



# Growing the New Michigan

## – Higher Education Marketplace



December, 2011

Developed by McKinsey & Company with support from Business Leaders for Michigan staff

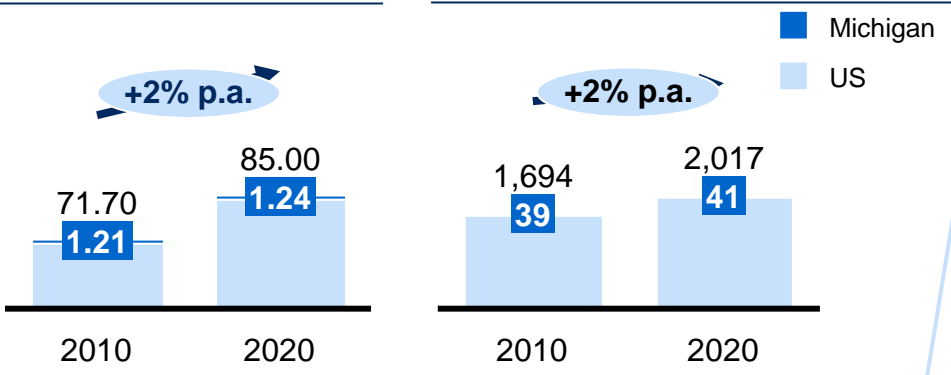
# Michigan can leverage its competitive research universities to develop a Higher Education Marketplace

## The asset

- Michigan’s research universities are recognized nationally and internationally in their educational excellence and research capabilities
- High patent activities do not translate into corresponding commercial impact and startup activities (e.g., university research driven startup results improving, but still below top states like Massachusetts)
- Michigan educates significant amount of STEM graduates but faces challenges in retention and attraction

**Higher education GDP**  
\$ Billions

**Higher education employment**  
Thousands

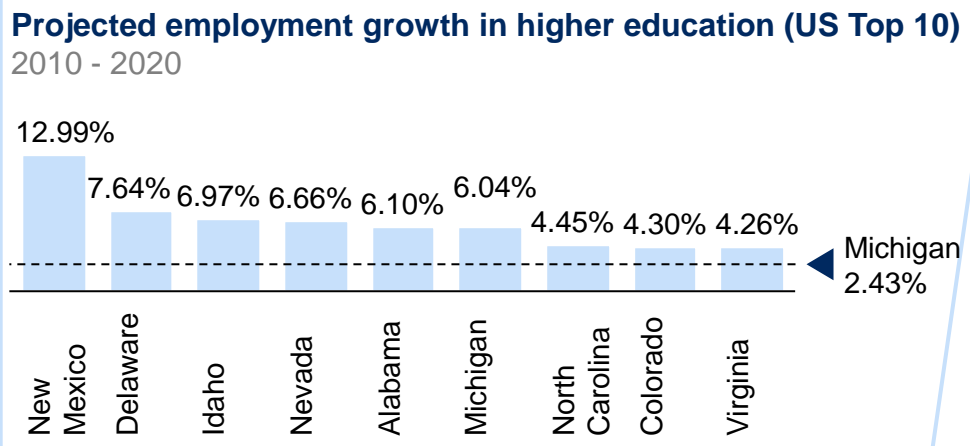
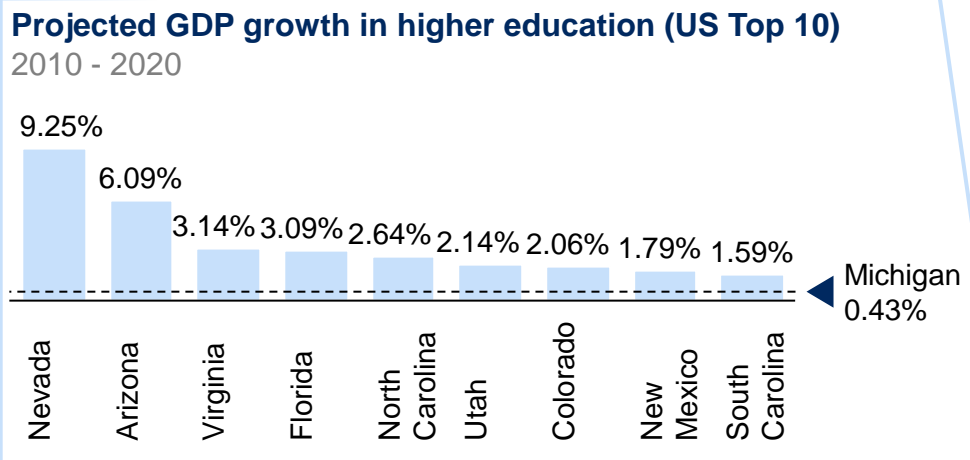


