About Business Leaders for Michigan

Business Leaders for Michigan is a private, non-profit executive leadership organization whose mission is to develop, advocate and support high-impact strategies that will make Michigan a “Top Ten” state for jobs, personal income and a healthy economy. The organization’s work is defined by the Michigan Turnaround Plan, a holistic, fact-based strategy developed to achieve our “Top Ten” goal. Serving as the state’s business roundtable, Business Leaders for Michigan is composed of the chairpersons, chief executive officers, or most senior executives of Michigan’s largest companies and universities. Our members drive over 25% of the state’s economy, provide over 325,000 direct and 820,000 indirect jobs in Michigan, generate over $1 trillion in annual revenue and serve nearly one half of all Michigan public university students.
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newmichigan

A 10-year strategy to leverage Michigan’s existing strengths to grow a New Michigan economy

In 2009, BLMI released the Michigan Turnaround Plan, a blueprint to make Michigan one of the Top Ten states for jobs, personal income and a healthy economy.

In 2012, a New Michigan strategy was added to the Plan, identifying six opportunities associated with assets that Michigan can leverage into faster economic growth. These assets include the state’s engineering prowess, geographic location, and world-class higher education institutions, among others.

The 2014 New Michigan Report is the second in an annual series in which we track Michigan’s progress in leveraging these assets. We chart Michigan’s performance on various metrics over time and compare Michigan with high-performing states.
INTRODUCTION

Thanks to the commitment of policy and industry leaders, Michigan is making headway in growing a New Michigan economy in several areas, including:

- **Global Engineering Village.** A comprehensive effort to rebrand and grow Michigan’s engineering sector has been developed and is in the early stages of implementation. The plan lays out recommendations for capitalizing on Michigan’s strong engineering base, attracting and developing new engineering talent, and strengthening the state’s economy through this industry sector.

- **Global Center of Mobility.** A strategy has been developed to continue Michigan’s leadership role in the automotive sector as it continues to transition to an increasingly advanced technology-based sector and new technologies reinvent how people and goods are transported. Our state has the potential to grow up to 100,000 new jobs by positioning itself for long-term growth.

- **Higher Education Marketplace.** Michigan’s colleges and universities continue to help drive Michigan’s economy by providing the talent and innovation to increase much needed productivity. The number of technical degrees and certificates conferred by our public and private colleges and universities has risen consistently over the last several years, growing at a faster pace than the average of Top Ten states. Our major research universities are leaders in innovation, ranking 2nd among eight major university research clusters for combined output in research spending, commercialization of research activity, and production of technical talent.

- **Gateway to the Midwest.** In collaboration with a broad group of stakeholders, the state issued a logistics and supply chain strategy and a Logistics and Supply Chain Commission was created legislatively to provide infrastructure and policy guidance. Further, Michigan’s access to worldwide markets is being expanded through the re-branding of the Detroit Region Aerotropolis as VantagePort and the construction of a new international trade crossing.

Please join us as we work to leverage our existing strengths to accelerate economic growth and build the New Michigan.
As you can see from the charts below, Michigan is improving on most key outputs across the six opportunity areas. Employment as a percent of the workforce was steady or up in all six areas. In fact, from 2011 to 2012, employment growth in the six opportunities was twice the rate for total private sector employment and accounted for 40% of the total increase in private sector employment.

Over 40% of all jobs created in 2012 were from New Michigan opportunities

New Michigan opportunities grew at twice the average job growth rate

<table>
<thead>
<tr>
<th>Output Metrics Across Six Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineered</td>
</tr>
<tr>
<td>Average Earnings</td>
</tr>
<tr>
<td>GDP Per Capita</td>
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<tr>
<td>Emp / % Workforce</td>
</tr>
<tr>
<td>Gateway</td>
</tr>
<tr>
<td>Average Earnings</td>
</tr>
<tr>
<td>GDP Per Capita</td>
</tr>
<tr>
<td>Emp / % Workforce</td>
</tr>
<tr>
<td>Higher Education</td>
</tr>
<tr>
<td>Average Earnings</td>
</tr>
<tr>
<td>GDP Per Capita</td>
</tr>
<tr>
<td>Emp / % Workforce</td>
</tr>
<tr>
<td>Life Sciences</td>
</tr>
<tr>
<td>Average Earnings</td>
</tr>
<tr>
<td>GDP Per Capita</td>
</tr>
<tr>
<td>Emp / % Workforce</td>
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<tr>
<td>Mobility</td>
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<tr>
<td>Average Earnings</td>
</tr>
<tr>
<td>GDP Per Capita</td>
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<tr>
<td>Emp / % Workforce</td>
</tr>
<tr>
<td>Natural Resources</td>
</tr>
<tr>
<td>Average Earnings</td>
</tr>
<tr>
<td>GDP Per Capita</td>
</tr>
<tr>
<td>Emp / % Workforce</td>
</tr>
</tbody>
</table>
Understanding This Report

**Inputs:** A strong showing on input metrics for an opportunity area signals that a state has a strong foundation in the industries that define that opportunity. Input metrics reflect high demand, a talented workforce, and a vibrant supply chain, as well as other positives. Each opportunity has its own specific input metrics, which we report and compare to those of the tenth-ranked states.

