

# **Economic Benefits Workgroup**

## *Research Brief*

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**by**  
Thomas E. Perorazio & Britany Affolter-Caine  
The University of Michigan, Ann Arbor



As illustrated by the first economic benefits workgroup meeting; the topic of enhancing economic benefits from higher education casts a broad net across a variety of issues and potential strategies.

To focus the work of the group, be responsive to the requests for additional data and information as context for the work group recommendations, and stimulate discussion and debate, this policy brief was developed.

It is intended as a starting point to frame potential major categories of economic benefit leveraged by education and higher education institutions, policy, and practice. It incorporates discussion of requested data and current policy and practice, as well as leading-edge practices under those headings.

A number of work group-requested studies from MEDC and other sources are available on the website. Where additional data and information requested by the commission work group members is not yet available, this is noted.

The report is organized around the following major headings:

- 1. Commercialization of Research**—Create incentives for research universities to spin off economic development in Michigan rather than export patents or other intellectual property elsewhere for development. Linked to venture capital enhancement, incubation strategies, and rewards in the institutional culture for commercialization.
- 2. Michigan's Status as a Gravity Center for Talent**—Increase quantity of R&D professionals and activity. Set goals to increase the number of R&D workers located in Michigan, help private/university sector recruit R&D centers/institutes linked to universities, keep and attract talent. R&D workers create the “cocktail” of job creation and populate “cool” cities.
- 3. Economic Growth and Workforce Alignment**—Link higher education to meet the needs of Michigan's economy and fuel economic growth. Create state/regional mechanism for providing colleges and universities with high-quality workforce data and foster higher educational institutional efforts and success at addressing the state's emerging workforce needs. Enhance higher education and community college direct services to business, key sectors in training and technical assistance.
- 4. Entrepreneurship education, K–16, Degree Programs**—Support a culture change that embeds entrepreneurial culture and skills, increases number of entrepreneurs and activity, as key requisite for fostering innovation and job creation.
- 5. Cool Cities/Community Development**—Engage higher education institutions in community development efforts aimed at creating neighborhoods and place-based environments that are attractive to young knowledge workers, as well as diverse, creative populations. Including strategies for immigrant-friendly (with education implications) physical environment, arts, culture, and partnerships with communities and higher education.

## **TOPIC 1. COMMERCIALIZATION OF RESEARCH**

Academic research leads to the launch of hundreds of start-ups, which impacts the economy in terms of new companies, new jobs and new streams of income. According to the Association of University Technology Managers (AUTM) Licensing Survey for fiscal year 2000, start-ups launch and remain most often in the state in which the technology was created (as cited by Bantel 2003). The AUTM survey also notes that start-ups have financial benefits to the university in terms of percentages of equity interests in the start-up firms and revenue from licenses and options. To realize start-up potential, however, states must not only be home to the technology being developed, but also to the entrepreneurs who can commercialize the technology.

The organization in Michigan taking responsibility for analyzing the state's performance in promotion of economic growth through university-business partnerships is the Partnership for Economic Progress, a collaborative initiative of The Michigan Economic Development Corporation and the President's Council, State Universities of Michigan. In 2001, it began assessing the relative performance of Michigan's public universities in technology transfer activities. Relying on data from the Association of University Technology Managers (AUTM) and reports from the directors of the institutions' tech transfer offices, the first assessment report compared Michigan's four universities in the AUTM survey (UM, MSU, WSU, and MTU) to the national average as well as the six highest performing institutions nationally. These benchmark institutions are the University of California, Columbia University, Stanford University, the Massachusetts Institute of Technology, the University of Wisconsin-Madison, and the University of Washington.

Examining this data does not allow for the determination of economic impact, as the invention, development, and marketing of new products resulting from university innovation is hardly a linear process. In addition, it is difficult to compare institutional activity because the number of patents, licenses, and disclosures can fluctuate wildly from year to year. Also, the amount of revenue institutions receive can be misleading because one particular patent can account for almost all the license income received. Moreover, when trying to ascertain the number of jobs created in the state, one should also remember that not all business created—or for that matter—licenses and options executed—remain in the state. The number that remains in a given year depends on the financial arrangements and the sources of venture capital. Still, the income received does remain in state as it goes to the universities, the inventors, and the academic departments to be reinvested in research.

The 2001 and 2002 reports (1999 and 2000 data) observed that the state institutions, taken together, approached or exceeded the national averages in many of the AUTM measures, while individual institutions had exceptional performances in a few. The 2002 report also shows improvement in many areas over the 2001 report. In the number of licenses and options yielding license income, the four state institutions were below the national average, although this gap narrowed in 2002. Regarding license income received, the state's average amount was more than the national average, due primarily to the large revenues received by MSU for two anti-cancer drugs, but the national average increased by nearly-two-thirds in the data used in the 2002 report, while Michigan's

average only increased by 9 percent. In another examination of impact, the amount of research conducted at universities, as measured by sponsored research dollars, and collaboration with the private sector, as measured by industry funding for research, are both important metrics for understanding tech transfer performance. The 2001 report observed that the four institutions as a whole were approaching or out-performing the national average on these indicators of the quantity and quality of technology transfer activities. Michigan universities improved on total sponsored research dollars, but declined in industry funding, reflecting a decrease in national funding (Partnership for Economic Progress, 2001, 2002).

**RESULTS**

TABLE I: SUMMARY OF METRICS FOR 1999 AND 2000

METRICS	1999			2000		
	MI AVG	NATL AVG	MI AVG NATL AVG	MI AVG	NATL AVG	MI AVG NATL AVG
Licenses and options yielding income	42	48	88%	52	53	98%
Adjusted gross license income received (in thousands)	6,966	4,612	151%	7,584	7,579	100%
Total sponsored research dollars (in thousands)	220,677	169,536	130%	237,657	181,339	131%
Industry sponsored dollars (in thousands)	16,652	16,030	104%	15,935	15,591	102%
Disclosures per \$10M research dollars	4.30	4.80	90%	5.20	4.20	125%
Licenses per \$10M research dollars	1.60	1.30	122%	1.60	1.40	112%
Number of start-ups	1.00	2.00	53%	2.00	3.00	67%
Start-ups/\$10M research dollars	0.04	0.13	31%	0.05	0.14	36%
Conversion rate of disclosures to licenses	32	33	97%	26.9	33.4	81%
Conversion rate of disclosures to start-ups	1.25	2.81	44%	2.7	3.4	79%

Source: The Partnership for Economic Progress, *The 2<sup>nd</sup> Annual Assessment of Technology Transfer*, 2002.