## Potential ways to leverage the asset

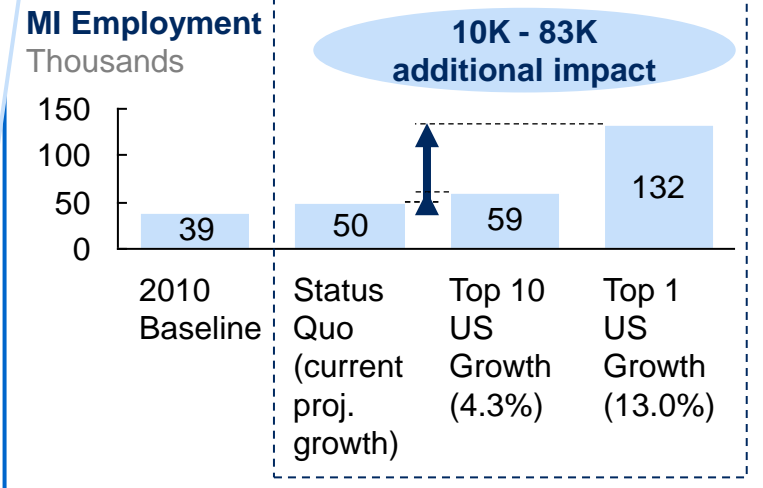
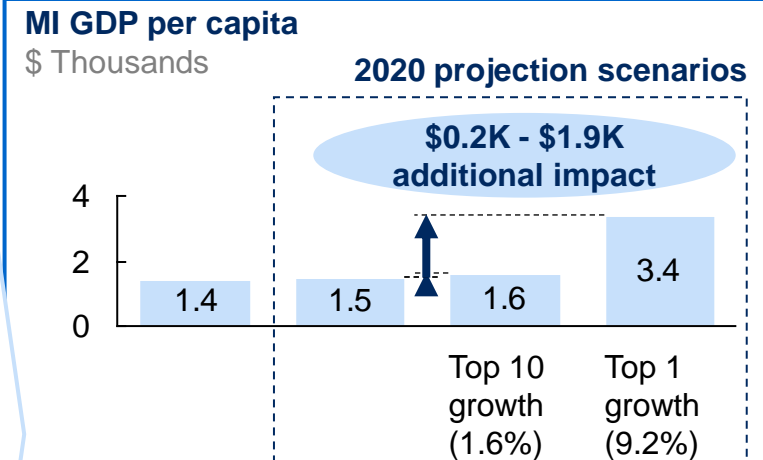
- A “Top-Ten” higher education system based on quality outcomes, productivity, and affordability
- A growing higher education center, producing STEM talent that will help drive development of the local economy
- Increase out of state enrollment at Michigan universities
- Increase industry sponsored R&D to national average to drive direct economic impact of innovation
- Become a larger hub for federal research and drive innovation on a national scale

# 2020 Goal: Michigan should be a Top Ten state in higher education

## Today, top US states outperform Michigan in growing higher education



## Michigan should aspire to reach top US state growth in higher education



## Key considerations for becoming a higher education marketplace

### A Opportunity & aspiration

- Economic growth over the next several years will come primarily from innovation driven increased productivity as opposed to labor growth
- Our higher education institutions could be the fountainhead of this innovation
- In 2018, 62% of the jobs needed in Michigan (approximately 2.9 million) will require some level of postsecondary education. Of those, 45% (1.3 million) will require at least a bachelor's degree
- Opportunity for Michigan lies in 4 key areas
  - Become a leader in science and technology education
  - Attract and retain best out-of-state and international students (less than 7.7% of freshmen currently come from out of state compared to 20.1% nationally)
  - Be the preferred research partner for federal research
  - Drive commercial impact of innovation thru collaborative research with private institutions; Michigan ranked # 4 Nationally in patent activity