**Outputs:** Output metrics are a measure of each state’s current economic performance. For each set of industries that we define as an economic opportunity, we have measured the levels of per capita real GDP, employment, and earnings. We report these values for Michigan, for the tenth-ranked comparison states, and show Michigan’s ranking among all fifty states for each metric.

**Potential Growth Scenarios:** Using historical data from 2002-2012 for GDP and earnings, and 2001-2011 for real GDP, we project what Michigan’s performance would be in 2022 under two different scenarios:

1. If Michigan remains on the same trajectory for growth as it had between 2002 and 2012,
2. If Michigan follows the patterns of growth between 2002 and 2012 for the 10th-fastest growing state in each metric.
In 2012, Business Leaders for Michigan laid out how Michigan could leverage its existing assets in six fundamental areas of strength to accelerate economic growth. Like the rest of the Michigan Turnaround Plan, these opportunities were identified through extensive research. They are some of the best opportunities for growing good paying jobs quickly and over a ten-year period.

We believe Michigan can build on its assets through the following six opportunities:

1. Grow and brand its industrial, production, and talent capacity to develop a reputation as a Global Engineering Village

2. Capitalize on its strategic location and available resources to become an alternative Gateway to the Midwest

3. Invest in a Higher Education Marketplace that boosts the state’s talent base and leverages its innovative strengths

4. Take advantage of Michigan’s natural resources to grow a Natural Resource Economy

5. Amplify our automotive and manufacturing expertise to become a Global Center of Mobility

6. Develop a Life Sciences Hub based on our robust health, medical, and bio-pharmaceutical capabilities
### Engineering Talent

**Global Engineering Village**
- Brand the engineering sector
- Grow engineering education capacity
- Grow engineering firms

**Geographic Location**
- Gateway to the Midwest
- Consolidate logistics base into Michigan
- Scale the Aerotropolis
- Invest in strategic trade-related infrastructure

**Higher Education System**
- Strengthen quality, affordability, productivity & economic impact
- Grow university enrollment
- Grow industry & university funded R&D
- Grow commercialization of R&D

**Health & Medical Expertise**
- Create a Hub for bio-pharmaceutical R&D
- Become the Center for research, testing & medical labs
- Grow medical tourism

**Automotive Industry**
- Lead in sustainable mobility
- Lead in multi-modal systems
- Lead in vehicle/infrastructure technology to improve road safety
- Grow the auto industry

**Natural Resources**
- Grow agricultural processing and exports
- Grow leisure tourism
- Lead in alternative energy technologies

### Higher Education Marketplace

- **Machinery manufacturing**
- Electrical equipment, appliance, and component manufacturing
- Nonmetallic mineral product manufacturing
- Primary metal manufacturing
- Motor vehicle, body, trailer, and parts manufacturing
- Space research and technology
- Research and development in engineering
- Engineering services

- **Air transportation**
- Rail transportation
- Water transportation
- Truck transportation
- Other transportation and support activities
- Warehousing and storage
- Highway, street, and bridge construction
- Other heavy and civil engineering construction
- Process, physical distribution, and logistics consulting

- **Colleges, universities, and professional schools**
- Technical and trade schools
- Education rehabilitation services
- Scientific research and development services

- **Pharmaceutical and medicine manufacturing**
- Medical equipment and supplies manufacturing
- Medical and diagnostic laboratories
- Research and development in biotechnology

- **Highway, street, and bridge construction**
- Primary metal manufacturing
- Motor vehicle, body, trailer, and parts manufacturing
- Other transportation equipment manufacturing
- Rail transportation
- Other transportation and support activities
- Urban transit systems
- Industrial design and engineering services
- Computer and electronic product manufacturing

- **Crop and animal production**
- Forestry, fishing, and related activities
- Oil and gas extraction
- Mining, and support activities for mining
- Water transportation
- Pipeline transportation
- Other transportation and support activities
- Waste management and remediation services
- Amusement and recreation
- Accommodations
Michigan has made progress and has the chance to improve its performance on key job and economic indicators across six New Michigan opportunities. While each of these opportunities is important on its own, in this section, we review how well Michigan performed across all of the industries relevant to the six opportunity areas, in aggregate. See the Appendix for further detail on the list of industries used in the calculations.

Where we stand

Outputs

The figures below show Michigan’s economic output aggregated across the industries representing all six opportunities in the New Michigan strategy. Michigan tends to pay well in these industries, though earnings have declined slightly over the last year, in real terms. While employment and production, in aggregate, are slightly below average, GDP and employment in these industries have improved considerably in the past year.¹

¹ There is extensive overlap between industries included in each opportunity, so adding up each of the opportunities will not equal the values calculated for the aggregate performance on all six opportunities.
Six Opportunities in Comparison to Overall Economy

At $65,356 in average earnings the six New Michigan opportunities are almost 40 percent higher than industry overall. GDP for the six opportunities represents 17 percent of all industry GDP in the state and increased at two and a half times the rate of the economy overall. Employment as a percent of the workforce for the six New Michigan areas accounts for 20 percent of the total for all industry and increased five times faster than industry overall.