The areas in which Michigan does the poorest relative to the national average demonstrate that the state has not been as successful in translating these sponsored research and technology transfer activities to economic development. Although Michigan's public universities held their own nationally in terms of the numbers of disclosures and licenses per \$10 million of sponsored research, the Michigan institutions fell short of the national averages in start-up activity, while the benchmark institutions had numbers far exceeding the national average. In examining the 2000 data, Michigan's institutions showed considerable improvement, owing to the generation of nine start-ups. Still, the performance of Michigan's four institutions participating in tech transfer was below that of the chosen benchmark institutions (Partnership for Economic Progress, 2001, 2002).

There are other indicators of Michigan's relative performance in technology transfer. The Milken Institute has created a State Technology and Science Index to compare the 50 states in terms of the technology and science assets that can be leveraged to promote economic development. Michigan ranks 25th in the nation, down one spot from the 2002 index. This places Michigan in the second of the report's four tiers. The State Technology and Science Index is composed of five equally weighted major composites (Michigan ranks are in parentheses): Research & Development Inputs (15), Risk Capital and Infrastructure (37), Human Capital Investment (19), Technology and Science Workforce

(22), and Technology Concentration and Dynamism (23). In the overall ranking, Michigan is not only behind national leaders like Massachusetts and California and other east and west coast states, but also behind other states in the Midwest, such as Minnesota, Pennsylvania, and Illinois (DeVol & Koepp, 2004).

### ***Venture Capital***

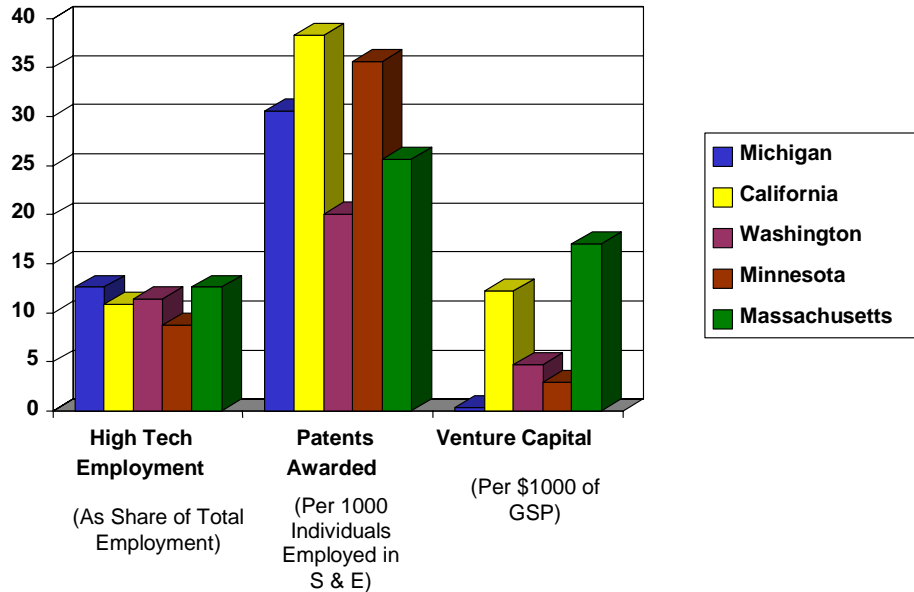
The recently published National Governors Association (NGA) guide to developing state entrepreneurship policy encourages investment in diverse sources of risk capital for the state's entrepreneurs and growth companies. Strategies include developing a rich base of early-stage capital options, supporting angel investors, and ensuring that risk capital is available in underserved rural areas. But how do we implement these strategies?

Preparing our science, engineering, and business graduates to be entrepreneurs is not enough. We also need to provide a fertile environment for entrepreneurial activity. We know Michigan is highly ranked in number of patents developed each year, but how many of these are being commercialized in our state? Michigan ranks in the third quartile for venture capital per \$1,000 of gross state product, which separates our state from first quartile-ranked states similar to ours in terms of human capital and patent resources. Venture capital is vital for providing funds to seed good ideas and grow them into living and breathing businesses that can drive a state's economy. With less available venture capital relative to competitor states, Michigan may lack a key element in providing the fertile environment entrepreneurs seek when considering a home for their prospective businesses.

It appears that a relative lack of talent may not be the primary issue. Recent analysis of data by the National Science Foundation reveals that Michigan ranks in the first quartile nationally for people employed in high-tech occupations as a share of total state employment. Michigan is also ranked in the first quartile in number of patents awarded per 1,000 individuals employed in science and engineering. But, Michigan is ranked in the third quartile for venture capital per \$1,000 of gross state product, separating itself from these other states, which rank in the first quartile (see Figure 1).

Michigan has taken several recent steps to enhance its venture capital vehicles. MEDC established a venture capital fund and hired a full-time Director of Venture Capital. MEDC led the formation of *Michigan Angels Network*, which offered a loose networking opportunity for angels as well as start-up companies. In 2002, investment leaders from a variety of firms across Michigan formed the Michigan Venture Capital Association (Michigan VCA). Its mission is to help people across the state understand the importance of venture capital and the role it plays in the development of new businesses. A concurrent goal is to establish Michigan as a recognized international leader in the emerging technology industries over the next decade. Participants from regional and local venture capital firms, private equity firms, corporate venture departments, and some of the best educational institutions joined to form the Michigan VCA (Partnership for Economic Progress, 2002).

**FIGURE 1**  
**State Comparison of Venture Capital, Patents, and High-Tech Employment**



SOURCE: National Science Board, *Science and Engineering Indicators 2004* (Washington, D.C.: National Science Foundation, 2004).

Just this year the governor announced the Emerging Business Fund to provide assistance to high-tech firms commercializing research out of Michigan’s universities; matching state dollars with federal SBIR funding; the Venture Michigan fund to support Technology Tri-Corridor technology start-ups, and the Small Business Growth Fund to support small and medium-sized firms.

**TOPIC 2. LINKING HIGHER EDUCATION TO MEET THE NEEDS OF MICHIGAN’S ECONOMY**

The potential for higher education to foster economic development has become very important to states looking to revitalize their economy or surge ahead of other states. To many state legislators and planners, state and land grant institutions are increasingly seen as important elements in economic policy because of their potential to generate new jobs or create commercial products (Barrow, 1996; Matkin, 1993; Wallhaus, 1996). State lawmakers in more than a dozen states have granted large infusions of public funds into universities to produce high technology and economic development, and two dozen states are now making economic development and their state’s competitiveness major components of their master plans for higher education (Schmidt, 2000a, 2000b).

