GTRI

Global Talent Retention Initiative of Michigan

International Talent Retention in Michigan: A Pathway to National Competitiveness

International Talent Retention in Michigan: A Pathway to National Competitiveness

Original Findings of the Global Talent Retention Initiative Data:

- Michigan's international students who use their student visa to work in the U.S. after graduation are nearly as likely (58%) as domestic students (63%) to stay in Michigan rather than choosing another state.
- Michigan's international students who work after graduation on their student visa are almost three times as likely (58%) as out-of-state students (22%) to stay in Michigan.
- Michigan's international students who work after graduation are more than four times as likely to major in science, technology, engineering, and mathematics (STEM) fields (59%) as domestic students (13.7%) nationally and more than three times as likely as Michigan students (18%).
- More than four-fifths (82.2%) of Michigan's international students who use their student visa to work in the U.S. after graduation earned advanced degrees—these are the most talented workers for the new economy.

Important Facts Underlying the Global Talent Retention Initiative's Work:

- Michigan colleges and universities host more than 25,500 international students who contribute more than $750 million to Michigan's economy each year.
- In at least one methodology, Michigan ranks last (or among the last) of the 50 states in its ability to attract young people aged 25-34. Student retention efforts are critical on all levels, including international students, especially if, as the data suggests, they are very willing to stay in Michigan if provided the legal opportunity to do so.
- Over the last decade, Michigan's immigrants created nearly one-third of all the new high-tech businesses in Michigan—at a rate six times the rest of the population and ranking Michigan third in the country.
- International students are the pathway to becoming the Silicon Valley of the Midwest.
- The Global Talent Retention Initiative was launched to retain international students in Michigan after their graduation. It is the first and only such program in the nation.

Public and private leadership in Southeast Michigan has grown accustomed to conversations about the "brain drain" problem: the area's population holds fewer college degrees, and far fewer advanced degrees, than needed to become a successful high growth, high prosperity region in the new, knowledge-based economy. In fact, according to research by Kurt Metzger, former Director of Data Driven Detroit and the region's most prolific demographer, Michigan ranks last in the percentage of its young people aged 25-34 born out-of-state and near last in the percentage of its population that is in this age cohort (just 11.8% compared to most states around 13-14%).[1] Metzger concludes:

> We want to make every effort to educate our residents and retain them. We need to make every effort to convince non-Michigan residents who we are educating in our universities to remain after graduation. We need to make every effort to attract non-Michigan-born graduates to relocate.

The Global Talent Retention Initiative (GTRI) was launched by Global Detroit (www.globaldetroit.com) because business, civic, and university leaders have begun to understand that international students could represent a large part of that equation. At a minimum, international students contribute to Michigan's economy by paying for their education and consuming goods and services while they are studying at Michigan colleges and universities. When fully utilized, they can be generators of high-tech industries, new jobs, and a higher quality of life for all Michiganders, including, of course, the native-born.

Data acquired by GTRI shows trends among international students that demonstrate that they are positioned to be even stronger contributors than previously thought. The two-and-a-half years of data collected from the seven original Michigan universities that participated with GTRI (representing two-thirds of all international students studying in Michigan) shows that international students continue to surpass domestic students in pursuit of the kind of degrees that are needed in a high-tech economy at significant rates.[2] The international students utilizing the work authorization portion of their student visas are almost exclusively pursuing advanced degrees, preparing them to fill high-skilled jobs or to become entrepreneurs, starting businesses critical to the new economy.

Perhaps most unexpected, though, is the fact that international students working in the U.S. on practical training appear nearly as likely as U.S. students to stay in Michigan after graduation. It should be noted, however, that there is no direct data comparison on these metrics and this report makes the best attempt possible to compare the GTRI data to the latest survey data conducted on the topic of college and university student retention in Michigan

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[1]Metzger's data appears in a blog post at http://bridgemi.com/2012/02/guest-post-how-do-we-lure-college-grads-to-michigan/

[2]The seven original Michigan universities that launched GTRI include the University of Michigan, Michigan State University, Wayne State University, University of Michigan-Dearborn, Eastern Michigan University, Lawrence Technological University, and Oakland University. The data sets are from March 2011, August 2011, March 2012, August 2012, and March 2013. Not every university provided information for each data period. A detailed list of which schools provided data for each of these five data sets appears in the Assumptions and Acknowledgments section at the end of this report.

Vivek Wadhwa, AnnaLee Saxenian, Ben Rissing, and Gary Gereffi, "America's New Immigrant Entrepreneurs," Duke University and University of California-Berkeley, January 4, 2007, found at http://ssrn.com/abstract=990152.