“Average earnings in the six New Michigan opportunities are nearly 40 percent higher than industry overall.”
Average Earnings

Source: BEA, BLS, U.S. Census Bureau
Analysis: Anderson Economic Group, LLC

Real Per Capita GDP

Employment/Working-Age Population

Collective Output of the Six New Michigan Opportunities
Projected Growth Scenarios

There is a lot at stake. If Michigan could boost its performance to that of a Top Ten state in all six opportunities through 2022, the state’s total economic output would jump by $31 billion per year, average annual earnings would increase by as much as $12,000, and the state would add as many as 220,000 new jobs compared to its current projected path.²

We can’t anticipate how well Michigan will seize each opportunity or how global economic conditions might change during the next decade, but these projections identify the economic potential of these opportunities and the necessary role they play in reversing the previous decade’s long downward trend and realizing a brighter future in the decades beyond.

² Projected growth scenarios for the aggregate numbers are based on state performances across all opportunities, taking overlap out of the equation.
The underpinnings of the New Michigan growth strategy are our state’s strong base of entrepreneurism, innovation and manufacturing strengths. The Michigan economy, as a whole, will thrive if the state improves its position in these areas. This will lead to more companies, better products, higher exports, better jobs, and, consequently, faster economic growth.

Where we stand

Inputs

Michigan performs well and continues to improve on input metrics for entrepreneurism, innovation, and manufacturing. It ranks in the top twenty states for each metric, placing in the Top Ten for number of existing firms, R&D spending, and GDP from goods-producing industries. Also, entrepreneurism is on the uptick with over 10,000 new firms taking root in Michigan in the year 2011, ranking Michigan 13th among all fifty states. Of these metrics, Michigan made the biggest gains in the area of venture capital investment.

<table>
<thead>
<tr>
<th>Metric</th>
<th>2011</th>
<th>2012</th>
<th>MI Rank</th>
<th>MI Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP of Goods-Producing Industries (millions)</td>
<td>$63,716</td>
<td>$72,025</td>
<td>12th</td>
<td>10th</td>
</tr>
<tr>
<td>New Firms*</td>
<td>9,618</td>
<td>10,387</td>
<td>13th</td>
<td>10,142</td>
</tr>
<tr>
<td>Existing Firms*</td>
<td>141,344</td>
<td>134,538</td>
<td>10th</td>
<td>9th</td>
</tr>
<tr>
<td>R&amp;D Expenditures at Universities (millions)*</td>
<td>$2,031</td>
<td>$2,160</td>
<td>10th</td>
<td>10th</td>
</tr>
<tr>
<td>Venture Capital Investment (millions)</td>
<td>$84.8</td>
<td>$384.3</td>
<td>24th</td>
<td>16th</td>
</tr>
</tbody>
</table>

*For 2010 and 2011
Source: IPEDS, U.S. Census Bureau, BLS, USPTO, U.S. Travel Association
Analysis: Anderson Economic Group, LLC
The Six Opportunities

1. Global Engineering Village

Global demand is increasing for high-tech manufacturing industries such as automotive, aerospace, medical devices, and precision instruments. These and other industries rely heavily on quality engineering, an area that Michigan excels in and can leverage. For example, the automotive industry is adopting cutting edge technology and fostering innovation in advanced manufacturing industries. Michigan, with its strengths in engineering and automotive, could capitalize on this trend.

Where we stand

Inputs

Michigan ranks well above average in each of the input metrics for this opportunity. The state ranks among the top five states for number of engineering graduates, engineering patents awarded, and engineers per capita and in the Top Ten for research and development spending in engineering fields.

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MI</td>
<td>MI Rank</td>
</tr>
<tr>
<td>Graduates per 100k</td>
<td>102</td>
<td>4th</td>
</tr>
<tr>
<td>Engineering R&amp;D (millions)</td>
<td>$334.9</td>
<td>9th</td>
</tr>
<tr>
<td>Number of Establishments</td>
<td>8,645</td>
<td>6th</td>
</tr>
<tr>
<td>Engineers per 100k</td>
<td>1,270</td>
<td>1st</td>
</tr>
<tr>
<td>Patents Awarded</td>
<td>1,737</td>
<td>4th</td>
</tr>
</tbody>
</table>

Source: IPEDS, U.S. Census Bureau, NSF, BLS, USPTO
Analysis: Anderson Economic Group, LLC
Outputs

Overall, Michigan ranks highly on output metrics for industries in the Global Engineering Village opportunity. Michigan ranks second in GDP and employment in Global Engineering Village industries, while it ranks 20th for average earnings.

Over one in twenty residents of working age (18-64) in the state works in a Global Engineering Village industry, and employment in this sector grew more than three times the rate of overall private sector employment from 2011 to 2012. Furthermore, per capita GDP in these industries grew by over 15% from the year 2010 to 2011 in Michigan. The drop in earnings from 2011 to 2012 was largely due to a decrease in average earnings for workers in the auto manufacturing and auto parts manufacturing industries in the state.

Source: BEA, BLS, U.S. Census Bureau
Analysis: Anderson Economic Group, LLC
Potential Growth Scenarios

If Michigan can achieve Top Ten growth in these industries, the state will realize an increase of $9 billion in GDP, 30,000 jobs, and $15,000 in average annual earnings for those working in these industries.