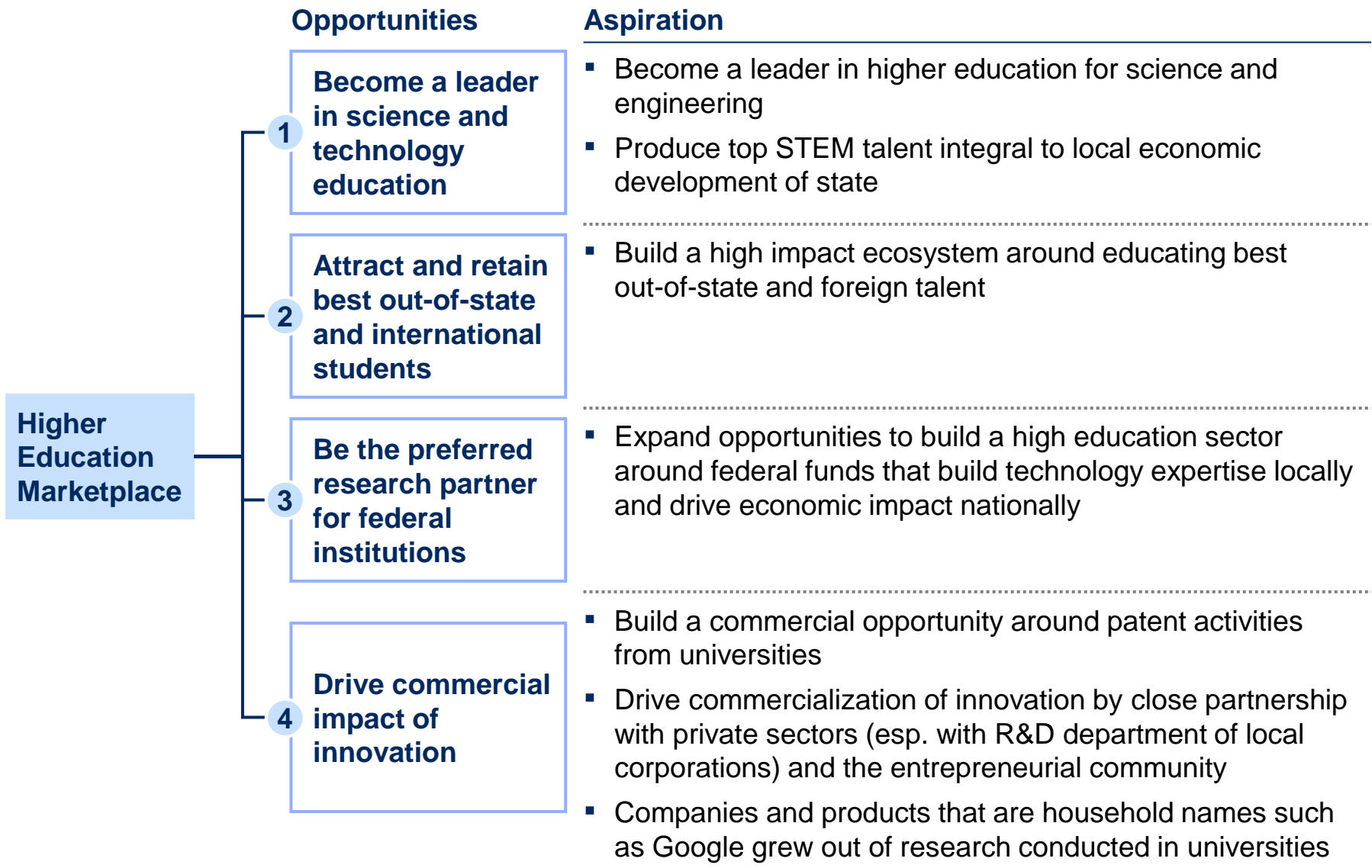
### B Feasibility & case for action

- In 2009, Michigan ranked 10th nationally in Academic R&D spending at over \$1.7 billion
- URC schools estimated economic impact in Michigan in 2010 was \$14.8 million
- Major research universities have been the drivers of some of the greatest technological innovations of the last century, including GPS, eBooks, and the internet
- The higher education sector is becoming increasingly competitive with developing countries investing heavily in their institutions; to stay in top position, we need to advocate for increasing state support for higher education institutions, tying the increases to outcomes in R&D activity and awarding degrees in fields that correspond with future workforce needs.