Regional communities and their respective states can foster economic “reinvention” provided they capitalize on human capital, the comparative advantage in today’s global economy. Boston represents the best example of this type of transformation. According to

Davis (2004), Boston in 1980 looked something like Detroit today, but after 20 years, Boston rivals sunny San Jose, California, in terms of its economic vitality. The fact that it incubates and attracts human capital was critical. Boston promoted city growth with strategies that raised the level of local human capital, and clearly benefited from an historical concentration of public and private higher education institutions. Policies that attract, instead of repel skilled and knowledgeable workers are also critical.

We know from the just-published Glazer and Grimes report (2004, appended) that the top four highest paid industries *today* are management of companies, professional and technical services, manufacturing, and wholesale trade, in descending order. Of these four, all but some of the plant floor aspects of manufacturing require a relatively high level of education. Manufacturing in Michigan in 2003, however, accounts for 238,100 more jobs than the other three industries combined, reflecting the slower growth of employment in other high-pay knowledge-based industries in Michigan as compared to the nation.

This data demonstrates Michigan's reliance on the industrial economy that it dominated in the 20th century as opposed to the 21st century post-industrial economies driven by knowledge-based industries. Manufacturing (particularly automotive, which contributes close to 30 percent of our economy) has been Michigan's lifeblood. Michigan does score high on the relative share of occupations that are "high-tech" compared to the rest of the nation, because it has remained the decision, research and development, and design/engineering center for automobiles and related advanced manufacturing industries. The industrial high-tech share of employment in Michigan exceeds the national norm for employment share by 72 percent.<sup>1</sup> Michigan also has a huge share of global R&D in autos and related sectors (we are home to 95 out of 100 of the top R&D firms for Tier One auto suppliers), and spillovers from R&D benefit other manufacturing and non-manufacturing firms.

Grimes and Glazer's report encourages an economy for the future driven primarily by knowledge-based industries and the young professionals and other knowledge workers who will fuel them. But for what types of occupations do we prepare our residents? In which industries? And when we identify these, how do we align our higher education institutions with these goals?

### ***Nurturing the Knowledge Economy***

Michigan policymakers in both political parties have made saving manufacturing jobs a top state economic priority; and Michigan has lost relatively fewer manufacturing jobs in the 1990s and through 2004 than the rest of the nation. However, economic prosperity depends on Michigan remaining the decision and development center for manufacturing, while growing the share of knowledge-based industries beyond those of manufacturing.

Glazer and Grimes' (2004) analysis demonstrates that states and metropolitan areas with above-average per capita income and above-average growth from 1969 to 2001 (i.e., District of Columbia, Massachusetts, Colorado, Connecticut, Virginia, New Hampshire,

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<sup>1</sup> Michigan at the Millennium

New Jersey, Minnesota, and Maryland) confirm the prevailing belief: the post-industrial economy is driven by two things—knowledge-based industries and young professionals (25–34-years-olds holding a bachelor's degree).

In contrast, Michigan's economy has exhibited below-average per capita income in 2001 and below-average growth from 1969 to 2001 compared to all other states. Michigan's share of 25–34-year-olds with a bachelor's degree or more in 2000 was less than the national average. The share of earnings from manufacturing was 10 percentage points greater than the national average, whereas the share of earnings in other high-pay, knowledge-based industries is 3.5 percentage points less than the national average.

### ***Aligning Higher Education and Workforce Needs***

It makes sense that one strategy may be to use our higher education institutions to prepare Michiganders for jobs in the high-pay knowledge-based industries. This requires us, as a state, to know our economic needs and goals, and to have a system for aligning these needs with higher education programs.

One alignment strategy is utilizing market research techniques, as the Michigan Association of Community Colleges and its members have done for many years to identify regional workforce needs and then designing and delivering corresponding programs. While this method works well in some cases, there are two problems. First these studies may identify the need for additional workers in a particular occupation, like nursing, but few students take an interest in pursuing these degrees, therefore never fulfilling the program's capacity or the region's need for nurses. The second problem is that the research surveys the *current* economy's needs and extrapolating into the future, not taking into account the future workforce needs of a "new economy" and the respective knowledge-based industries Michigan is targeting.

*(The workgroup meeting on 8/16 will introduce, and subsequent meetings present, the current analysis of Michigan-specific job, occupation and skill needs and how they might be used to drive the "supply side.")*

Another strategy is to promote continuing education among our current workforce, which impacts both young and older workers in Michigan. There are a number of ways to do this, including corporate tuition incentives. These programs vary in structure (e.g., full tuition, tuition up to "X" amount, tuition for "X" number of credits in a given period of time, matching funds, reimbursement policies), and most certainly in effectiveness. Some of these tuition schemes are tied to a particular field of study congruent with the employing business and/or to continued employment with the sponsoring company. Another corporate strategy is to offer employees opportunities for continued education through a tailored degree program designed according to an employer's specific needs and offered exclusively to its employees by a crediting institution. For example, the University of Michigan School of Business has an Executive Education program that, among other activities, offers tailor-made courses and programs for individual firms. This is basic contract work for higher education institutions.

The overall strategy of corporate-sponsored continuing education is good for growing capacity in industries that drive the state's economy. The main problem with this strategy

is similar to that of conducting market research, in that it impacts industries *already established*, which do not necessarily represent the industries that will lead Michigan onto the path of prosperity. A strategy that considers not only *existing* industries, but also *targeted* industries that will drive Michigan's 21st century economy, is educating our young Michigianians for knowledge-based occupations in these industries.

A second mechanism is to enhance the services that higher education institutions provide directly to businesses in the form of job training, technical assistance, consulting, etc. that support the growth of key sectors and industries

Examples include the effective links among some community colleges in providing customized training services to area businesses, (particularly in the context of M-TECs), and services as diverse as the consulting, executive training, and extension services coming out of higher education institutions across the state.

*(A further discussion and elaboration of effective approaches at training and direct service will be developed for future work group meetings.)*

### **TOPIC 3. MAKING MICHIGAN A “GRAVITY CENTER” THAT ATTRACTS R & D WORKERS/CENTERS**

Michigan's economic future is contingent on enhancing Michigan regional communities as centers of decision and management for key industries and as the centers of research and development and incubation of new technologies, products, and services. To fuel this dynamic Michigan regional communities must be attractive “talent centers” serving to attract and keep well-educated knowledge workers. Richard Florida, a professor of regional development at the Heinz School of Public Policy and Management at Carnegie Mellon University, has theorized that regional economic growth is dependent on what he calls “the creative class.” These are the people working in knowledge-based professions that do creative work that leads to innovation and problem-solving, such as scientists, engineers, artists, designers, academics, etc. Close to one-third of the workforce in the country is made up of such professionals. He further divides the creative class into two components: the super-creative core and the creative professionals. The super creative core is composed of computer and math occupations, architecture and engineering, the life, physical and social sciences, educating professions, and other occupations such as arts, entertainment, sports, and media. The creative professionals include management, business and financial services, legal occupations, health care/technical professions, and high-end sales and sales management (Florida, 2004).