How to leverage our engineering talent

Michigan can continue to position itself as a Global Engineering Village by branding Michigan as a hotbed for engineers, expanding its engineering capacity, growing its engineering firms, increasing the number of Michigan students that enter engineering programs and expanding efforts to attract engineers from out-of-state and retain those already in Michigan. Engineering stakeholder groups, working together, can help implement a rebranding strategy to show the breadth of engineering work occurring and available in Michigan, what is needed to add jobs and promote investment in Michigan. A focus should be on highlighting the high tech nature of the work and opportunities in the aerospace, medical device, precision instrument and automotive arenas.
During 2013, the following accomplishments helped boost the state’s engineering sector:

- Development of a clear plan for attracting and retaining engineering talent and increasing the engineering sector’s contribution to Michigan’s economy over the next ten years.
- Development of a plan of action, in collaboration with several stakeholders.
- Hosting of the National Engineering Forum in Michigan to increase awareness of the importance of engineering and develop ideas for engaging our youth to consider careers in engineering.
- Creation of the Michigan Automotive Office, which among other things will identify key technology trends for talent development, much of which is in the engineering space.
- In 2013, a partnership was developed with MDOT, the Black Caucus Foundation and the construction industry focused on exposing nearly 1,000 Detroit Public School students to the numerous career opportunities within the engineering and construction fields via a Construction Science Expo.

“The state ranks among the top five states for number of engineering graduates, engineering patents awarded.”

Industry Highlights
2. Gateway to the Midwest

The movement of goods and people is crucial to economic growth and success. Michigan’s geographic location enables it to be accessible by road, rail, sea, or air. Michigan can build on this advantage by advancing as an integrated, multi-modal hub for trade. Specifically, Michigan has the capacity to encourage the development of aviation-dependent businesses and an international border crossing. These actions could contribute to expansion of a logistics infrastructure crucial to facilitating trade in the Midwest.

Where we stand

Inputs

Michigan ranks well above average in its performance for all but one input metric for the Gateway to the Midwest opportunity. Michigan ranks in the top three states for transborder trade with Mexico and retains 1st place for transborder trade with Canada. For amount of cargo moved by freight and rail in and out of the state, Michigan remains among the top 20 states.

<table>
<thead>
<tr>
<th>Metric</th>
<th>2011 MI</th>
<th>MI Rank</th>
<th>2011 Top Ten</th>
<th>2012 MI</th>
<th>MI Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduates per 100k</td>
<td>16</td>
<td>29th</td>
<td></td>
<td>28</td>
<td>29th</td>
</tr>
<tr>
<td>Number of Establishments</td>
<td>5,519</td>
<td>14th</td>
<td>6,504</td>
<td>5,783</td>
<td>11th</td>
</tr>
<tr>
<td>Transportation Expenses by State &amp; Local Gov (millions)*</td>
<td>$5,783</td>
<td>15th</td>
<td>$7,150</td>
<td>$5,300</td>
<td>17th</td>
</tr>
<tr>
<td>Carloads of Freight by Rail, Origination (millions)</td>
<td>525</td>
<td>14th</td>
<td>765</td>
<td>566</td>
<td>14th</td>
</tr>
<tr>
<td>Carloads of Freight by Rail, Termination (millions)</td>
<td>579</td>
<td>16th</td>
<td>893</td>
<td>567</td>
<td>16th</td>
</tr>
<tr>
<td>Lbs. of Freight Departing Airports (millions)</td>
<td>244</td>
<td>21st</td>
<td>765</td>
<td>273</td>
<td>18th</td>
</tr>
<tr>
<td>Lbs. of Freight Landing at Airports (millions)</td>
<td>326</td>
<td>16th</td>
<td>856</td>
<td>345</td>
<td>18th</td>
</tr>
<tr>
<td>Imports from Canada (billions)</td>
<td>$46.8</td>
<td>1st</td>
<td>$9.4</td>
<td>$49.6</td>
<td>1st</td>
</tr>
<tr>
<td>Exports to Canada (billions)</td>
<td>$23.4</td>
<td>1st</td>
<td>$8.3</td>
<td>$25.3</td>
<td>1st</td>
</tr>
<tr>
<td>Imports from Mexico (billions)</td>
<td>$32.9</td>
<td>2nd</td>
<td>$5.0</td>
<td>$38.1</td>
<td>2nd</td>
</tr>
<tr>
<td>Exports to Mexico (billions)</td>
<td>$9.0</td>
<td>3rd</td>
<td>$2.9</td>
<td>$10.5</td>
<td>3rd</td>
</tr>
</tbody>
</table>

*For 2010 and 2011

Source: IPEDS, U.S. Census Bureau, BLS, U.S. Census Bureau, Association of American Railroads, Bureau of Transportation Statistics

Analysis: Anderson Economic Group, LLC
Outputs

Earnings in the Gateway to the Midwest opportunity are above average, ranking 20th among the fifty states. While rankings for GDP and employment output metrics are lower, employment in logistics industries grew 30 percent more than the average for all private sector employment from 2011 to 2012. Michigan can further improve on these metrics if it leverages its position as a manufacturing hub and as a convenient location for global trade to bring more transportation and logistics industries to the state.