### C Potential Enablers

- Public opinion needs to be turned: A majority of the public think the value of a college education is only fair or poor
- Need to recognize higher education as industry sector

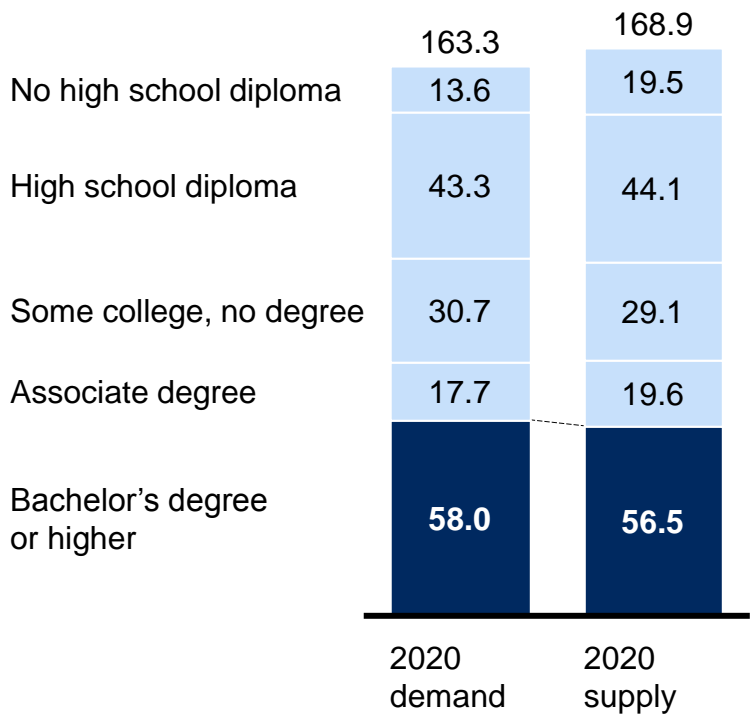
# Michigan should aspire to grow university enrollment and expand higher education marketplace



# 1 Higher education in science and engineering

## A Opportunity & aspiration

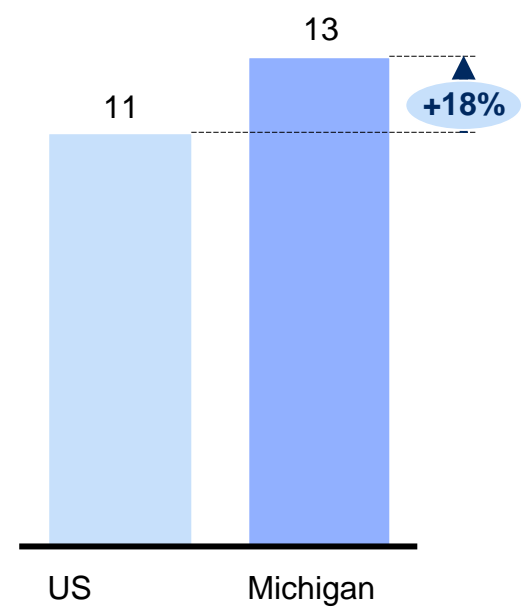
**Demand vs. supply—2020 projections (high-growth demand scenario)**  
Million



- Labor demand and supply projections indicate 1.5 million too few college graduates in 2020
- Position in science and engineering are the second hardest to fill, according to employers

## B Feasibility for Michigan

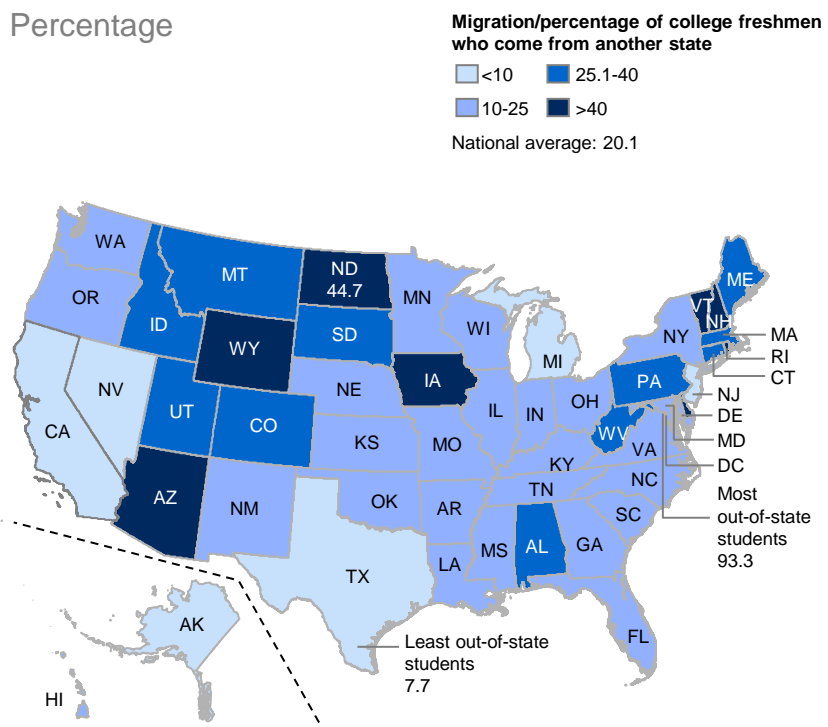
**Talent availability** → **Proportion of STEM graduates**  
Percent of total, 2009