**Table 2**  
**Creative Class Employment, Michigan Cities, by Population**

Rank/ Grp.	City	Creative Class		Super-Creative Core		Working Class		Service Class		Total
		Share (%)	Emp.	Share (%)	Emp.	Share (%)	Emp.	Share (%)	Emp.	
<b>Population over 1,000,000</b>										
22	Detroit	30.89	764,800	13.28	328,940	26.92	666,570	42.14	1,043,310	<b>2,476,080</b>
48	Grand Rapids	25.14	138,020	9.89	54,330	35.51	194,980	39.20	215,220	<b>549,100</b>
<b>Population 500,000 to 1,000,000</b>										
	None									
<b>Population 250,000 to 500,000</b>										
3	Lansing	35.47	68,710	15.51	30,040	16.07	31,130	48.34	93,640	<b>193,720</b>
30	Kalamazoo	27.27	54,840	11.45	23,020	30.21	60,740	42.41	85,270	<b>201,080</b>
40	Saginaw	26.01	44,560	10.62	18,200	28.89	49,490	45.04	77,160	<b>171,310</b>
<b>Populations under 250,000</b>										
38	Jackson	27.61	15,660	11.58	6,570	30.32	17,200	41.96	23,800	<b>57,720</b>
54	Benton Harbor	26.50	16,410	11.35	7,030	30.03	18,600	43.21	26,760	<b>61,930</b>

Source: R. Florida, *The Rise of the Creative Class*, (New York: Basic Books, 2004). Data taken from the Bureau of Labor Statistics, *Occupation & Employment Survey*, 2001.

The table above presents occupation data for these classes for cities in Michigan that appear in the rankings of regions compiled by Florida, as well as the service and working class professions. The cities included are presented with their rank in the groupings by their population. The cities in Michigan that are listed have about 10–15 percent of their workforce in the *super-creative core*, and 25–35 percent in the *creative professions*. Universities must attract the highest quality students, faculty, and researchers to their institutions. In addition, as more Michigan businesses diversify and computerize their work processes, they have a greater demand for engineers, scientists, and computer-literate employees.

In some of his other work, Florida (2001; 2002) documents that the attraction of talented persons to a geographic region is related to diversity, as greater tolerance lowers the “barriers to entry for human capital.” Regions also require a concentration of cultural and nightlife amenities. “Talent” in this analysis is not only the percentage of a population with a bachelor’s degree, but also the percentages of scientists and engineers and professional/technical employees in the workforce. Although the distribution of talented persons around the country cannot be fully explained by the methods used, Florida found that talented people are attracted to regions by cultural amenities more so than recreational ones, and that they seek out energetic and vibrant places. Desired amenities include dining and nightlife opportunities, active outdoor recreation, a thriving music scene, and bustling street scenes. However, the strongest association was for diversity and openness, with people seeking out places with high levels of demographic diversity, especially tolerance for gay and minority populations. The association with diversity was stronger than those for conventional measures of climate, culture, and recreational amenities.

The findings also show an association between regions with diversity and tolerance and those with high levels of high-technology industries. These findings are consistent with other human capital analyses that show that talent is a key intermediating factor in attracting industry and in generating higher incomes in a region. Regions with demographic diversity are attractive to industries seeking new locations. Talented people are attracted to such regions and ply their skills in the new industries. Thus, human capital has both a direct and indirect effect, through high-tech industry, on regional income (Florida, 2001, 2002).

The Partnership for Economic Progress has outlined an aggressive agenda to enhance the entrepreneurial and talent culture in Michigan. This agenda grew out of its assessment of technology transfer in Michigan, comparison with the nationally leading university activities, and the recommendations of the Governor's Innovation Forum, which were the product of a study in 1999 of the relationship between Michigan's universities and industry. The agenda highlights four areas which, if developed, could further stimulate the transfer and commercialization of ideas (Partnership for Economic Progress, no date). These are:

1. Attracting and retaining superior talent
2. Commercialization of ideas
3. Supporting entrepreneurial culture
4. Creating entrepreneurial infrastructure

### ***Attracting and Retaining Superior Talent in Michigan***

Migration could be the single most important issue facing Michigan as it works to achieve the governor's goals of doubling the number of graduates in our state and creating a workforce for the 21st century. In 2001, the Partnership for Economic Progress performed a benchmark assessment of retention and reported that Michigan has a relatively high rate of retaining high technology graduates of its public universities. The study surveyed graduates in the fields of life sciences, information technology, and engineering to chart their migration patterns upon graduation. It found that 79 percent of graduates from the state and 55 percent of graduates who came from out-of-state to attend our public universities remained in the state to live and work. However, this good news is tempered with data that shows that Michigan ranks near the bottom nationally in terms of attracting graduates from other states into the state (The Partnership for Economic Progress, November 2001).

In general, states that have a net out-migration of foreign-born also experience a net out-migration of its natives (Perry & Schachter, 2003). Michigan has a net in-migration of foreign-born (17.3 percent), but it does have a net *out*-migration of native-born (11.2 percent). This trend is particularly acute among our most talented population—college graduates between the ages of 25 and 39. According to 2000 Census data, Michigan lost more single college educated adults in this age group than it gained between 1995 and

2000.<sup>2</sup> Michigan saw over this five-year period a domestic net out-migration of 16,018 individuals from this critical population group—a net migration rate of 86.7 percent (United States Census, 2000)! Net migration for young, single, college graduates was somewhat below the national median at 29th out of 50 states. As a comparison, Minnesota had a net migration rate of 15.5 percent (a net in-migration of 1,715 individuals), and Washington a rate of 96.5 percent (a net in-migration of 11,669 individuals).

However, Michigan did well retaining young, single, college graduates who reported living in Michigan five years earlier. Michigan ranks 9th nationwide with a retention rate of 77 percent (Darga, 2004; Rondeau, May 2003), but as State Demographer Kenneth Darga cautions, 42,700 living elsewhere—the out-migration rate of this critical demographic group from 1995 to 2000—leaves much room for improvement (Darga, 2004). In addition, data on the migration patterns of Michigan residents between the ages of 22 and 29 with a college degree or higher shows out-migration of 43.5 percent. Perhaps Michigan is retaining a significant percentage of its high-tech graduates, but is losing graduates in other fields while also not attracting out-of-state graduates.

