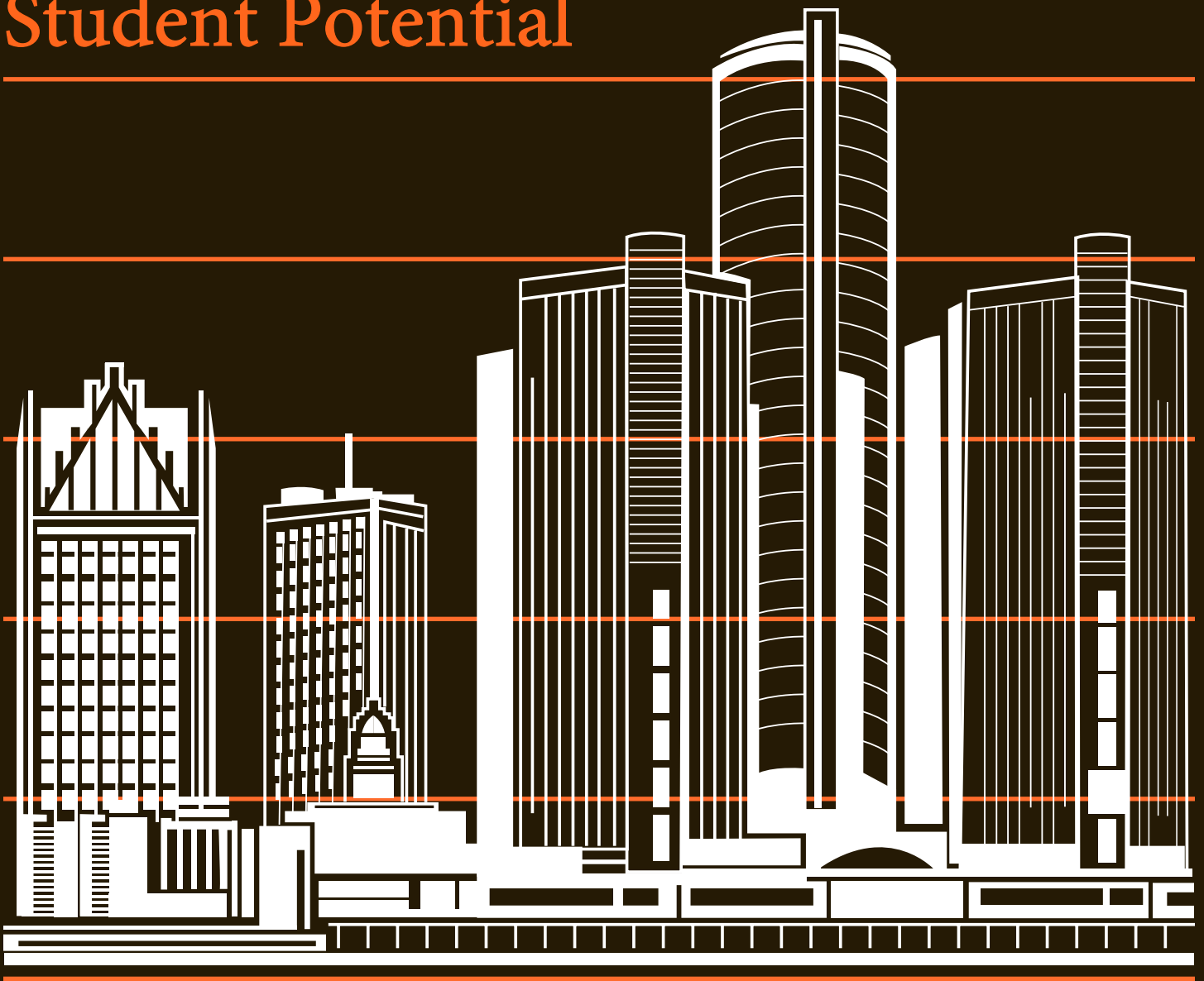


GLOBAL DETROIT

FILLING THE TALENT GAP:

Mobilizing Michigan's International
Student Potential



An Update on Optional Practical Training Visas

ACKNOWLEDGMENTS

This report was prepared by Ryan Etzcorn and Steve Tobocman for Global Detroit and the Michigan Global Talent Retention Initiative. Beth Szurpicki, Karen Phillippi, and Morgan Princing provided additional editing, data analysis, and charts. The report would not have been possible without the tremendous partnership and support from the international student offices at GTRI's participating universities—University of Michigan, Michigan State University, Wayne State University, Eastern Michigan University, Lawrence Technological University, University of Michigan-Dearborn, and Oakland University. Additionally, we are extremely grateful to the New Economy Initiative for their financial support and partnership. Without NEI's vision and ongoing support, the Michigan Global Talent Retention Initiative and this report would not be possible. This report also is supported by Fragomen Worldwide.

FOREWORD

The 2010 Global Detroit Study provided compelling economic data for pursuing an innovative strategy to grow the regional economy, revitalize Detroit neighborhoods, and help spark the region's recovery by encouraging, welcoming, retaining, and integrating immigrants into our region. It chronicled the tremendous economic contributions that immigrants have made to the region and that they make in high growth economies across the nation. The study outlined eleven recommendations for the region to pursue. Today, most of those recommendations have been implemented and Southeast Michigan is a global leader in the emerging field of immigrant economic development.

Global Detroit motivated the creation of an impressive array of infrastructure that will serve as a foundation for the region to attract international talent and integrate immigrants into the economy in ways that will produce jobs and prosperity across the board. Nonprofit programs who can trace their history to the Global Detroit Study and in which Global Detroit played a role in their origin include: the **Welcoming Michigan** program led by the Michigan Immigrant Rights Center (MIRC) to build welcoming communities; the **Welcome Mat** network of immigrant integration service providers, arts, and cultural organizations that includes an online searchable database to find services; skilled immigrant integration efforts of **Upwardly Global** and the **State of Michigan's Michigan International Talent Solutions** to help college-degreed immigrants find meaningful employment utilizing their professional skills; the **ProsperUS Detroit** micro-enterprise program which provides training, lending, and support services to low-income immigrants and African-Americans in Detroit; the **Cultural Ambassadors** volunteer network helping to integrate immigrant professionals; and the **Global Talent Retention Initiative of Michigan (GTRI)**, the nation's first international student retention program.

Elected leadership and the public sector in the region have been leaders in attracting, retaining, and integrating immigrant communities and Global Detroit has worked to partner with these efforts where our expertise can enhance these important efforts. **Michigan Governor Rick Snyder's** creation of the Michigan Office for New Americans (MONA), Global Michigan, a Michigan International Talent Solutions program to assist skilled immigrants find meaningful employment, and his broad support to make our state welcoming provides a strong foundation, as does **Detroit Mayor Mike Duggan's** recent creation of a Mayor's Office of Immigrant Affairs and Mayor's Office of International Affairs, and the **Detroit City Council's** Immigration Task Force. In fact, thanks to the efforts of MIRC's Welcoming Michigan program, the state of Michigan contains more **Welcoming Cities and Counties** as part of Welcoming America's official designation of welcoming communities than any other state in the nation—more than California, New York, or Florida.

Of all these profound changes in Michigan's and Southeast Michigan's efforts to be a global leader in attracting, retaining, and integrating immigrant talent, perhaps none is more important than our efforts to retain international students via the **Global Talent Retention Initiative of Michigan (GTRI)**. Launched in 2011 at the University Research Corridor with the support of the New Economy Initiative of Southeast Michigan (NEI), GTRI began with seven universities—University of Michigan, Michigan State University, Wayne State University, Lawrence Tech University, Eastern Michigan University, University of Michigan-Dearborn, and Oakland University. Under the guidance of Athena Trentin, the program secured additional funding from the Michigan Economic Development Corporation (MEDC) and expanded to include a total of 32 Michigan colleges and universities, as well as over 60 Global Opportunity (GO) Employers interested in employing international talent to fill unmet hiring and staffing needs. GTRI moved to the Prima Civitas Foundation before migrating back to Global Detroit where the program is now housed and overseen by Gracie Xavier.