“Michigan ranks in the top three states for transborder trade with Mexico and retains 1st place for transborder trade with Canada.”
Potential Growth Scenarios

If Michigan can realize Top Ten growth in the Gateway to the Midwest opportunity, it would mean an additional $2.8 billion in state GDP, an additional 12,000 jobs, and an additional $5,500 in annual earnings for each of the 115,000 employees in these industries by the year 2022, when compared to current levels.

How to leverage our geographic location

Leveraging this asset can be done by consolidating a logistics base into Michigan, scaling and aggressively marketing VantagePort, and investing in strategic trade-related infrastructure such as roads, bridges, tunnels, and rails. Building a strong logistics infrastructure requires a broad, unified commitment from state and local administrations and permitting authorities, as well as the private sector.
Over the past year, the most significant developments to advance Michigan’s logistics/gateway opportunity have been:

- The Detroit Region Aerotropolis was re-launched and re-branded during 2013, and is now known as VantagePort. A permanent CEO has been hired to develop and lead efforts to promote Michigan’s geographic access to worldwide markets.
- In 2013, the VantagePort region benefitted from $660 million worth of new real and personal property investment and the creation of 974 new jobs.
- Establishment of a new Logistics and Supply Chain Commission to provide infrastructure and policy guidance to state government and economic leaders.
- Issuance of a logistics and supply chain strategy, developed in collaboration with a broad group of stakeholders.
- Increased collaboration among various regions of the state, which created new logistics/supply chain partnerships during the past year.
3. Higher Education Marketplace

Economic growth is being driven by gains in productivity, and gains in productivity are driven by talent and talent-generated innovation. As a primary source of both talent and innovation, our higher education system represents a major opportunity to grow Michigan’s economy. In addition, higher education institutions are drivers of economic growth as they bring students, employers, and additional spending to local economies.

Where we stand

Inputs

Michigan is ranked in the Top Ten states for total degrees awarded, total enrollment, and STEM degrees awarded. However, Michigan ranks considerably lower than the national average in terms of out-of-state enrollment and state appropriations to public universities.

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MI</td>
<td>MI Rank</td>
</tr>
<tr>
<td>Total Degrees Awarded</td>
<td>145,488</td>
<td>9th</td>
</tr>
<tr>
<td>STEM Degrees Awarded</td>
<td>12,243</td>
<td>7th</td>
</tr>
<tr>
<td>Total FTE Enrollment</td>
<td>504,870</td>
<td>8th</td>
</tr>
<tr>
<td>Out-of-State Enrollment+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Appropriations per Capita*</td>
<td>$180.9</td>
<td>32nd</td>
</tr>
</tbody>
</table>

* For Fall 2010
* For 2010 and 2011
Source: IPEDS, U.S. Census Bureau
Analysis: Anderson Economic Group, LLC
Outs

Earnings in the Higher Education Marketplace opportunity have decreased as part of a broad-based reduction in average salary and wages for higher education industries in Michigan. However, compared to other states average earnings in this opportunity are relatively high. Increasing enrollment of in-state students and attracting more students from outside of Michigan could help raise Michigan’s lower rankings for GDP and employment.

Source: BEA, BLS, U.S. Census Bureau
Analysis: Anderson Economic Group, LLC
Potential Growth Scenarios

On its current trajectory, by 2022 Michigan will see an increase in employment of 23,000 in higher education. This would be accompanied by a slight uptick in earnings but a decrease in overall contribution to GDP in the state. If Michigan grows at the Top Ten rate, then by 2022, the state will have $200 million more in real GDP, nearly 40,000 more jobs, and the 181,000 Michigan workers who are in the higher education industry will have $10,000 more in average annual earnings.

The Next Steps

How to leverage our higher education assets

Michigan’s opportunities as a Higher Education Marketplace can be facilitated by growing community college and university enrollment, growing industry-funded and university-funded research and development, and growing the commercialization of research and development. To accomplish this, Michigan should set a concrete goal of being among the Top Ten states for higher education, measured in quality, affordability, productivity and economic impact. The current performance-based funding approach for state support encourages our colleges and universities to strive to be best in class without undermining the strength of these institutions. Similarly, colleges and universities should increase in- and out-of-state enrollments and accelerate support for and spin-off of business creation opportunities.
In 2013, the following actions helped advance the Higher Education Marketplace opportunity area:

- There are 1.3 million alumni from Michigan public universities living in Michigan representing more than 61 percent of those with a four-year degree, and they earned a total $47 billion dollars in salaries and wages in 2012.

- Degrees and certificates earned at Michigan’s public universities increased by 13 percent; the number of bachelor’s degrees awarded grew by more than 16 percent.

- Since 2008, an average of 14 new start-up companies a year have been cultivated at Michigan’s major research universities and in 2012 these universities ranked 4th among eight peer research university clusters at over $2 billion in spending on research and development.

- Baccalaureate degrees are now offered at some community colleges to increase college attainment.

- All 43 of Michigan’s public colleges and universities are expected to sign a new Michigan Transfer Agreement, which should dramatically improve transfer of core college courses between public institutions in the state.

