028%	59.921%	30.740%	22.775%	36.351%
Detroit-Warren-Flint, MI CSA	**$36,649**	**9.774%**	**50.885%**	**26.835%**	**23.811%**	**32.559%**
Grand Rapids-Muskegon-Holland, MI CSA	**$30,497**	**12.146%**	**40.339%**	**24.347%**	**23.297%**	**26.094%**

In Table 5 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 capitols) also are places where the knowledge-based economy is growing.

Table 5: Performance of Lansing and Madison Metropolitan Areas

State	Per Capita Income 2005	Per Capita Income change 2000 to 2005	Share of wages in 2005 earned in high education attainment industries	Share of population aged 25 or more with a bachelors or more, 2006	Share of households in 2006 Income under $25,000	Share of households in 2006 Income $75,000 or more
United States	$34,471	15.508%	54.031%	26.994%	25.319%	29.724%
Lansing-East Lansing-Owosso, MI CSA	**$29,583**	**12.091%**	**56.061%**	**29.405%**	**25.021%**	**27.162%**
Madison-Baraboo, WI CSA	$38,302	19.470%	56.812%	39.962%	19.070%	34.264%

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 12 of the 53 metropolitan areas with populations of one million or more.

As we see in Tables 4 and 5, Michigan's three largest regions clearly lag 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.

What we found: Michigan

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

Although many refer to it as a single state recession, we believe what we are going through is primarily 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, until the Detroit Three automakers stabilize, Michigan's economy will continue to lag the nation. With another round of announced downsizing about to begin as well as, at best, a national slowdown that will reduce motor vehicle sales we are 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 (although still a major asset) of economic success. Our goal: Michigan on a path that will better position its citizens to succeed in a flattening world economy.

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 2006 Michigan ranked 26th in per capita income, an unprecedented drop of 10 places in a relatively short six year period.

In Table 6 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. As we saw in Table 4 the story is basically the same for the Lansing region which trails substantially metropolitan Madison on most of our metrics.

Table 6: Ranking of Michigan, Detroit and Grand Rapids compared to Peers (1 is highest, 50 or 53 is lowest), selected indicators

	Per Capita Income 2005 (2006)	Per Capita Income change 2000 to 2005 (2006)	Share of wages in 2005 earned in high education attainment industries	Share of population aged 25 or more with a bachelors or more, 2006
Michigan	26	50	37	34
Detroit-Warren-Flint, MI CSA	15	47	38	34
Grand Rapids-Muskegon-Holland, MI CSA	49	39	51	45

Our best guess is that unless we substantially increase the proportion of college educated adults in Michigan – particularly in our biggest metropolitan areas – we will continue to trend downwards in the per capita income rankings towards the mid 30s. Our basic belief: over the long-term Michigan's and its regions' per capita income will be consistent with the 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 metric for economic growth. In Table 7 we present employment growth from 2001-2005 for the US, Michigan and its three largest metropolitan areas.

Table 7: Employment Change for industries identified by their educational attainment, U.S., Michigan and selected metro areas

Industry Group	United States	Michigan	Detroit CSA	Grand Rapids CSA	Lansing CSA
Employment change 2001-2005					
All industries	1,935,823	-179,642	-112,630	-6,453	-10,037
(percent change)	1.493%	-4.013%	-4.597%	-1.079%	-4.257%
Low education attainment industries	473,499	-190,098	-120,367	-20,061	-8,857
(percent change)	0.619%	-6.812%	-8.220%	-4.917%	-6.902%
High education attainment industries	1,462,324	10,456	7,737	13,608	-1,180
(percent change)	2.753%	0.620%	0.785%	7.212%	-1.100%
Education, health, & social services	1,766,634	46,763	29,579	10,176	136
(percent change)	8.428%	6.335%	7.320%	11.844%	0.276%
Other high education attainment industries	-304,310	-36,307	-21,843	3,432	-1,317
(percent change)	-0.946%	-3.831%	-3.754%	3.340%	-2.272%

We have divided the economy between the high education attainment industries and other industries. In addition we have divided the high education industries between those in the education and health care sectors and all other sectors. The data clearly shows the preeminence of the high education attainment industries in employment growth. More specifically, dominance of education and health care industries within the high education attainment industries in job creation during the first half of this decade.