GLOBAL TALENT RETENTION INITIATIVE OF MICHIGAN (GTRI):

The Michigan Global Talent Retention Initiative (GTRI) is the first and only known program in the United States developed to retain international student talent as a strategy for economic growth. The goal of GTRI is to provide international students and Michigan employers with training and resources on relevant immigration regulations, finding a job and working in Michigan, and the cross-cultural issues that both employers and international applicants may experience during the hiring process.

Launched in 2011, GTRI is a product of the Global Detroit Study about the impact of immigrant talent on the region's economy. Studies have shown that immigrants disproportionately contribute to economic growth, employment, and wage gains. Funded by the Michigan Economic Development Corporation (MEDC) and a grant from the New Economy Initiative of Michigan of Southeast Michigan (NEI) and housed in the University Research Corridor (URC), GTRI is a collaborative effort of the Global Michigan Initiative, Global Detroit, Michigan universities, the American Immigration Lawyers Association (AILA), Michigan's economic development agencies, ethnic chambers and professional organizations throughout Michigan. Founding partners include the American Immigration Lawyers Association (MI Chapter), Ann Arbor SPARK, Detroit Regional Chamber of Commerce, Eastern Michigan University, Global Detroit, Lawrence Technological University, Michigan State University, New Economy Initiative of Southeast Michigan, Oakland University, University of Michigan-Ann Arbor, University of Michigan-Dearborn, University Research Corridor, and Wayne State University.

GTRI

OPPORTUNITY

International students and immigrants to the Metro Detroit region hold great potential for creating significant and sustained economic growth and job creation—jobs and prosperity that will touch the entire region, including the non-immigrant population. Immigrants are helping to advance Michigan into the new economy by launching high tech firms at incredible rates. While they constituted only 5.3% of the Michigan population in 2000, immigrants created 32.8% of all Michigan's high-tech startups from 1995 – 2005.[3] Michigan—a state with a relative population of immigrants slightly less than half that of the national average—had the third highest percentage of high-tech firms started by immigrant, trailing only California and New Jersey. Follow-up research to the study on immigrant high-tech firms revealed that the average immigrant high-tech entrepreneur started her business 13 years after she entered the U.S., and the most common reason she came to the U.S. was to pursue her education. In other words, the average immigrant high-tech entrepreneur was once an international student.

Simply put, retaining international students after they graduate is the pathway to becoming the Silicon Valley of the Midwest. Michigan is in a unique position to continue to expand the economic impact of international students by investing in retention strategies to keep its international students in Michigan following graduation. Michigan universities provide a healthy, and virtually untapped, supply of some of the world's most talented international students from across the globe. The state currently educates more than 25,500 international students each year, ranking it 8th in the country. Currently, these students represent more than a $750 million export product (the purchase of Michigan goods or services by a foreign country) for Michigan's university towns and campuses.[4]

Foreign-born students and inventors are critical components of the innovation economy. They drive the economy by producing 76% of the almost 1,500 patents from the top 10 patent

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[3]Vivek Wadhwa, AnnaLee Saxenian, Ben Rissing, and Gary Gereffi, "America's New Immigrant Entrepreneurs," Duke University and University of California-Berkeley, January 4, 2007, found at http://ssrn.com/abstract=990152.

[4]NAFSA Association of International Educators, "The Economic Benefits of International Education to the United States for the 2011-2012 Academic Year: A

2011.[5] Imagine the economic potential if we were to retain this talent to help power Michigan's economy beyond these students' graduation. In fact, a recent study from the American Enterprise Institute and the Partnership for a New American Economy suggested that each international student retained in the STEM fields is associated with more than 2.5 additional jobs for U.S. natives.[6]

When compared to domestic students, international students are nearly three times as likely to pursue a degree in science, technology, engineering, and mathematics (the "STEM" fields)—areas that are critical to the new economy and in high demand. The data tracked by GTRI in this study reveals that a full 52% of the students using their student visa to work after graduation were in STEM fields—more than four times the average of domestic students. Moreover, more than 80% of the students using their student visa to work in the U.S. after graduation had earned graduate degrees, suggesting that an international student retention effort is indeed targeting some of the most economically important talent. Losing these students to other states or to their home country is a missed opportunity to improve the Michigan economy.