- STEM graduates are already a significant portion of current graduates
- High ranking STEM programs such as University of Michigan and Michigan State

## 2 Expand economic opportunities by growing out-of-state enrollment

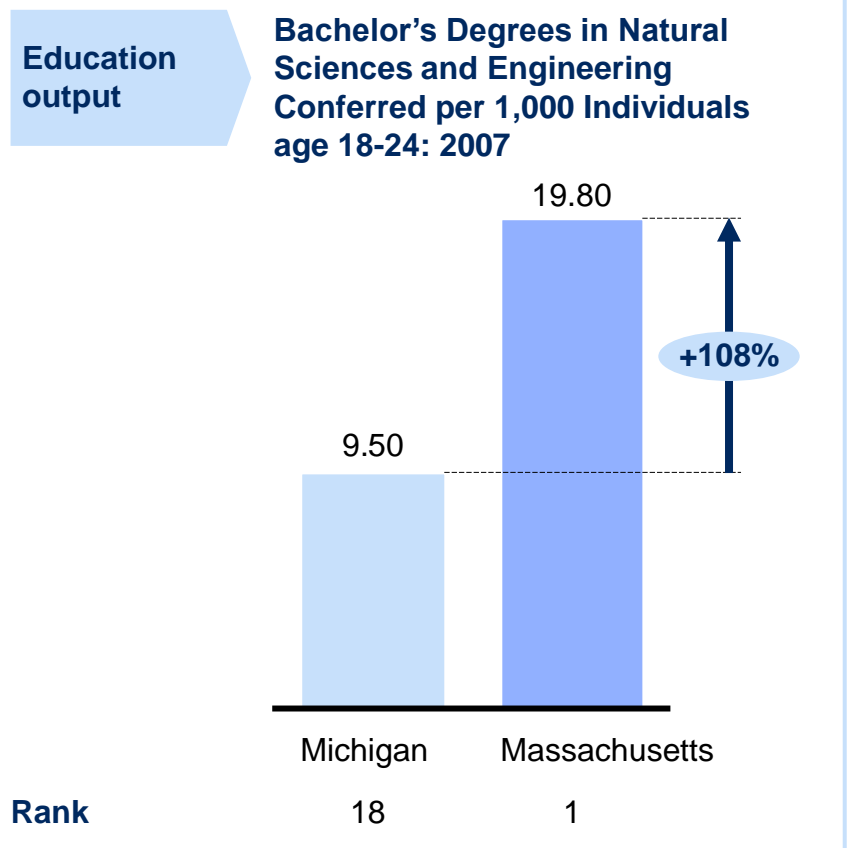
### A Opportunity & aspiration



Note: Data for 2008, the most recent year available  
 SOURCE: National Center for Education Statistics

- **Less than 7.7% freshman currently come from out of state, compared to National average of 20.1% and 93.3% of Washington DC**
- **However, out-of-state and especially foreign enrollment is a growing economic opportunity**

### B Feasibility for Michigan

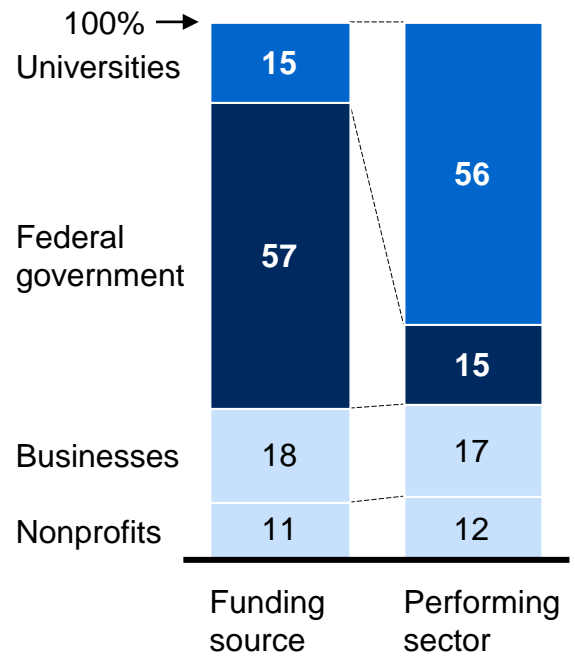


- **Michigan is competitive nationally in terms of STEM degrees conferred, but could improve**