GTRI works closely with MONA, the Detroit Regional Chamber of Commerce, the Michigan Economic Development Corporation, Ann Arbor SPARK, Automation Alley, the University Research Corridor, Prima Civitas Foundation, the Michigan chapter of the American Immigration Lawyers Association (AILA), ethnic chambers, professional organizations, and employers throughout the state.

Since its inception in 2011, nearly 3,000 talented international students studying at Michigan colleges and universities have attended GTRI events about how to attain employment in Michigan post-graduation and the majority characterized their experience as “invaluable” or “very useful.” Over 3,000 employers and recruiters have attended a GTRI event or presentation and over 80 percent rated it “very useful” or “useful.” The data contained in this report on Michigan’s international students’ utilization of the Optional Practical Training (OPT) portion of their student visa—an update of a 2013 report—firmly evidences the desire and talent of Michigan’s international students as a powerful economic driver for our region.

In the coming year, GTRI hopes to strengthen the systems that will attract and retain international student talent in Southeast Michigan by concentrating on the over 20,000 talented international students studying at GTRI’s original seven universities and connecting them to Southeast Michigan employers. Given the intense needs for highly-skilled STEM talent from local companies and the ample supply of that talent that GTRI represents, Global Detroit is intensifying its work to build off GTRI’s initial success and make the program a national model in sparking local economic growth and prosperity.

There is much to consider in this second report on use of the OPT employment opportunities in Michigan, almost all of it positive. We look forward to working with you in the coming year.

Steve Tobocman
Executive Director



Gracie Xavier
Director



OVERVIEW OF FINDINGS

This 2016 International Student Retention in Michigan Report is an update to the 2013 GTRI report on OPT use at the original seven GTRI universities entitled, “International Talent Retention in Michigan: A Pathway to National Competitiveness.” The 2016 “Filling the Talent Gap” report comes at a time that other communities across the nation are beginning to realize the tremendous economic opportunity that international student retention presents. The federal government is in the process of promulgating new rules that will enable certain international students to stay and work up to three years after graduation. Over the past year the Ohio Board of Regents released its Ohio GREAT (Global Reach to Engage Academic Talent) report in accordance with a mandate from the State Legislature about the potential economic benefits of enhancing international student retention. Our friends and partners at St. Louis Mosaic collaborated with researchers at the University of Missouri-St. Louis on an in-depth report on global talent hiring in St. Louis, including identifying seven key recommendations to improve retention of international student talent in the St. Louis metro.

Michigan has a profound head start on these other regional efforts and the preliminary results are encouraging. An increasing number of international students are choosing Michigan as a place to study and, hopefully, relocate to pursue the American Dream. **The number of international students in Michigan (now more than 32,000, ranking the state 9th in the nation) has grown over the past decade by nearly 60 percent**, while nationally the numbers of international students grew 73 percent.¹ The percentage of all college and university students in the U.S. that are international students also has grown over the past decade by 50 percent, as almost 5 percent of the 20 million college students in America are international students.

The research underlying this report demonstrates powerful growth in utilization of the OPT portion of international student status in Michigan. The absolute number of OPTs pursued by international students at GTRI’s seven original university partners increased significant and **the number of those students hired by Michigan companies increased by more than 80 percent in the first four short years since GTRI launched in 2011.**

In fact, based upon the data contained in this report, **international students using OPTs are nearly as likely as in-state students from Michigan colleges and universities—and three times as likely as out-of-state students—to live and work in Michigan after graduating instead of moving to another state.** More than half (56.4 percent) of international students on OPT in the last three years of GTRI data worked in Michigan (and 57.2 percent of such students over the last five years) compared to the most recent estimates that 63 percent of in-state students, and 22 percent of out-of-state students, stay in Michigan after graduation.