Given this opportunity, **Global Detroit** (www.globaldetroit.com), a regional economic development initiative, helped to build support and funding for the nation's first international student retention program. The **Global Talent Retention Initiative** ("GTRI," www.migtri.org), spearheaded by the **University Research Corridor**, in collaboration initially with seven partner universities, provides a central resource to keep talented international students in the Detroit metro area by helping employers with unmet workforce and talent needs connect with international students. GTRI encourages international students to take advantage of their practical training eligibility during their degree

GLOBAL DETROIT:

Global Detroit is a regional economic development effort to revitalize Metro Detroit's economy by pursuing strategies that strengthen Detroit's connections to the world, and that make the region more attractive and welcoming to immigrants, internationals, and foreign trade and investment. Launched in 2010 with the Global Detroit study funded by the New Economy Initiative for Southeast Michigan, Detroit Regional Chamber of Commerce, and Skillman Foundation, Global Detroit is a collaborative network of immigrant-friendly initiatives that attract and retain talent and investment, revitalize neighborhoods, and holistically create a more inclusive economy.

To date Global Detroit has helped connect over $5.5 million in philanthropic and government investments in over a half dozen ambitious initiatives including the Global Talent Retention Initiative of Michigan, Welcoming Michigan, ProsperUS Detroit, the Welcome Mat, and Upwardly Global's Career for New Americans Michigan licensing guide.

GLOBAL DETROIT

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[5] "Patent Pending: How Immigrants Are Reinventing the American Economy," Report for the Partnership for a New American Economy, June 2012.

[6] Madeline Zavodny, "Immigration and American Jobs," Report by the Partnership for a New American Economy and the American Enterprise Institute, December 2011. Analyzing data comparing employment among the fifty states and the District of Columbia from 2000 to 2007, the report found that an additional 100 foreign-born workers in STEM fields with advanced degrees from US universities

programs and after graduation, while educating employers about the opportunities that exist to utilize international students and graduates to fill unmet talent needs. For instance, more than 50% of PhDs in the STEM fields and as many as 40% of master's degrees in engineering, life sciences, computer sciences, and physical sciences are awarded each year in the U.S. to international students.[7] As a result, employers who do not consider international talent are having a difficult time finding qualified candidates for high-level tech positions. GTRI helps to bridge this gap from both sides.

II. OVERVIEW OF REPORT

This report examines recent data on international students enrolled in academic training programs for seven Michigan universities. Examining the degree programs and use of practical training programs for these students in 2011-2013 sheds light on the talent that we have right here in our backyard. This data will help GTRI explore the choices students are making in degree programs and the cities they choose for their training programs, as well as the impact that GTRI is having on those decisions.

The data used in this report does not give a complete picture of the effect that international students are having on the region or state. The data obtained by GTRI only tracks the international students who stay to seek practical training associated with their student visa (as opposed to those who stay in the U.S. through other legal means such as the H-1B program, L-visas, or by becoming permanent resident aliens). The universities retain a level of responsibility and connection with the international students in these practical training programs. Those who leave the country or remain here legally through some other visa mechanism do not need to notify the university and the university cannot realistically track their career paths.[8]

The available data offers a glimpse of the impact international students can have on the local economy. It indicates that international students still desire to stay and contribute to the Michigan economy in important ways and, in fact, appear to be nearly as likely as domestic university students to stay in Michigan after graduation. While incomplete about the total impact international students have on the state or regional economy, the data offer GTRI an important trend line from which to gauge its impact on increasing international student retention. This data will be critical to determining the effectiveness of GTRI's work going forward.

[7]Richard Herman and Raghav Singh, "Recruiting the Tired, the Poor, and the Wretched Refuse," Journal of Corporate Recruiting Leadership, September 2008, p. 18.

[8]As far as the authors know, this is the first time anyone has been provided as broad a set of data on international students from several universities. That said, there are several portions of the data which are incomplete, including tracking the percentage of students that graduate, the percentage of students that stay in the U.S. after graduation (which is unknowable as noted above), and the geographic location of all practical trainings (some of which were reported with no geographic

III. INTERNATIONAL STUDENTS WORK AUTHORIZATIONS

The U.S. Department of Homeland Security oversees several programs that allow international students to supplement their education with practical training during and following their higher education programs. These short-term programs connect students to valuable internships, co-ops, and other time-limited positions that offer hands-on practical work experience to complement academic programs. This report explores data on international students enrolled in the following training programs:

A. Curricular Practical Training (CPT)

Curricular Practical Training (CPT) is a program for international students on F-1 visas who need or desire hands-on work experience to complete a degree. This can include work-study programs, internships, and cooperative education opportunities provided by sponsoring employers. CPTs are temporary placements and take place while students are completing a degree.