### 3 Basic research for federal government

#### A Opportunity & aspiration

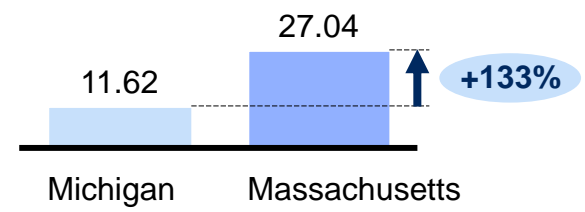
Basic research by performing sector & funding source  
2008



- The majority of basic research in the United States is conducted at our universities
- The majority of funding for basic research comes from the Federal government

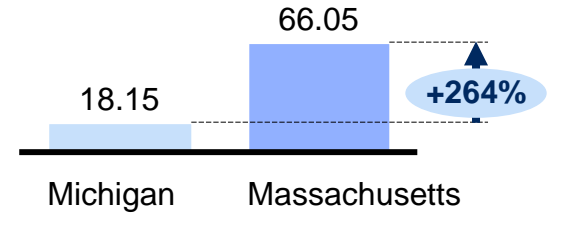
#### B Feasibility for Michigan

R&D activity R&D expenditure per FTE \$ Thousands 2001 - 2008



Rank Michigan 6 Massachusetts 2

Innovation Competitive-ness Index of innovation based competitiveness 2011



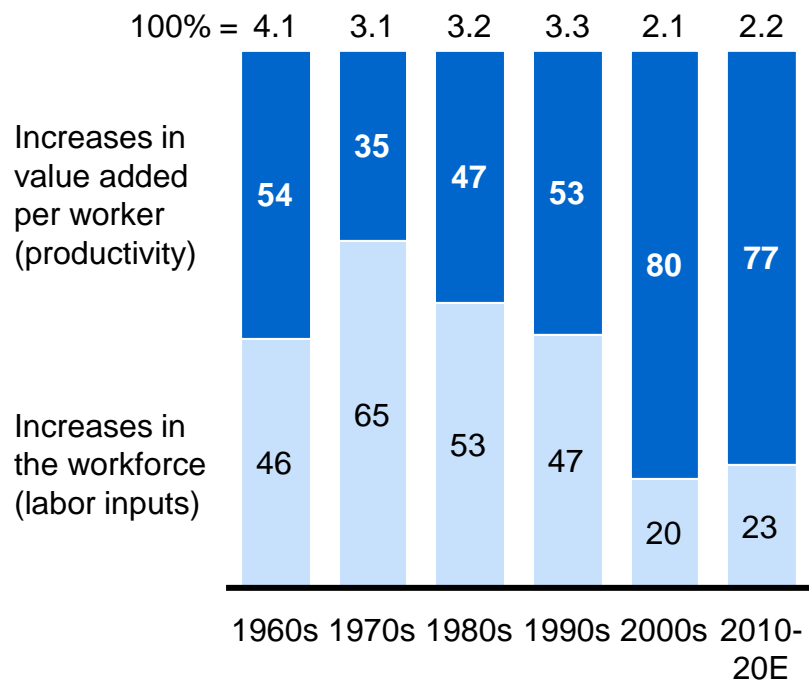
Rank Michigan 12 Massachusetts 1

- Michigan already attracts significant R&D dollars on per FTE basis
- However, there is opportunity to increase the share of federal research through a well defined value proposition on innovation