According to data from the 2000 US Census, young single college graduates who came to Michigan from other states between 1995 and 2000 represented only 0.3 percent of our total population. This compares to a national average of 0.6 percent and puts Michigan 45th in the nation. The Detroit-Ann Arbor-Flint metropolitan area had the lowest rate of net loss of this population among Michigan's metro areas. By 2000, 27,400 young single college graduates had moved in from other areas since 1995. The area ranks 85th among the nation's 276 metro areas in overall net loss, while the Grand Rapids-Holland-Muskegon metro area ranks 87th. The Lansing-East Lansing metro area had the highest rate of net loss in the state. By 2000, 4,200 young single college graduates had moved in from other areas since 1995, placing the area 249th among the nation's 276 metro in overall net loss.

If Michigan is to achieve the governor's goal of doubling the number of degreed and credentialed graduates in the state by 2015, we must also attract graduates from outside our state. Michigan is significantly less successful attracting 25–39-year-old college graduates from out-of-state. The effect of international migration is greatest in outlying and major metropolitan counties, but in the latter cannot offset out-migration (State of Michigan HAL, 2003).

Lou Glazer, executive director of Michigan's Future Inc., said the first step in the process is to focus on retaining and attracting young educated adults to our central cities, such as Lansing and Detroit. If these cities are to maintain their 25 to 34-year-old population, they must remain attractive to two particular groups in this age range—the creative class and the immigrant population (Rondeau, May 2003). Glazer said, “The creative class includes young professionals, particularly those with careers in the arts. These are the people who want a nightlife; they want music clubs, book stores, coffee shops and the like.” This is the crux of the governor's “Cool Cities” initiative and the SmartZone and

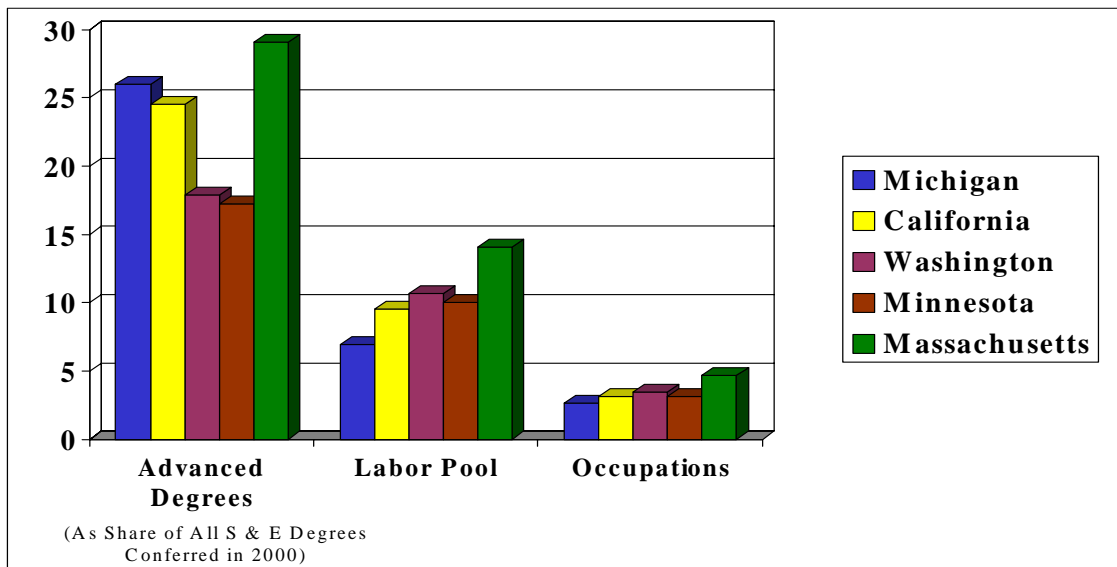
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<sup>2</sup> Please note the single status is as of 2000 for individuals. Data is not available for married individuals, which may or may not support the trend portrayed by these statistics.

Renaissance projects. To maximize the economic and social benefits of our state investment in higher education, we need to retain the talent we develop.

According to the National Science Foundation, Michigan produces valuable human capital in the form of science and engineering graduates (Figure 2). Michigan ranked in the first quartile nationally for awarding advanced degrees in science and engineering. But Michigan lags behind Massachusetts other states in share of the state workforce with science and engineering degrees, ranking in the third quartile.

**Figure 2**  
State Comparison of the Science and Engineering Workforce



Source: National Science Board (2004) Science and Engineering Indicators 2004. Washington, DC. National Science Foundation.

Michigan also lags behind these same first quartile-ranked states in the percentage of people employed in science and engineering occupations in the workforce, ranking in the second quartile. Bottom line: Michigan is a producer of some of the best talent in science and engineering fields, but does keep them here or attract others. The Life Sciences Corridor and the plan for Tri-Corridor development are clearly strategies geared to fuel Michigan's university-centered communities as gravity centers for R&D in key sectors. The conditions for success of these initiatives require close examination.

The 2002 Action Plan of the Partnership for Economic Progress identified two additional goals that would help attract talented people to Michigan. The first was to provide incentives for investors and this was addressed by an event that would publicly offer awards to inventors. The *Investment and Commercialization Success Celebration* is held in the fall and seeks to celebrate the success of sponsors and inventors in Michigan. The second goal was to provide easy access to entrepreneurial activities. This was addressed by the creation of the Michigan Entrepreneurship Education Network (MEEN) and the piloting of business accelerators to six SmartZones.

**Immigration**

According to the Brookings Institution’s report, *The Rise of New Immigrant Gateways*, Singer (2004) classifies U.S. cities across six categories that describe historical and present immigration trends in terms of immigration percentages (i.e., Former, Continuous, Post-World War II, Emerging, Re-Emerging, and Pre-Emerging).<sup>3</sup> Detroit is considered to fall into the category of “Former Gateway” with other “Rust Belt” Midwest cities, which means that immigration has declined significantly since the large percentage of immigrant growth in the early part of the 20th century. Detroit, however, is experiencing an up-tick in the influx of foreign-born. Unlike Cleveland, Buffalo, and Pittsburgh, Detroit retains larger immigrant populations in absolute terms (foreign-born population comprises 7.5 percent of the total population), and saw these grow considerably in the 1990s (42.9 percent change in total foreign-born).

If this trend continues, Detroit, along with Philadelphia and Baltimore, could attain re-emerging gateway status (Singer, 2004) and join the ranks of cities like Minneapolis, Seattle, Tampa and Portland. Minneapolis-St. Paul is a metropolitan area that shares a similar history, climate, and economy with Detroit and other Michigan cities, but is considered a “Re-Emerging Gateway” (see table below). Throughout this report, Minnesota has been used as a comparison state to Michigan because of its similarities to our state. The influx of immigrants signals a region’s economic strength and cultural vitality.