While international students are much more likely than domestic students to study in the science, technology, engineering, and mathematics (STEM) fields so critical to future economic growth, the numbers of international students using OPT to stay and work after graduation reflect even deeper penetration in the STEM fields. **More than two-thirds (68.0 percent) of the international students in our data using OPT between the Spring 2012 semester and Fall 2014 were STEM majors.** That number skyrockets to 84.0 percent for the portion of the international Ph.D. graduates using OPT from the seven target universities. These are the world’s most important economic assets (STEM Ph.D. and master degree holders) and GTRI represents the first and leading effort in the nation to retain their contributions.

A final takeaway from the data in this report is that Southeast Michigan is benefitting far more from this talent than other parts of the state. **We estimate that more than three-quarters (75 percent) of the OPTs from our seven target universities working in Michigan are working in the four county (Macomb, Oakland, Washtenaw, and Wayne Counties) target area that defines the Global Detroit footprint.** And, in a typical semester, more than 225 Michigan companies are utilizing recently graduated Michigan international student talent.

THE GLOBAL TALENT RETENTION INITIATIVE OF MICHIGAN (GTRI)

GTRI was launched in 2011 as the nation's first international student retention initiative with full-time staff outside of a college or university. The idea, organizing and planning conversations, and impetus grew out of the 2010 Global Detroit study. Originally housed at the University Research Corridor (and later at the Prima Civitas Foundation before migrating back to Global Detroit in 2015), GTRI was seed-funded by the New Economy Initiative for Southeast Michigan (NEI) and began with seven universities—University of Michigan, Michigan State University, Wayne State University, Lawrence Tech University, Eastern Michigan University, University of Michigan-Dearborn, and Oakland University. Additional funding from the Michigan Economic Development Corporation enabled the program to expand to a total of 32 Michigan colleges and universities, as well as over 60 Global Opportunity (GO) Employers interested in employing international talent to fill unmet hiring and staffing needs.

GTRI works by helping to explain the legal pathways by which international students can stay in Michigan after graduation and help Michigan companies grow and succeed. The program also helps to introduce employers to this often overlooked talent pipeline, helping them to understand the intricacies of the Optional Practical Training (OPT) and Curricular Practical Training (CPT) programs, as well as other legal pathways to employ this talent. GTRI works with international students and Michigan companies to build relationships and connections that can result in employment opportunities for these employers to fill unmet talent needs.

Since its inception in 2011, nearly 3,000 talented international students studying at Michigan colleges and universities and over 3,000 Michigan employers and recruiters have attended GTRI events. While in its early years, GTRI focused on large on-campus student conferences, the program is evolving to include more frequent and smaller on-campus events, as well as additional events to connect Michigan employers to the high-skilled and diverse talent that these students present. GTRI is working to connect employers with unmet talent needs to ambitious international students who possess the education, skills, and passion that employers seek. Other program enhancements are underway to increase the networking opportunities for international students off-campus within the professional and ethnic communities that exist in Southeast Michigan.

Michigan Governor Rick Snyder has noted that:

The message to international students who take part in GTRI events is simple. Michigan wants you! . . . Connecting highly skilled international students with employers and giving them the opportunity to work and live in a beautiful, vibrant state will help create a strategic advantage for our state and strengthen the Michigan economy.²

¹ Data compiled from Institute of International Education, including IIE's "International Student Enrollment Trends, 1948/49-2014/15." Open Doors Report on International Educational Exchange. (2015). Retrieved from <http://www.iie.org/opendoors>, as well as 2015 and 2014 Michigan Fact Sheets retrieved from <http://www.iie.org/Research-and-Publications/Open-Doors/Data/Fact-Sheets-by-US-State>.