Michigan, of course, lagged the nation substantially. Last in overall employment growth and 44th in employment growth in high education attainment industries. Michigan and its three largest metropolitan areas all suffered heavy job loss in the non high education attainment industries. This includes the severe loss of manufacturing jobs – particularly in the domestic automotive industry.

Beneath the headlines of continuous job loss, there is good news! Michigan had employment gains in the high education attainment industries. This despite large employment declines in the knowledge-based portion of the automotive industry. In the high education attainment industries in the education and health sectors – where most of the national job growth occurred – a gain of nearly 47,000 jobs. Almost 40,000 coming in metro Detroit and metro Grand Rapids.

Overall Grand Rapids fared best of Michigan's three largest metropolitan areas. It had impressive employment growth in the high education attainment industries. Exceeding the national average growth rate in both segments. Metro Detroit saw significant gains in the education and health care segment of the high education industries, but experienced steep declines in the other segment. We believe that is primarily due to the declines in employment in the knowledge-based portions of the domestic auto industry which is a large component of the knowledge-based economy in southeast Michigan. Metro Lansing lagged across the board in employment growth in high education attainment industries.

In Table 8 we look at average wage data by industry category. That good-paying work is concentrating in the high education attainment industries nationally and here in Michigan is clear. That is particularly true for the sectors of the knowledge-based economy outside of education and health care where wages are more than $20,000 above the national average.

Table 8: Average Wage in 2005 for industries categorized by their educational attainment, U.S., Michigan, and selected Metropolitan Areas

Industry Group	United States	Michigan	Detroit CSA	Grand Rapids CSA	Lansing CSA
Average Wage, 2005					
All industries	$40,677	$41,214	$46,016	$36,269	$37,418
Low-education attainment industries	$31,955	$35,725	$39,311	$32,932	$31,068
High-education attainment industries	$52,980	$49,629	$55,083	$42,653	$44,547
Education, health, & social services	$40,905	$41,375	$43,940	$39,377	$40,609
Other high education attainment industries	$61,596	$56,738	$63,712	$45,618	$47,990

Michigan's non high education attainment industries – which includes manufacturing – have wages nearly 12% above the national average. By comparison in the high education attainment industries we have wages below the national average. That is particularly true in the sectors of the knowledge-based economy outside of education and health care where the average wage in Michigan is nearly 8% 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 other 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 – should 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 3, 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 9 we present data on college attainment for the top ten regions, the three high prosperity Great Lakes regions and Michigan's three largest regions and the largest city in each region.

Table 9: Educational Attainment of Ten Metropolitan Areas (with a population of over 1 million) and their primary central city, Detroit, Grand Rapids, and Lansing

	Per Capita Income	Metro Share of population aged 25 or more	Primary City Share of population aged 25 or more
State	2005	with a bachelors or more, 2006	with a bachelors or more, 2006
United States	$36,629	26.994%	NA
San Jose-San Francisco-Oakland, CA CSA	$49,650	40.400%	36.043%
Washington-Baltimore-Northern Virginia, DC-MD-VA-WV CSA	$45,765	41.283%	45.899%
New York-Newark-Bridgeport, NY-NJ-CT-PA CSA	$45,440	34.439%	32.053%
Boston-Worcester-Manchester, MA-NH CSA	$42,715	38.513%	41.550%
Hartford-West Hartford-Willimantic, CT CSA	$41,348	31.082%	12.559%
Denver-Aurora-Boulder, CO CSA	$41,315	36.716%	36.264%
Minneapolis-St. Paul-St. Cloud, MN-WI CSA	$40,933	35.147%	40.445%
San Diego-Carlsbad-San Marcos, CA Metro Area	$40,569	33.347%	40.408%
Seattle-Tacoma-Olympia, WA CSA	$40,068	34.835%	53.427%
Philadelphia-Camden-Vineland, PA-NJ-DE-MD CSA	$39,859	30.740%	20.658%
Chicago-Naperville-Michigan City, IL-IN-WI CSA	$38,687	31.290%	29.286%
Madison-Baraboo, WI CSA	$38,302	39.962%	52.567%
Detroit-Warren-Flint, MI CSA	**$36,649**	**26.835%**	**11.274%**
Grand Rapids-Muskegon-Holland, MI CSA	**$30,497**	**24.347%**	**28.374%**
Lansing-East Lansing-Owosso, MI CSA	**$29,583**	**29.405%**	**22.634%**

Except for Hartford and Philadelphia 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 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 college educated movers. 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 movers with a four-year degree or more there are some limitations in the data. It is for those moving into an area only, so you can't calculate net migration statistics. Its also is 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 areas. Which exaggerates the movers in those regions compared to other regions which are exclusively in one state.