# 4 Drive commercial impact of innovation

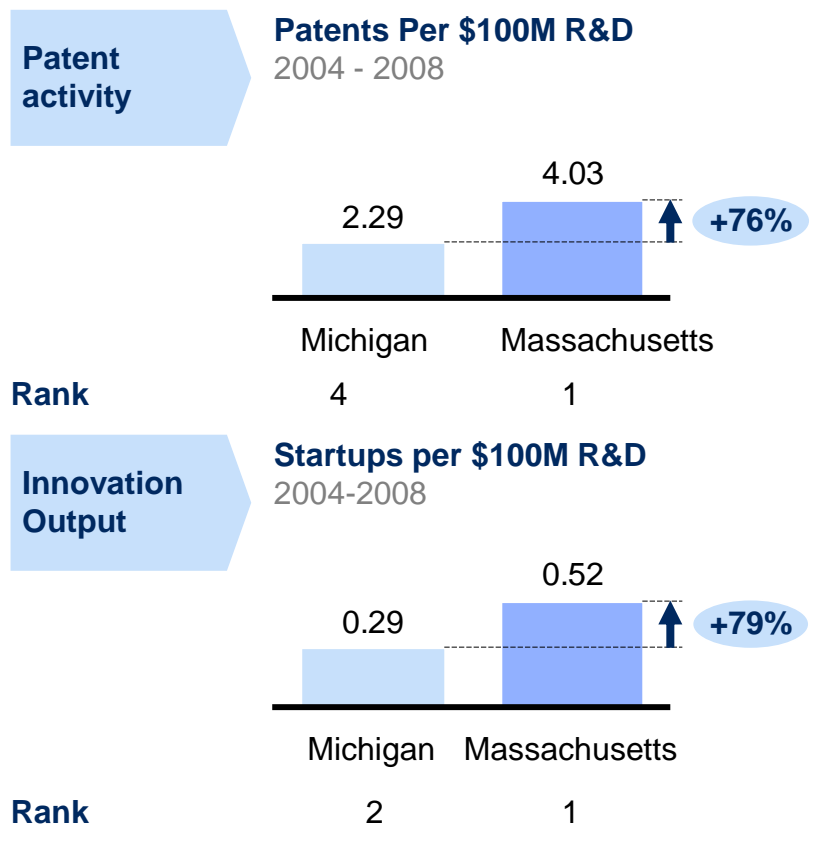
## A Opportunity & aspiration

**Contributions to growth in real US GDP, overall economy**  
 Share of compound annual growth rate, 1960–2008, %



- Innovation is increasingly the majority of value-added growth
- Consequently, opportunities to drive commercial impact with innovation is also increasing

## B Feasibility for Michigan



- Per R&D dollar, Michigan is one of the top performers in terms of both patent activities and startup activities

# Ⓢ Potential enablers – What needs to happen to successfully pursue the opportunity?

	Role	Requirements	Key enablers	Case examples
<b>Federal government</b>	<ul style="list-style-type: none"> <li>Support universities and research</li> </ul>	<ul style="list-style-type: none"> <li>Partnership between private and public sectors</li> </ul>	<ul style="list-style-type: none"> <li>A “productive” public sector</li> </ul>	Finland
<b>Universities</b>	<ul style="list-style-type: none"> <li>Backbone of the higher education ecosystem</li> </ul>	<ul style="list-style-type: none"> <li>Funding availability</li> <li>Talent - both on faculty and student side</li> </ul>	<ul style="list-style-type: none"> <li>Modernized infrastructure</li> <li>Capital Availability</li> <li>Innovative K-12 education – pipeline of raw STEM talent</li> </ul>	Korea
<b>Startups</b>	<ul style="list-style-type: none"> <li>Driver of next generation of innovation and economic development</li> </ul>	<ul style="list-style-type: none"> <li>Availability of resources</li> <li>Availability of talent</li> <li>Ease of starting and operating business</li> </ul>	<ul style="list-style-type: none"> <li>Business friendly regulations</li> <li>Capital Availability</li> <li>Development of entrepreneurs</li> </ul>	California
<b>Students</b>	<ul style="list-style-type: none"> <li>Provide the talent pool, and revitalize city areas</li> </ul>	<ul style="list-style-type: none"> <li>Robust education</li> <li>A vibrant community</li> <li>Employment opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Vibrant cities/strong quality of life</li> <li>“Frictionless” job markets –magnet for talent</li> </ul>	Netherlands

## ② Potential enablers – What needs to happen to successfully pursue the opportunity?

Potential enabler	Potential actions	Case examples
1 Immigration reform	Support targeted immigration reform to improve tuition revenues by attracting talented out state and international students in desired field of studies	Australia
2 Entrepreneurial environment	Develop incubators to encourage and support entrepreneurial activities emerging directly from university systems in order to attract out of state entrepreneurial talent	Massachusetts
3 Improved talent retention	Encourage universities to partner with private sector to improve curriculums, in order to provide targeted education for local economy	Finland
4 Sustainable pipeline of R&D activity	Leverage BLM-URC partnership to drive commercialization of university research in order to ensure direct economic impact	California

# Case examples

Case examples parallel to Michigan NOT EXHAUSTIVE

**Canada**

- Although institutions are publicly-owned, universities have always had high levels of autonomy in terms of funding allocation and governance

**France**

- The French Higher Education system is based on 3 principles: success for students, excellence in research and innovation for French society as a whole
- France's HE system is mainly public and is aimed at offering wide access