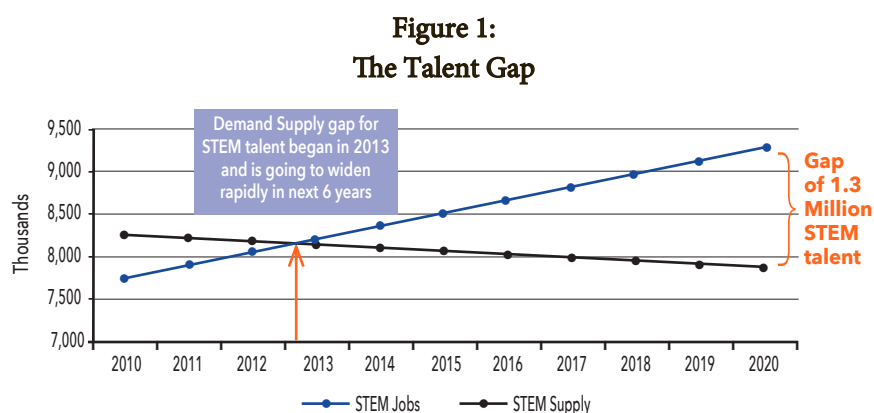
² Letter from Governor Rick Snyder posted on the GTRI website, <http://www.migtri.org/mission/>.

WHY IS INTERNATIONAL STUDENT RETENTION IMPORTANT?

International Students Are Critical to Filling the Talent Gap

The jobs of tomorrow's economy will require a mix of technical skill, advanced education, and global knowledge. The demand for such skills already is rapidly spreading through all sectors of the global economy. At the same time, the number of graduates and residents staying in Michigan to fill these roles is struggling hard to keep pace. This is especially true for graduates in science, technology, engineering, and mathematics (STEM) fields and other high-skilled fields.

The needs are severe. In 2013, there were an estimated total of 8.2 million STEM jobs in the US, which made up 6.2 percent of total employment. These jobs represent the fastest-growing and most important part of the economy. According to a 2015 estimate from the Corporate Executive Board (CEB), a publicly-traded corporate advisory specialist, factoring in parameters such as growth and an aging workforce, there will be a gap a STEM employment supply shortfall of 1.3 million by 2020.³



Business Leaders for Michigan, a private nonprofit executive leadership organization, whose mission is to develop, advocate, and support high-impact strategies that will make Michigan a “Top Ten” state for jobs, personal income, and a healthy economy, has identified making the state a Global Engineering Village as one of its top six strategies for the state's economy. Its 2015 report noted that, “In the years to come, engineering services are predicted to grow at a rate that far outpaces that of the economy as a whole.”⁴

Michigan can continue to position itself as a Global Engineering Village by branding Michigan as a hotbed for engineers, expanding its engineering capacity, growing its engineering firms, increasing the number of Michigan students that enter engineering programs and expanding efforts to attract engineers from out-of state and retain those already in Michigan.

According to the Detroit Regional Chamber of Commerce, the current STEM workforce in Metro Detroit (165,000 workers) is greater than 34 states' total STEM workforce. With over 30,000 mechanical engineers, Metro Detroit has more mechanical engineers than any other metro, nearly equal to the entire state of California and over 3,800 more than the state of Texas. The Chamber notes that civil (13%), aerospace (19%), biomedical (18%), and other engineering occupations that are expected to see notable growth over the next five years in the region.⁵

³ Vijay Swaminathan, “STEM Talent: 3 Ways to Beat the Shortage,” blog (March 6, 2015) at <https://www.cebglobal.com/blogs/stem-talent-3-ways-to-beat-the-shortage/>.

⁴ Business Leaders for Michigan, “New Michigan: The 2015 Report on Michigan's Progress in Leveraging Six Opportunities.” (July 2015).

⁵ Detroit Regional Chamber of Commerce website at <http://www.detroitchamber.com/econdev/data/talent/>.