B. Optional Practical Training (OPT)

Primarily used for post-graduation employment, Optional Practical Training (OPT) allows international students on F-1 visas (by far the most prevalent visa used by international students) to work in the United States for 12 months in a job for which they will apply what they learned in their academic program. International students are eligible for 12 months of OPT for each degree, as long as they continue to advance to a higher level (Bachelors to Masters to PhD). Students with a STEM (science, technology, engineering and mathematics) degree are eligible for an additional 17 months post-graduation, for a total of 29 months.[9]

C. Academic Training (AT)

Academic Training (AT) is designed to allow international students on J-1 visas the opportunity to apply knowledge gained in the classroom to a practical work experience off campus. It is available for full or part-time employment to those in both degree and non-degree programs. Students can participate in the AT before or after the completion of their academic program. Eighteen (18) months of AT is allowed for degree-seeking students (not exchange students), and can be used pre- and/or post-graduation. The use of AT is cumulative no matter when it is used. PhD students may be eligible for an additional 18 months of work authorization after their PhD is awarded, resulting in a total of three years of work authorization.

The additional 17 months of employment opportunity is available only for international students whose employer is utilizing the federal E-verify program.

The Global Talent Retention Initiative partnered with seven participating public universities to garner data on students that were enrolled in one of the three training programs described above in 2011-2013. Of the 12,957 students enrolled in the training programs, 10,259 (79.2%) were enrolled in OPT, 2,518 (19.3%) were enrolled in CPT, and 180 (1.4%) were enrolled in AT (see Chart 1). Indicators contained in the data-set include country of origin, academic major, and city/state of the selected training program.

Chart 1: International Students Enrolled in Training Programs

Training Type	Total International Students Enrolled	Share of All Practical Training Utilization
All Trainings	12,957	100%
Optional Practical Training	10,259	79.2%
Curricular Practical Training	2,518	19.4%
Academic Training	180	1.4%

V. FINDINGS

A. International Students in Michigan

Optional Practical Training (OPT) is the strongest indicator for tracking students' interest in staying in Michigan, since students enrolled in OPT possess the freedom to travel to any location within the United States. Curricular Practical Training (CPT) are more likely to remain near their academic institution because, by nature, those using CPT are still completing their studies and will likely need to work in close proximity to their college or university.

International students using an OPT are nearly as likely as domestic students attending Michigan universities to stay in Michigan after graduation. Of the 10,259 students enrolled in the OPT program in 2011-2013, we have no geographic data on the place of employment for 1,848 international students. The data does provide information on 8,411 of the OPT graduates and the data shows that, **of those international students using an OPT for whom their location was reported to GTRI, 58.2% are located in Michigan** (see Chart 2)**.**[10]

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[10]It must be noted that 4,914 of the 10,259 students (47.7% of the total OPT students, but 58.2% of the OPT students for whom we have geographical information) reported working in Michigan, while 3,553 students (34.3% of the total OPT students, or 41.8% of the OPT students for whom we have geographical information) reported working out-of-state. Thus, the data did not include a geographic location for 1,848 (18.0%) of the students using an OPT. Those students for whom a geographic location was not reported likely includes many students who have not secured employment, as OPT users have 90 days to secure employment. In reality, GTRI cannot fully account for all of the non-reporting. Some may be due to international students failing

This compares significantly higher than domestic students from out-of-state. According to recent survey research conducted this year by, only 22% of out-of-state domestic students who attend Michigan universities stay in Michigan after graduation.[11] Overall, 63% of all domestic graduates (both in-state and out-of-state students) stay in Michigan after graduation, according to the 2013 survey, as compared to 58.2% of the international student graduates authorized for OPT.[12]

In other words, international students authorized for OPT appear to be almost three times as likely as other out-of-state students, and only slightly less likely than in-state students, to stay in Michigan after graduation.

Chart 2: Location of Training Program Employer – OPT

Training Location	Total International Students per Location	% of all OPTs	% of OPTs Reported
All OPTs	10,259	100%	-
Michigan	4,914	47.7%	58.2%
State other than Michigan	3,553	34.3%	41.8%
Unreported	1,849	18.0%	-

B. Totals for International Students in STEM Fields

Science, technology, engineering, and mathematic (STEM) fields are the drivers of the new economy. Improving Michigan's economic edge in the knowledge economy means retaining students and attracting professionals across STEM fields. According to the data collected, **59.5% of the international students enrolled in an optional practical training (OPT) program are pursuing, or have received, a STEM field degree** (see Chart 3). This is a highly saturated pool of students presenting access to opportunities for economic advancement.