**Finland**

- Large range of provision in vocational and research-based Higher Education
- The Finnish government is putting emphasis on institution consolidation in an effort to create centers of excellence

**Korea**

- Korean Government and Universities introduced a "National Project Toward Building World Class Universities" to attract highly- qualified foreign professors and researchers in order to improve international rankings



**California, US**

- Nonresidents make up 12.3 percent of the system's freshman class in 2011, up from 8 percent last year
- Close partnership with private sector and entrepreneurial communities to encourage innovation and startup activities

**Netherlands**

- Government use funding incentives to shape focus of institutions
- Vocational institutions have internal boards that consult employers and other members of the professional community to ensure their courses provide the skills that are needed by the workforce

**Australia**

- Australia has a balanced funding of the HE system, with 48% of funds from public sources and 52% from private sources in 2007 (51% public, 49% private in 2006 according to OECD)
- International students' fees are a key source of income for universities, providing 15% of total income and comprising 20% of the total student body

# Australia – A well-developed support system for students has led to high participation

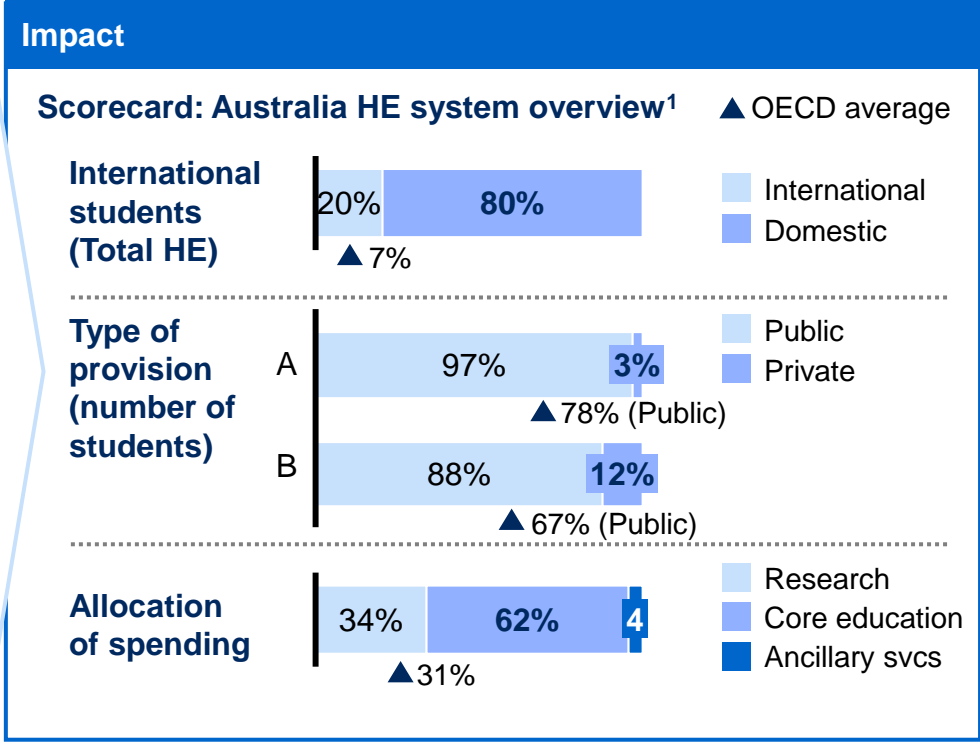
<b>Idea</b>	<ul style="list-style-type: none"> <li>Government actively studies the challenges of the system and provide necessary support</li> </ul>
<b>Key Lessons</b>	<ul style="list-style-type: none"> <li><b>Public and private funding:</b> a balanced funding of the HE system, with 48% of funds from public sources and 52% from private sources in 2007</li> <li><b>Educate foreign talent:</b> International student fees are a key source of income for universities and an important talent pipeline for the local economy</li> <li><b>Government support:</b> Government appointed a panel to review the HE system and provide solutions</li> </ul>

**Case facts**

- Although tuition fees are one of the highest among OECD countries (\$9,982), entry rates are high (86%<sup>1</sup>), mostly due to government subsidizing approximately 50% of students fees and a comprehensive support system that allows students to defer the payment of their contribution until their income reaches a set threshold
- International students' fees are a key source of income for universities, providing 15% of total income and comprising 20% of the total student body

**Similarities to Michigan**

- Strong education infrastructure
- Increasing supply demand gap of high skilled labors



<sup>1</sup> Type A is theoretical degrees and type B is technical degrees