**Table 1. Six Immigrant Gateway Types, Metropolitan Areas, 2000**

Former	Continuous	Post-World War II	Emerging	Re-Emerging	Pre-Emerging
Baltimore	Bergen-Passaic	Fort Lauderdale	Atlanta	Denver	Austin
Buffalo	Boston	Houston	Dallas	Minneapolis-St. Paul	Charlotte
Cleveland	Chicago	Los Angeles	Fort Worth	Oakland	Greensboro-
Detroit	Jersey City	Miami	Las Vegas	Phoenix	Winston-Salem
Milwaukee	Middlesex-Somerset-	Orange County	Orlando	Portland, OR	Raleigh-Durham
Philadelphia	Hunterdon	Riverside-	Washington, D.C.	Sacramento	Salt Lake City
Pittsburgh	Nassau-Suffolk	San Bernardino	West Palm Beach	San Jose	
St. Louis	New York	San Diego		Seattle	
	Newark			Tampa	
	San Francisco				

**TOPIC 4. ENTREPRENEURSHIP POLICY AND EDUCATION**

According to venture capital legend Arthur Rock, venture capitalists invest in *people*, not ideas because good people may be wrong about a product, but savvy enough to make the appropriate “switch” to a better product (Sahlman, 1997). In other words, it is not enough to have good ideas that possess the potential for successful commercialization; a state also needs to cultivate capable, adventurous entrepreneurs.

<sup>3</sup> All the gateways have metropolitan populations of one million residents or more. Categories are defined by percentage growth over time and projected into the future.

### ***Strategies for Entrepreneurial Promotion***

Governor Granholm has sent a clear signal that Michigan's future revolves around nurturing and entrepreneurial culture and fostering conditions—including education—that encourage and support entrepreneurs. What are the ways to promote entrepreneurial activities? The NGA (National Governors Association) Center for Best Practices developed the *Governor's Guide to Strengthening State Entrepreneurship Policy* (Psilos, Harpel, Crawford, Leiken, & Kalormiris, 2004). In this guide, the NGA outlines the importance of entrepreneurs as the key factor in driving healthy state economies and creates a case for governors and states to play a leading role in developing more entrepreneur-friendly environments. The NGA suggests five strategies states can implement to achieve a more entrepreneurial environment:

1. Integrate entrepreneurship into state economic development efforts
2. Use the education system to nurture and encourage future entrepreneurs
3. Incubate entrepreneurial companies
4. Invest in diverse sources of risk capital for the state's entrepreneurs and growth companies
5. "Get out of the way" through regulatory reform and streamlining.

### ***Integrating Entrepreneurship into State Economic Development Efforts***

According to the NGA guide, states need to make entrepreneurship part of the explicit mission of its economic development efforts, create support mechanisms through economic development programs, use entrepreneurial, capital, and research networks to deliver services, and deploy workforce development, unemployment insurance, and community development systems to support entrepreneurs and promote entrepreneurship.

In general, Michigan possesses a fairly sophisticated set of economic development programs. The state currently works to promote economic development through the establishment and support of the Michigan Economic Development Corporation. The MEDC conducts research on economic drivers, such as research and development, venture capital, entrepreneurship, and the Michigan workforce. It also supports programs that foster economic development in the state, and sometimes partner with other organizations to pursue strategic initiatives that will stimulate our economy.

Michigan could, however, do more to become an engine of new enterprise creation, particularly at the community level. Lichtenstein and Lyons (2001) suggest a government model known as the *Entrepreneurial League System*<sup>®</sup> (ELS). This model is designed to transform community economies using a new paradigm—focusing greater attention to developing entrepreneurs and less on providing services for entrepreneurs, although the latter is still important.

The Appalachian Regional Commission (ARC) is one example of the ELS. Established in the 1960s as part of President Lyndon Johnson's Great Society, the ARC is governed by the governors of the 13 Appalachian states and a federal co-chair appointed by the president and confirmed by the senate. Its structure is similar to the professional baseball

league system, in which the ELS develops the skills of entrepreneurs through its minor leagues until the most highly skilled entrepreneurs are considered major leaguers. Entrepreneurs are tracked through the system and receive appropriate services at the right time in their development. The system benefits a community or region in its ability to foster entrepreneurship at a scale and in a community-chosen direction to transform its economy (Lyons, 2002).

The fundamental rationale for focusing more attention on developing entrepreneurs and less on services, in general, is that attracting entrepreneurs is less important than developing those already living in a region. Lichtenstein and Lyons found that the dynamic regions around the world that are held up as models for other communities to emulate do not just attract or recruit entrepreneurs from other areas, *they develop them*. Growing entrepreneurs at home through entrepreneurial education is a key strategy.

### ***Entrepreneurial Education***

Besides employing the model of ELS, states are also implementing development strategies that span all levels of education and link multiple organizations together to deliver entrepreneurial education. For example, some states have infused entrepreneurship into the K–12 curriculum and developed programs that foster entrepreneurial skills and spirit in schools of business, engineering, medicine, natural resources, and education at the postsecondary level. For some examples, see the Kauffman Foundation ([www.emkf.org](http://www.emkf.org)), which is committed to advancing entrepreneurship in the U.S.

The Kauffman Foundation studies the impact of entrepreneurial education on students in the Berger Entrepreneurship Program at the University of Arizona (Charney & Libecap, 1999). It found that these students:

- Were 25 percent more likely to be involved in new ventures
- Were 11 percent more likely to own their own businesses after graduation
- Realized five times the growth in sales and employment in their companies or their employer's companies
- Earned roughly 27 percent more than non-entrepreneurship graduates
- Were 9 percent more likely to be involved in new technological product development
- Were 13 percent more likely to be employed by a high-tech firm

Michigan has a university-wide entrepreneurial development program known as the Michigan Entrepreneurial Education Network (MEEN). It was created by the Michigan Economic Development Corporation to develop and support entrepreneurial education in the state's traditional degree-granting university programs in business, engineering, medicine, and other professional schools. MEEN's goals are to:

1. Create a template of a comprehensive entrepreneurial education program
2. Assess the current status of the entrepreneurship education program in Michigan's universities
3. Provide recommendations and assistance to the universities to develop their entrepreneurship education programs vis-à-vis MEDC resources

4. Create an enduring, collaborative network of entrepreneurship education programs
5. Develop partnership and integration between MEEN and the SmartZone initiatives and other entrepreneurship initiatives
6. Improve Michigan's performance in and reputations for entrepreneurial education
7. Develop a plan for the creation of a permanent MEEN infrastructure for ongoing continuing education, networking, and collaboration.

Without a fertile entrepreneurial environment, we are not likely to retain the entrepreneurs we develop in our higher education system; thus we would not be reaping the state's investment in entrepreneurial education.