“Michigan ranks in the top ten states for total degrees awarded, total enrollment, and STEM degrees awarded.”
4. Natural Resources Economy

Today, the demand for natural resources is more pressing than ever. The provision of these commodities, as well as the development of technologies that maximize the production of scarce resources, is crucial for succeeding in natural resources markets. Michigan has competitive advantages in agricultural innovation, and can leverage its natural beauty to increase its tourism industry. Policies and regulations that grow agricultural industries and tourism can help Michigan to capitalize on the opportunity that its natural assets provide.

Where we stand

Inputs

Michigan has high performance on most input metrics related to the Natural Resources Economy. The state ranks in the Top Ten for number of establishments in natural resources industries. The number of graduates last year in natural-resources-related fields was lower than in most states, but improved considerably from 2011 to 2012. The state ranked 15th in patents awarded for natural resources-related applications, which captures the level of innovation by companies and inventors in the state. Michigan also ranked 15th in expenditures for travel.

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MI</td>
<td>MI Rank</td>
</tr>
<tr>
<td>Graduates per 100k</td>
<td>31</td>
<td>43rd</td>
</tr>
<tr>
<td>Number of Establishments</td>
<td>13,509</td>
<td>11th</td>
</tr>
<tr>
<td>Patents Awarded</td>
<td>89</td>
<td>13th</td>
</tr>
<tr>
<td>Travel Expenditures (millions)*</td>
<td>$15,293</td>
<td>14th</td>
</tr>
</tbody>
</table>

*For 2010 and 2011
Source: IPEDS, U.S. Census Bureau, BLS, USPTO, U.S. Travel Association
Analysis: Anderson Economic Group, LLC
Outsput

Michigan’s average earnings in the Natural Resources Economy opportunity are above average, ranking 21st among all states. Michigan ranks lower for employment in this opportunity, but employment grew more than 30 percent above the average for all private sector employment from 2011 to 2012. GDP is lower due in part to the fact that Michigan under-leverages its natural resources, including mineral production, food processing and water. Both metrics can improve by pursuing responsible, sustainable production of these resources.

Source: BEA, BLS, U.S. Census Bureau
Analysis: Anderson Economic Group, LLC
Potential Growth Scenarios

The Natural Resources Economy has steadily grown in Michigan over the past decade. Even at the Michigan growth rates of the past ten years, Michigan will realize growth in real GDP of $1.2 billion and an increase of about 5,000 jobs by the year 2022. Annual earnings would grow considerably, as well, to an average of $60,000. Employment and real GDP would increase much faster, though, if the state were to attain the same growth levels as the 10th-fastest-growing state. Real GDP would increase by $3.1 billion and jobs would increase by 49,000 by the year 2022.

The Next Steps

How to leverage our natural resources

Agricultural processing and exports can be increased by supporting policies and regulations designed to grow the industry, increasing agricultural engineering solutions, expanding the export transportation infrastructure and helping expand overseas markets. To grow Michigan’s tourism opportunities, we need to market our easy access to major population centers, relatively low costs, and the intrinsic and varied attractiveness of our natural amenities, and strategically develop travel and hospitality infrastructures. With our plentiful supply of fresh water, we can work now to attract water-intensive industries to the state that adopt safe, sustainable practices to prevent the diversion of water outside of Michigan. Finally, we should also pursue the prudent utilization of natural shale, wind and precious minerals resources.

Source: U.S. Census Bureau, Bureau of Economic Analysis
Analysis: Anderson Economic Group, LLC
Michigan is second only to California in terms of agriculture diversity with over 300 commodities commercially produced. The agriculture and food industry now contributes $96 billion to our state’s economy—an increase of $25 billion since 2009, and well on the way to meeting an industry-wide goal of $100 billion by 2015.

The development of the New International Trade Crossing provides another viable trade route for Michigan agricultural exports and imports via the Detroit/Windsor corridor. Michigan agricultural exports are up 16 percent year over year, with approximately 60 percent of all agricultural exports shipped to Canada, our largest trading partner.

Michigan Department of Agriculture and Rural Development secured $3 million grant program to fund proposals to advance agricultural processing.

Michigan’s tourism market brought in an estimated $18.1 billion in visitor spending and provided 200,000 jobs for Michiganders in 2012.

Michigan’s surplus growing forest stock (annual net growth minus harvest) is the largest in the nation, 2.3 times the amount harvested annually, representing significant expansion potential of a $17 billion dollar industry.

Michigan also ranks 9th nationally for biomass energy production, and has significant expansion potential from the millions of tons of harvest and processing residue produced, but faces challenges in price efficiency and interconnection with electric grids.

In 2013, extraction of the state’s oil, natural gas and minerals generated $39 million to support Michigan’s outdoor and natural resource assets such as parks, trails, and public waterway and public land access. Further, the Natural Resources Trust Fund board granted $27.7 million for 76 projects to develop and improve public recreation opportunities statewide.

Wind energy has been the primary source of new renewable energy in Michigan. At the end of 2013, there were over 1,100 MW of utility-scale wind projects in operation in Michigan with plans to increase generation to over 1,400 MW by the end of 2014.