Limitations not withstanding, the data is quite revealing. From 2005 to 2006 there were roughly two million individuals with a bachelor's degree or more who moved from one state to another or from another country. Of those, 69% moved to a metropolitan area with populations of one million or more. These big metros account for 61% of the national population. And 57% of movers without a four-year degree. More evidence of the concentration of talent in big metros.

In Table 10 we look at the data on college educated movers for the ten big regions with the highest per capita income as well as metropolitan Detroit and Grand

Rapids. (Data on movers is part of Appendices A and B for states and the 55 regions we collected data for.)

Table 10: Movement of College Educated Residents (2005 to 2006) to the Ten Metropolitan Areas (population over 1 million) with the Highest Per Capita Income Detroit and Grand Rapids

	Population aged 25 or more with Bachelors or more moved from other states or countries, 2005 to 2006	Share of bachelors or more movers in the U.S.	Bachelors or more movers Share of Population 25 or more
United States	2,095,426	100.000%	1.069%
San Jose-San Francisco-Oakland, CA CSA	65,908	3.145%	1.347%
Washington-Baltimore-Northern Virginia, DC-MD-VA-WV CSA	131,300	6.266%	2.413%
New York-Newark-Bridgeport, NY-NJ-CT-PA CSA	163,291	7.793%	1.112%
Boston-Worcester-Manchester, MA-NH CSA	57,691	2.753%	1.462%
Hartford-West Hartford-Willimantic, CT CSA	7,901	0.377%	0.895%
Denver-Aurora-Boulder, CO CSA	35,187	1.679%	1.836%
Minneapolis-St. Paul-St. Cloud, MN-WI CSA	23,892	1.140%	1.048%
San Diego-Carlsbad-San Marcos, CA Metro Area	27,249	1.300%	1.466%
Seattle-Tacoma-Olympia, WA CSA	50,727	2.421%	1.931%
Philadelphia-Camden-Vineland, PA-NJ-DE-MD CSA	43,387	2.071%	1.099%
Detroit-Warren-Flint, MI CSA	**21,057**	**1.005%**	**0.590%**
Grand Rapids-Muskegon-Holland, MI CSA	**4,069**	**0.194%**	**0.485%**

We calculated college educated movers in two ways: 1) the share of national movers with a college degree and 2) college educated movers as a share of the area's adult population. Michigan ranks 17th in terms of its share of all college educated movers and 49th in the number of college educated movers as a share of the state's adult population (only West Virginia ranked lower). Of the 53 metros with regions of one million or more, metro Detroit ranked 23rd and 39th, metro Grand Rapids 52nd and 37th, respectively.

In comparison, except for Hartford, the high prosperity metropolitan areas are places that are substantially adding to already large concentrations of college educated adults.

Metro Lansing also lagged. It attracted 2,834 adults with a four-year degree or more from another state or foreign country compared to 4,768 for metro Madison.

A path to a high prosperity Michigan

To us the clear message from the data we have just reviewed is 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. 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.

End Notes

Our data comes from:

Information on per capita income comes from the U.S. Department of Commerce, Bureau of Economic Analysis http://www.bea.gov/regional/index.htm#state retrieved January 31, 2008.

For calculating education attainment by industry we used 2000 Census 5% PUMS data maintained at the University of Minnesota. Steven Ruggles, Matthew Sobek, Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. Integrated Public Use Microdata Series: Version 3.0 [Machine-readable database]. Minneapolis, MN: Minnesota Population Center [producer and distributor], 2004. http://usa.ipums.org/usa/

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 June 2007. 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 six-digit NAICS industry data was then allocated between high-education attainment and low-education attainment industry groups using the 2000 Census IPUMS data.