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[11]"Mobility and Employment: Michigan's Millennial Talent: Where Are They Going," June 2013 draft prepared by the Detroit Regional Chamber of Commerce, the Presidents Council, Michigan Municipal League, iLabs, Pure Michigan, and UM Dearborn. The study was an e-survey sent to 41,000 May 2012 graduates and responses were obtained from 7,054 graduates (or a 17% response rate for a margin of error of 1.1%). This e-survey was a follow-up to a 2010 survey done by many of the same partners. The 2013 report showed a significant improvement in retention of recent in-state graduates. The retention of in-state graduates within the first six months of graduation rose to 71% in the 2013 survey compared to 59% in 2010. Given the predominance of in-state students over out-of-state students, the overall retention for all domestic students grew from 51% in the 2010 survey to 63% in 2013.

[12]It is important to note, that there is no completely accurate way to track where graduates reside after graduation, either for

Chart 3: Students enrolled in STEM fields		
	Total Students	Percentage
STEM	6,107	59.5%
Non-STEM Field	4,152	40.5%

STEM graduates have the most valuable and attractive skills for the global workplace, are in the most demand, and can have the greatest impact on growing a regional economy. In fact, it is estimated that each international student retained in the STEM fields is associated with more than 2.5 additional jobs for U.S. natives.[13] STEM graduates from the seven universities partnered with GTRI stay in Michigan at the same high rates (58.2%) as the overall population of international students using the training option (see Chart 4).

Chart 4: OPT STEM Students			
	Total Students	Percentage	% of Reported
STEM Students Remaining in Michigan After Graduation	3,130	51.3%	58.5%
STEM Students Leaving Michigan After Graduation	2,217	36.3%	41.5%
STEM Students with Unreported Location	760	12.4%	n/a

C. STEM Field Breakdown

Of the 6,107 international students from the data in STEM fields, 3,302 (53.8%) pursued an engineering degree. Science degrees made up the second highest concentration with 1,404 (22.9%) international students. Finally, 958 (15.6%) of the international STEM students pursued technology degrees and 442 (7.2%) of the international STEM students pursued mathematics degrees (see Chart 5).

[13]Madeline Zavodny, "Immigration and American Jobs," Report by the Partnership for a New American Economy and the American Enterprise Institute, December 2011.

Chart 5: STEM Fields Pursued by International Students		
Field	Number of Students	Percentage of STEM Students
Engineering	3,303	53.8%
Science	1,404	22.9%
Technology	958	15.6%
Mathematics	442	7.2%
Total STEM Students	6,107	59.5 % of all students

D. Academic Level of Achievement

International students represent the talent that Michigan needs to revitalize its economy. More than four out of every five international students authorized for OPT (82.2%) graduate from an advanced degree program (i.e., PhD, JD, or Masters Degree). Some 1,755 international students (17.1%) earned a bachelors degree and were able to work through the OPT program and 72 (0.7%) sought a certification (e.g., E-Business) or lifelong education program. Since international students are not eligible for OPT under certification and lifelong education programs, it can be assumed that their OPT authorization was based on completing a concurrent degree (see Chart 6).

Chart 6: Academic Level		
Degree	Number of Students	Percentage
Doctorate	2,310	22.5%
Masters	6,122	59.7%
Bachelors	1,755	17.1%
Other	72	0.7%

VII. CONCLUSION

Michigan's international students already are having a significant impact on our state's economy. They contribute over $750 million in economic activity in terms of their tuition, fees, and consumption dollars brought from abroad into the local economy. Thousands stay in Michigan after graduation and contribute to the growth of Michigan businesses and firms, enhancing the state's competitiveness. International students possess the skills and education needed by firms in the STEM fields—skills and education critical to the new economy.

According to GTRI's data, it appears that international students are nearly as likely to choose Michigan as domestic students. International students on OPT are free to pursue employment anywhere in the country. With this freedom, 58% of international students who utilize an OPT are selecting to stay in Michigan, a rate that appears to be significantly outpacing domestic students from out-of-state (of whom only 22% stay), but is not far from the 71% of in-state residents who elect to stay in Michigan after graduation. International students from this data set are almost three times as likely to choose Michigan and contribute to the knowledge economy as those who matriculated from out-of-state.