“Michigan ranked 15th in patents awarded for natural resources-related applications, which captures the level of innovation by companies and inventors in the state.”
5. Global Center of Mobility

Michigan has been a center for automotive innovation for as long as cars have existed. The state has a unique opportunity to continue to expand with the automotive industry, by growing the existing automotive cluster to a hub of diverse set of industries that meet the demands of global mobility. Michigan can increase its focus on multi-modal sustainable transportation. In addition, developing cutting-edge research and technology for vehicles will help Michigan advance as a center of mobility.

Where we stand

Inputs

Michigan has performed consistently well, and is generally improving, on input metrics for the Global Center of Mobility opportunity. The state is ranked in the Top Ten for patents awarded, and the share of national GDP, earnings, and employment in mobility industries. Its position in share of national GDP improved considerably between 2010 and 2011. The state improved slightly in the number of auto-ready graduates per population of 100,000 between 2011 and 2012.

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th></th>
<th>2012</th>
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<tbody>
<tr>
<td></td>
<td>MI</td>
<td>MI Rank</td>
<td>Top Ten</td>
<td>MI</td>
</tr>
<tr>
<td>Auto-Ready Graduates per 100k</td>
<td>61</td>
<td>17th</td>
<td>71</td>
<td>64</td>
</tr>
<tr>
<td>Number of Establishments</td>
<td>13,509</td>
<td>15th</td>
<td>13,369</td>
<td>11,286</td>
</tr>
<tr>
<td>Patents Awarded</td>
<td>1,344</td>
<td>2nd</td>
<td>440</td>
<td>1,608</td>
</tr>
<tr>
<td>Share of Nat’l GDP*</td>
<td>3.1%</td>
<td>8th</td>
<td>2.9%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Share of Nat’l Employment</td>
<td>4.7%</td>
<td>4th</td>
<td>3.3%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Share of Nat’l Earnings</td>
<td>4.45</td>
<td>5th</td>
<td>3.1%</td>
<td>4.3%</td>
</tr>
</tbody>
</table>

*For 2010 and 2011

Source: IPEDS, U.S. Census Bureau, BLS, USPTO, BEA
Analysis: Anderson Economic Group, LLC
Outputs

Overall, the state’s performance in industries related to the Global Center of Mobility opportunity is above average, with Michigan ranking in the top five for employment in Global Center of Mobility industries. Employment in this sector grew more than three times the rate of overall private sector employment from 2011 to 2012.

Earnings in these industries, however, have fallen even while GDP and employment grow. This is particularly the case in the automotive manufacturing and automotive parts manufacturing industries.
Potential Growth Scenarios

If Michigan were to achieve the growth rate of the 10th-fastest growing state for each metric, Michigan’s GDP, employment, and average earnings in these industries would increase from their current levels by 245%, 31%, and 22%, respectively, by 2022.

The Next Steps

How to leverage our automotive industry

Michigan is the number one state for vehicle research and development, the number one state for vehicle production and home to 47 of the top 50 automotive suppliers. As the auto sector transitions into a mobility industry, Michigan is uniquely positioned to design and build the future of transportation with its unmatched network of suppliers, talent, and R&D capabilities. To remain the leader of the auto sector Michigan must move forward strategically and aggressively. Specifically, Michigan must foster stronger public-private leadership, aggressively market its assets and the auto industry, attract more mobility conferences, develop a stronger talent pipeline, establish facilities that enable OEM-supplier collaboration and increase mobility-focused venture capital. As the industry changes, the state can leverage its automotive and mobility industry prominence to lead in sustainable mobility, multi-modal systems, vehicle and infrastructure technology to improve road safety, and auto industry growth.
During 2013, the automotive industry took a major step forward with the creation of new government structures for economic advancement, specifically with the establishment of the Automotive Industry Office within the Michigan Economic Development Corporation.

A state mobility plan was developed by industry stakeholders that calls for fostering private-public leadership, aggressively marketing more mobility conferences, developing a stronger talent pipeline, establishing facilities that enable OEM-supplier collaboration and increasing mobility-focused venture capital.

For the fourth consecutive year, automotive manufacturing employment increased by 3.6 percent in Michigan from 148,300 in December 2012 to 153,600 in December 2013.

For the fourth consecutive year, light vehicle production increased by 8.1 percent in Michigan from 2,252,219 in 2012 to 2,434,460 in 2013 or by 8.1 percent. This production level is at least twice that of any other U.S. state or more than all of Canada.

“Michigan ranked in the top five for employment in Global Center for Mobility industries.”
6. Life Sciences Hub

A demand for higher quality of life persists among developing and developed nations alike. The search for solutions in the life sciences is causing health care expenditure growth to outpace GDP growth in the developed world. Michigan already has a high amount of bio-science degrees awarded, as well as high-end medical research facilities paired with capacity in hospital and healthcare facilities. Bio-pharmaceutical product development, medical device innovation, and market research and testing can help to promote the development of Michigan as a Life Sciences Hub.

Where we stand

Inputs

Michigan ranks in the top half of states for each input metric that we evaluate for life sciences industries. The state made significant improvements in venture capital investment, more than tripling the amount of venture capital for life science firms from 2011 to 2012. While the amount of spending at universities for research and development in the life sciences decreased somewhat from 2011 to 2012, Michigan retained its position at 10th place among all states in this category. While still in the top 20, Michigan’s rank did drop for the number of graduates with concentration in the life sciences.