Information on Population, Educational Attainment, Income Distribution and Movers are from the U.S. Census Bureau, American Community Survey (ACS) for 2006. http://www.census.gov/acs/www/

Appendix C: Description of High Education Attainment Industries

High education attainment industries are defined in this study as those industries where the proportion of workers with at least a bachelor's degree exceeded 110 percent of the U.S. average.

The data on educational attainment by industry were derived from the 2000 Census, 5 percent PUMS sample (Ruggles, et al., 2004). According to the Census data, 27 percent of all employed persons had at least a bachelor's degree; consequently, our high education attainment industries include all industries where the proportion of workers with at least a bachelor's degree exceeded 30 percent.

Most of the industries meeting this criterion were service-providing industries, but a few goods-producing industries qualified, including forestry (except logging); oil and gas extraction; petroleum refineries; pharmaceutical, soap and basic chemical manufacturing; computer and electronic product manufacturing; and aircraft and aerospace manufacturing.

The service-providing industries were concentrated in the information sector, finance, professional and technical services, company management, and education and health care services. Commercial equipment and drug merchant wholesalers, as well as electronic wholesale markets, made the list of high-education attainment industries. Retail electronic merchandise stores, pharmacies and electronic retail businesses were identified as high-education attainment industries, as well as the performing arts, museums, religious organizations, business associations and other civic organizations. The list of high-education industries was relatively robust to small alterations in the criteria.

The complete list of our high education attainment industries and their NAICs code follows:

1131, 1132	Forestry except logging
211	Oil and gas extraction
32411	Petroleum refineries
3254	Pharmaceutical and medicine manufacturing
3256	Soap, cleaning compound, and toiletry mfg.
3251, 3259	Basic and other chemical manufacturing
334	Computer and electronic product manufacturing
3364	Aerospace product and parts manufacturing

4234	Commercial equipment merchant wholesalers
4242, 4246	Druggists' and chemical goods merchant wholesalers
425	Electronic markets and agents and brokers
443112	Radio, TV, computer, camera and other electronics stores
44312	Radio, TV, computer, camera and other electronics stores
44313	Radio, TV, computer, camera and other electronics stores
44611	Pharmacies and drug stores
4541	Electronic shopping and mail-order houses
481	Air transportation
51111	Newspaper publishers
51112-51119	Periodical, book, directory, other publishers
5112	Software publishers
5121	Motion picture and video industries
5122	Sound recording industries
5172	Wireless, resellers, satellite, other telecommunications carriers
5173	Wireless, resellers, satellite, other telecommunications carriers
5174	Wireless, resellers, satellite, other telecommunications carriers
5179	Wireless, resellers, satellite, other telecommunications carriers
515, 5175	Broadcasting, except Internet, cable distribution
51912	Libraries and archives
51911, 51919	News syndicates and other information services
5182	Data processing and related services
516	Internet publishing and broadcasting
5181	ISPs and web search portals
5222, 5223	Nondepository credit intermediation and related activities
524	Insurance carriers and related activities
521	Monetary authorities, commercial banking, other depository
52211	Monetary authorities, commercial banking, other depository
52219	Monetary authorities, commercial banking, other depository
523, 525	Securities, commodity contracts, funds and trusts
531	Real estate
54	Professional and technical services
55	Management of companies and enterprises
61	Educational services
6211	Offices of physicians
6212	Offices of dentists

6213	Offices of other health practitioners
6214	Outpatient care centers
6215, 6219	Medical and diagnostic laboratories, other ambulatory health 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
8131	Religious organizations
81391	Business associations, professional, political, and other organizations
81392	Business associations, professional, political, and other organizations
81394	Business associations, professional, political, and other organizations
81399	Business associations, professional, political, and other organizations
8132	Grantmaking and giving, social advocacy, and civic organizations
8133	Grantmaking and giving, social advocacy, and civic organizations
8134	Grantmaking and giving, social advocacy, and civic organizations
921	Executive, legislative and general government (except tribal governments)
923	Administration of human resource programs
928	National security and international affairs
924, 925	Administration of environmental, housing programs
926, 927	Administration of economic and space programs