Michigan has an advantage in producing a higher percentage of STEM field graduates than the national rate; nationwide, 13.7% of college students pursue a STEM field degree, while in Michigan 18% of all bachelors degree students pursued a STEM field degree.[14] Of the 10,259 international students taking advantage of the OPT between 2011-2013, more than half (59.5%) have obtained a degree in a STEM field—more than four times the STEM matriculation of domestic students nationally and more than three times the rate of Michigan university students. **In other words, international students who remain after graduation are more than three times as likely to have a degree in the STEM fields than the domestic graduates at Michigan colleges and universities.** Over four-fifths (80.7%) of the international students at these Michigan universities who use these academic training programs have advanced degrees.

By 2018, Michigan will need to fill 274,000 STEM field jobs, which are projected to produce higher median wages than most other fields.[15] These projections suggest that Michigan needs to rapidly develop and improve its primary education pipeline to produce more STEM college and university students. Such alterations in our primary system of education could take a generation or longer to implement. The good news is that Michigan businesses don't have to wait until the primary educational systems are improved. Michigan's universities, employers, and communities are already beginning to roll out the welcome mat to international students and connect them to the jobs that will encourage them to begin a career in Michigan. Bolstering the Global Talent Retention Initiative and developing additional initiatives to market the state as a high quality place to live will take advantage of a nearly untapped opportunity for regional economic development.

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[14]NCES, 2009 Integrated Postsecondary Education Data System, Fall 2009. Data for school year 2008-09.

[15]Georgetown University Center on Education and the Workforce publication "Help Wanted: Projections of Jobs and Education

International students are already improving Michigan's economic edge in the knowledge economy. More than half (59.5%) of international students authorized for OPT in this data set pursued a STEM field degree and more than four in five earned a graduate degree**.** These are critical insights given that (1) immigrants have historically launched high-tech firms at six times the rate as U.S.-born residents in Michigan; and that (2) the most common reason that immigrant high-tech entrepreneurs come to the U.S, is to get an education.[16] **Hence**, **improving retention rates of international students means a more competitive Michigan for generations to come.** When viewed from this lens, **if GTRI successfully fills it mission of retaining our international student talent, it will provide Michigan a key advantage in the global innovation economy.**

When taken together, the trends around international students emerge as a story of promise for Michigan, a story of high-skilled workers in high-demand fields choosing to make their homes in Michigan. This story should provide a compelling basis for additional investment in efforts that help international students connect to Michigan employers and set roots down in Michigan communities. All Michiganders are poised to benefit.

[16]See Wadhwa and related research in footnote 3.

Universities providing data include Eastern Michigan University, Lawrence Technological University, Michigan State University, Oakland University, University of Michigan – Ann Arbor, University of Michigan – Dearborn, and Wayne State University.

Four Schools reporting March 2011: Eastern Michigan University, Michigan State University, University of Michigan – Ann Arbor, Wayne State University.

Five Schools reporting August 2011: Eastern Michigan University, Lawrence Technological University, Michigan State University, University of Michigan – Ann Arbor, Wayne State University.

Seven Schools reporting March 2012: Eastern Michigan University, Lawrence Technological University, Michigan State University, Oakland University, University of Michigan – Ann Arbor, University of Michigan – Dearborn, Wayne State University.

Seven Schools reporting August 2012: Eastern Michigan University, Lawrence Technological University, Michigan State University, Oakland University, University of Michigan – Ann Arbor, University of Michigan – Dearborn, Wayne State University.

Five Schools reporting March 2013: Eastern Michigan University, Lawrence Technological University, Michigan State University, University of Michigan – Ann Arbor, University of Michigan – Dearborn.

Currently, no definitive list exists detailing which disciplines count as STEM fields. STEM field classification for this study was based on the U.S. Department of Homeland Security Immigration and Customs Enforcement STEM Designated Degree Programs List.

A partial list of the STEM fields of study under U.S Immigration classification includes: Physics, Actuarial Science, Chemistry, Mathematics, Computer Science, Psychology, Biochemistry, Robotics, Computer Engineering, Electrical Engineering, Mechanical Engineering, Industrial Engineering, Civil Engineering, Aerospace Engineering, Chemical Engineering, Astrophysics, Astronomy, Nanotechnology, Nuclear Physics, Mathematical Biology, Operations Research, Neurobiology, Biomechanics, Bioinformatics, Acoustical Engineering, Geographic Information Systems, Atmospheric Sciences. The full ICE list is much more detailed and longer and can be found at http://www.ice.gov/doclib/sevis/pdf/stem-list.pdf.

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www.MiGTRI.org