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>MI Rank</th>
<th>2012</th>
<th>MI Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduates per 100k</td>
<td>314</td>
<td>13th</td>
<td>357</td>
<td>19th</td>
</tr>
<tr>
<td>Number of Establishments</td>
<td>940</td>
<td>13th</td>
<td>1,308</td>
<td>13th</td>
</tr>
<tr>
<td>Life Sciences R&amp;D Spending at Universities (millions)*</td>
<td>$1,122</td>
<td>10th</td>
<td>$1,089</td>
<td>10th</td>
</tr>
<tr>
<td>Venture Capital Investment in Life Sci. Firms (millions)</td>
<td>$27.9</td>
<td>24th</td>
<td>$139.8</td>
<td>14th</td>
</tr>
<tr>
<td>Active Clinical Trials**</td>
<td>1,775</td>
<td>11th</td>
<td>3,794</td>
<td>13th</td>
</tr>
<tr>
<td>Patents Awarded</td>
<td>235</td>
<td>19th</td>
<td>571</td>
<td>19th</td>
</tr>
</tbody>
</table>

*For 2010 and 2011
**For 2012 and 2013

Source: IPEDS, U.S. Census Bureau, BLS, NSF, NIH, USPTO. Analysis: Anderson Economic Group, LLC
**Outputs**

Overall, the state’s performance on output metrics in life sciences industries is about average, with Michigan ranking around 20th for personal income, GDP and employment.

The state has improved slightly in comparison to its peers on employment and earnings. Within the industries related to the Life Sciences Hub opportunity in Michigan, pharmaceutical and medicine manufacturing had the greatest employment gains, while medical equipment and supplies manufacturing saw the greatest increase in average earnings.

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**Average Earnings**

- **22nd** (2012: $68,532) vs. **20th** (2011: $69,068)

**GDP Per Capita**

- **29th** (2010: $316) vs. **28th** (2011: $320)

**Employment/Working-Age Population**

- **22nd** (2012: 0.42%) vs. **20th** (2011: 0.42%)

*Source: BEA, BLS, U.S. Census Bureau
Analysis: Anderson Economic Group, LLC*
**Potential Growth Scenarios**

If Michigan were to achieve Top Ten growth in these industries, they have significant economic potential. Michigan’s real GDP in these industries would nearly double, to $5.9 billion from $3.2 billion. Also, employment would increase to 34,000 and average annual earnings would increase to an impressive $81,000.

**The Next Steps**

**How to leverage our health and medical expertise**

Michigan can leverage its health & medical expertise and establish itself as a Life Sciences Hub by creating a hub for bio-pharmaceutical R&D, becoming a center for research, testing, and medical labs, and growing medical tourism.

> Michigan made significant improvements in venture capital investment, more than tripling the amount of venture capital for life science firms from 2011 to 2012.
During 2013, the following accomplishments helped grow the life sciences sector:

- Michigan attracted $70.2 million in venture capital investment for 16 companies in 2013. The state was third among eleven Midwest states in total amount raised.

- Michigan ranks 10th nationally in number of clinical trials conducted (8,403) through February 2014, and of them, 5,305 clinical trials were sponsored by the biopharmaceutical industry.

- Wayne State University received a 10-year, $165.9 million renewal of its Perinatology Research Branch that will continue conducting critical perinatal and maternal-fetal medical research in Detroit.

- Esperion Therapeutics, based in Plymouth, at the Michigan Life Sciences Innovation Center, successfully raised a $70 million initial public offering in 2013 to support ongoing development of non-statin treatments for elevated levels of "bad" cholesterol.
Conclusion

Our vision for Michigan is bold, strategic, and attainable. But we have to work together to make it happen today. Other states are not standing still—in fact, they are moving forward just as aggressively as we are to attract new job providers, build new technologies, and seize the economic opportunities that are ripe for the taking.

The future of our state can be as bright as we choose to make it. Working together, we have the unified strategy, tools, and resources to deliver on our rich history and future potential. But Michigan’s future won’t happen without the collaborative efforts of us all—families, students, leaders and professionals—each of us brings dynamic ideas, hard work, and action to the table. It will take the collective strength of all Michiganders to deliver the type of change we need.

The New Michigan is within reach. Let’s make it happen.
Research for the 2014 New Michigan Report was conducted by Anderson Economic Group, a research and consulting firm with expertise in economics, public policy, finance, and industry analysis.

The data presented in this report come from several sources, most of which are publicly available. The report used the most recent data available for which there was a complete data set. Earnings data is presented in 2013 dollars, including future projections. Dollar amounts for all input metrics are in nominal amounts for the corresponding year. Real GDP figures are presented in chained 2005 dollars. This is the conventional way to present real GDP data, as used by the Bureau of Economic Analysis.

For more detail on the methodology used to compile this report refer to: 2014 New Michigan Report-Appendix A: Methodology at: http://www.businessleadersformichigan.com/research-reports/

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Charter One

Delta Air Lines, Inc.

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