One case study is the MBA degree program at the University of Michigan. The MBA degree is one that represents a competent, entrepreneurial, enterprising leader in business. Michigan is home to a number of highly ranked MBA programs, including the program offered at the University of Michigan's School of Business. This MBA program draws students globally, and extends its local reach through its Evening MBA program designed for current Michigan residents already working in our economy. Upon graduation, how many of these MBAs stay and work in Michigan businesses? According to an institutional survey of 2002 MBA graduates<sup>4</sup>, most respondents accepted jobs outside of Michigan. Evening MBA graduates were more likely to stay in Michigan, but surprisingly, some did leave their current jobs for others outside of the state (see Figure 3). While it is important for the University of Michigan's School of Business to be a global leader in MBA education, it would benefit the State of Michigan to retain more of these graduates, even if many entered the MBA program from out-of-state.

**FIGURE 3**  
Location of University of Michigan 2002 MBAs Upon Graduation

	Evening MBA	Traditional MBA	Total
Total	56	286	342
<b>Michigan</b>	<b>43</b>	<b>28</b>	<b>71</b>
Other States	13	243	271
California	2	24	26
Minnesota	0	24	26
Illinois	1	29	30
New York	1	51	52
International	0	36	36

SOURCE: Office of Career Development in the School of Business at the University of Michigan.

<sup>4</sup> Each year the Office of Career Development in the School of Business at the University of Michigan surveys graduates with respect to their employment, location, reasons for choosing current job and other indicators.

Another question Commissioners raised with respect to the benefits of higher education in the state is how various communities within Michigan benefit from individual institutions. Looking at the 71 MBAs in the 2002 cohort who stayed in Michigan upon graduation, which communities benefited most by attracting these leaders of business? Where did these MBAs locate? As expected, most accepted jobs in major metropolitan areas (see Figure 2), which does little to benefit the more rural areas in need of economic development like the northeastern part of the Lower Peninsula and all of the Upper Peninsula.

**FIGURE 2.**  
Location Within Michigan of 2002 University of Michigan MBAs Upon Graduation

	Evening MBA	Traditional MBA	Total
<b>Total in Michigan</b>	<b>43</b>	<b>28</b>	<b>71</b>
Ann Arbor/Ypsilanti/Chelsea	3	3	6
Detroit Greater Metropolitan Area	19	19	38
Dearborn	19	3	22
Grand Rapids/Kalamazoo	0	1	1
Midland	1	2	3
Other	1 (Howell)	0	1

The Kauffman Center for Entrepreneurial Leadership has produced several reports with guidelines on how to create venture capital opportunities through support and education of angel investors (See Kauffman Foundation, 2002; 2003). According to the MEEN Template Report (Bantel, 2003), a number of universities have designed venture fund programs to invest in student ventures and/or to engage students in the investment decision process across the country since the mid-1990s. The University of Michigan Wolverine Venture Fund is operated directly out of the Business School's Zell Lurie Institute and is the largest and most active university-based venture fund of its type in the country. The fund's investments are made with the active involvement of MBA students with the assistance of faculty and an eight-member advisory board of professional venture capitalists and entrepreneurs.

Additionally, many research universities have built-in programs that provide internship opportunities and lessons in writing business plans and grants, and link students with angel investors. Others use their entrepreneurial education programs to target strategies that will foster an "entrepreneurial culture" that incorporates education, mentoring, and incubation of new firms in a given region, e.g., Wake Forest's Triad Entrepreneurial Initiative in the North Carolina Piedmont region (Bantel, 2003).

Michigan has an opportunity to cultivate an entrepreneurial culture through initiatives such as the MEEN and the Life Sciences Corridor, but it must be a priority in order to provide entrepreneurs—both homegrown and from outside the state—with a rich entrepreneurial environment in communities across the state. Focusing attention on development of SmartZones and "cool cities" can not only help us retain the

entrepreneurs and other educated professions we develop, but also attract those from out-of-state.

### ***Supporting Entrepreneurial Culture***

Aside from university-based entrepreneurial education programs, how can our state be entrepreneur-friendly? The NGA (2004) suggests removing legal restrictions on equity ownership by the state, public universities, and other government entities; putting regulatory and licensing processes online; and using one-stop business and licensing models.

The Partnership for Economic Progress is seeking to provide a framework to promote networking between universities, state and local government, private companies, and venture capitalists. One of the Partnership's goals in this area is to improve relationships among stakeholders. To accomplish this, it works with MEDC to sponsor workshops, summits, and success celebrations. Also, several national events were held in Michigan, including the State Science and Technology Institute and the Great Midwest Venture Capital Conference. Another effort in this direction is the Michigan Entrepreneurship Education Network (MEEN), created to strengthen entrepreneurship education. The University of Michigan's Zell Lurie Institute for Entrepreneurial Studies will assess and benchmark entrepreneurial education programs in Michigan and develop new program templates, foster collaboration with universities and high-tech clustering SmartZones, and administer a new University Entrepreneurship Program Development Fund (Partnership for Economic Progress, no date).

MEDC also sponsored the Great Lakes Entrepreneur's Quest (GLEQ), a nonprofit educational program that was founded in 2000 to be a one-stop resource where people could learn how to develop a business idea. The program is open to anyone who lives, works, or attends school in Michigan and provides access to training, networking, coaching, and capital. From 2000 to 2003, the GLEQ has had 2,300 people attend training sessions and has offered more than 1,000 coaching sessions (the value of the time contributed to these has been estimated at \$440,000). To date, more than half of the state's universities are sponsoring GLEQ training, mentoring, and coaching activities, on campus and by interactive video conferencing (Great Lakes Entrepreneur's Quest, 2003).

There is also a real-world business plan competition. From 2000 to 2003, the GLEQ had 500 teams submit business plans and has awarded \$487,500 in prizes, involving nearly every major venture capital fund in the state. Several dozen teams have started businesses and have, to date, raised more than \$6 million in capital. In the next 18 months, the GLEQ strives to enhance this infrastructure by expanding opportunities for linking entrepreneurs with community resources, expert advice, high-quality education, management talent, and capital for every stage of their development. It is also focused on better integrating the GLEQ with university-sponsored technology transfer/commercialization efforts, as well as angel networks, venture capital and corporate development. (Great Lakes Entrepreneur's Quest, 2003).

### **Other Business Accelerators/ Incubators**

The National Governors Association suggests that states provide business incubation services through physical incubators and by creating virtual and remote incubation options for rural regions. Michigan's striving to be a national leader in the life sciences industry has created the need for specialized support services. One of these is the Michigan Universities Commercialization Initiative (MUCI), a project designed to complement and enhance the technology transfer functions available at Michigan academic and research institutions to promote their life science inventions. Initially begun by Michigan State University, University of Michigan, and Wayne State University, the program has expanded to include five other research institutions in Michigan. The overarching principle is that by bringing together those in the Life Sciences Corridor with primary responsibility for facilitating and negotiating intellectual property and technology commercialization "deals" based on university research, the climate for technology transfer in Michigan could be improved. The primary objectives of MUCI include (MUCI, 2003):

- Facilitate and expedite the management of intellectual property derived from Michigan's major research institutions
- Engage in joint activities to disseminate information in the field of technology transfer
- Facilitate the development of performance indicators related to technology transfer and mechanisms to report these data
- Sustain this collaborative, inter-institutional initiative regardless of the funding environment, due to its proven benefit and significant potential

MEDC allocated a total of \$2.5 million to six SmartZones to create Business Accelerators for the life sciences. Types of services offered at the accelerators include technology mining, technology assessments, business feasibility studies, business planning, entrepreneurial training, venture capital preparation and introductions, market analysis, product development, management recruitment, and business development mentoring. The six SmartZones have also each attracted additional local funding, ranging from over \$400,000 in Grand Rapids to more than \$2.4 million in Kalamazoo.

## **TOPIC 5. COOL CITIES/COMMUNITY DEVELOPMENT**

Quality of place is an increasingly important part of successful economic development strategies. Spin-offs and R&D are enhanced by geographic proximity, and clusters of firms, researchers, universities, and design/production capability congregate in communities with high quality of life. As *Rise of the Creative Class* author Richard Florida notes, "[A]menities of value in marketing and attraction include culture, the environment, the physical aesthetic, and natural assets." University "districts" and leveraging higher education assets are central to a new era's mission of economic development.

Better-educated people as well as research institutions are also part of the overall economic leverage and job/wealth creation of a state. However, Gittell & Sedgley (2000) demonstrated that there is no direct relationship between FTE spending on higher

education and the number of high-tech workers in a state, as states can attract workers from or lose them to other states. Investment must be made in other infrastructural areas to ensure that the human and intellectual resources of the 21st century economy that are engaged in Michigan are utilized within the state. Varga (2000) discusses “agglomeration effects”—which is the concentration of economic entities and activities within a geographic region—as a prerequisite for the transfer of knowledge produced at local universities. Universities are not so much direct engines of economic growth but rather, “enabling infrastructures” that facilitate growth in cooperation with other business and government entities (Florida & Cohen, 1999).

We have few “cool” cities in the state, characterized by high activity in city neighborhoods where people patronize restaurants, bars, art galleries, music clubs, book stores and coffee shops, walking the downtown streets during the day and evening, weekdays and weekends (Michigan Future, 2003). Most of our Michigan cities do not project this image, the reality, in fact, is that they resemble ghost towns from the crumbling industrial age with empty shop fronts, closed factories, and run-down residential units.

The governor has led an ambitious “cool city” agenda that includes many components where higher education can play a critical role. Locally led cool city commissions are planning programs of development to enhance the physical and cultural dynamic of their core cities. Attracting immigrants and young professionals is vital to Michigan’s future, as they create the population growth and density in urban areas that create cool cities. The state is leveraging its state and federal resources and grant-making programs to focus on cool city development, including enhancing student and residential mixed-use developments in communities. Cool city catalyst grants have been awarded to promote change and spark innovation. The particular role of higher education institutions needs to be discussed and enhanced.

Another place-based strategy to review is the SmartZone program. The Michigan Economic Development Corporation has a plan to create an infrastructure supportive of economic development through high-tech industry growth. The Smart Tech Agenda seeks to retain, create, and attract more high-tech businesses, jobs, and workers. Part of this plan is the creation of 11 SmartZones throughout the state. SmartZones are collaborations between universities, industry, research organizations, government, and other community institutions intended to stimulate the growth of technology-based businesses and jobs by aiding the creation of clusters of new and emerging businesses, as well as those primarily focused on commercializing ideas, patents, and other corporate, university, or private research institute R&D efforts. SmartZones provide distinct geographical locations where technology-based firms, entrepreneurs, and researchers can locate in close proximity to all of the community assets that will assist in their endeavors. The locations of the Michigan SmartZones represent areas that comprise a critical mass of technology development assets including (MEDC, 2004):

- Commitment to supporting technology development—leadership and commitment from both the public and private sector to enable an environment that encourages and emphasizes technology development and innovation

- Leadership and commitment of research institutions to support technology development
- Coordinated access to capital—seed, venture, and conventional
- Business development networks—high-quality business service—providers and potential customers and suppliers
- Established technology infrastructure—laboratory space, access to university facilities, high bandwidth telecommunications, and incubator space
- Educated and talented workforce—access to top technology talent from universities and the private sector
- Proximity to research and development partners such as industry, universities, hospitals, and research laboratories
- Education and training opportunities
- Quality of place—access to top cultural, entertainment, educational, recreational, residential, and other quality-of-life amenities

SmartZones have been designed to achieve several goals (MEDC, no date):

- Increase awareness of Michigan's advantages in high technology and its numerous geographic areas in which to start or grow a technology-oriented company.
- Create a common brand identity that will put Michigan on the map with other nationally recognized and respected areas such as Route 128 or the Research Triangle.
- Create nurturing environments in each of the zones to help create and grow small and emerging businesses by locating most of the zones adjacent to universities or research institutes.
- Allow for the development of business incubators and other business services.
- Foster true working partnerships among business leaders, the university, and local governments in each zone.

MEDC has established SmartZones in the following 11 communities (MEDC, 2004):

1. **Automation Alley**—Oakland University, Lawrence Technological University, and Walsh College
2. **Battle Creek Aviation**—Western Michigan University and Kellogg Community College
3. **Houghton/Michigan Tech Enterprise**—Michigan Technological University
4. **Lansing Regional**—Michigan State University
5. **Mount Pleasant/Center for Applied Research and Technology**—Central Michigan University
6. **Kalamazoo**—Western Michigan University
7. **Grand Rapids**—Grand Valley State University and Van Andel Research Institute

8. **Muskegon Lakeshore**—Grand Valley State University
9. **Ann Arbor/Ypsilanti**—University of Michigan and Eastern Michigan University
10. **Detroit/Woodward Technology Corridor**—Wayne State University
11. **Wayne County/Pinnacle Aeropark**—Detroit Metropolitan Airport

Since April of 2001, more than 70 companies have received assistance, \$165 million in capital has been raised for these firms, 24 companies have located within the zones, and \$120 million of private investment has been spurred (Owens, 2003).

*(Assessments of the SmartZone's effectiveness was raised and can be a subject of discussion among the work group.)*

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