Foreign students disproportionately study in STEM and business fields. According to the Brookings Institution, 67 percent of foreign students pursuing a bachelor's or higher degree whose student visa was granted between 2008 and 2012 majored in STEM or business, management and marketing fields, compared to 48 percent of domestic students in the United States.⁶

International students comprise a startling proportion of graduate STEM degrees. According to the National Science Foundation, the proportion of STEM graduate students enrolled at U.S. colleges and universities that are international students is on the rise. As of 2013, 57.1 percent of the computer science and 67.3 percent of the engineering graduate students were international.⁷

Stuart Anderson, the Executive Director for the National Foundation for American Policy, a nonprofit, non-partisan public policy research organization, has identified international students as “a key source of talent for U.S. employers and . . . crucial to enhancing the ability of U.S. universities to conduct research and offer high quality academic programs to U.S. students.”⁸

**Figure 2:
International Students Predominate STEM Graduate Programs**

Full-time Graduate Students and the Percent of International Students by Field (2010)			
Field	Percent of International Students	Number of Full-time Graduate Students - International Students	Number of Full-time Graduate Students - U.S. Students
Electrical Engineering	70.3%	21,073	8,904
Computer Science	63.2%	20,710	12,072
Industrial Engineering	60.4%	5,057	3,314
Economics	55.4%	7,587	6,117
Chemical Engineering	53.4%	4,012	3,504
Materials Engineering	52.1%	2,660	2,891
Mechanical Engineering	50.2%	8,352	8,273
Mathematics & Statistics	44.5%	7,840	9,766
Physics	43.7%	5,716	7,369
Civil Engineering	43.7%	6,202	7,989
Other Engineering	42.1%	7,279	9,992
Chemistry	40.3%	8,059	11,952
Source: National Science Foundation, Survey of Graduate Students and Postdoctorate, webcasper.nsf.gov. U.S. students include lawful permanent residents.			

⁶ Neil G. Ruiz, Brookings, “The Geography of Foreign Students in U.S. Higher Education: Origins and Destinations” (Aug. 29, 2014) at <http://www.brookings.edu/research/interactives/2014/geography-of-foreign-students-/M10420>.

⁷ Kelly Kang, “Full-Time Graduate Enrollment in Science and Engineering Rose in 2013, Fueled by a Large Increase in Foreign Graduate Enrollment,” National Science Foundation (April 14, 2015) at <http://www.nsf.gov/statistics/2015/nsf15318/#fig1>.

⁸ Stuart Anderson, “The Importance of International Students to America,” National Foundation for American Policy Brief (July 2013) at <http://www.nfap.com/pdf/New%20NFAP%20Policy%20Brief%20The%20Importance%20of%20International%20Students%20to%20America,%20July%202013.pdf>.

Figure 3:
Graduate STEM Programs Percent International Students

Nationally, over 63% of computer science and 70% of engineering graduate students are international (2013).

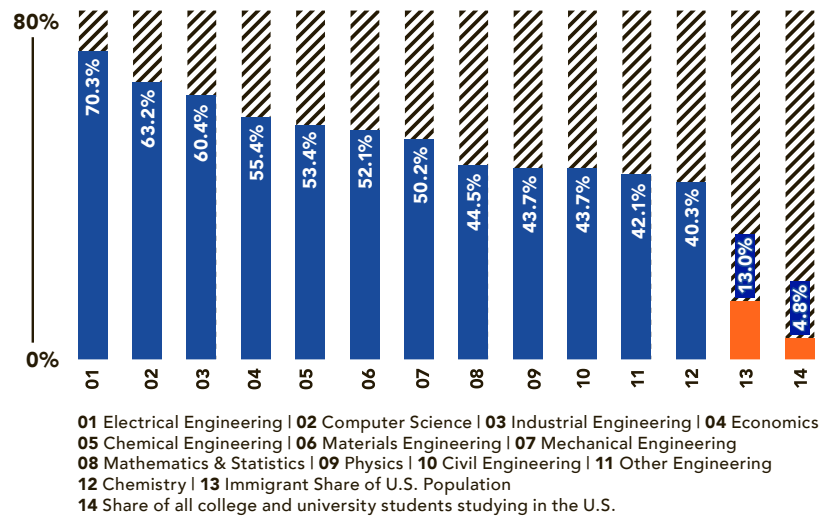
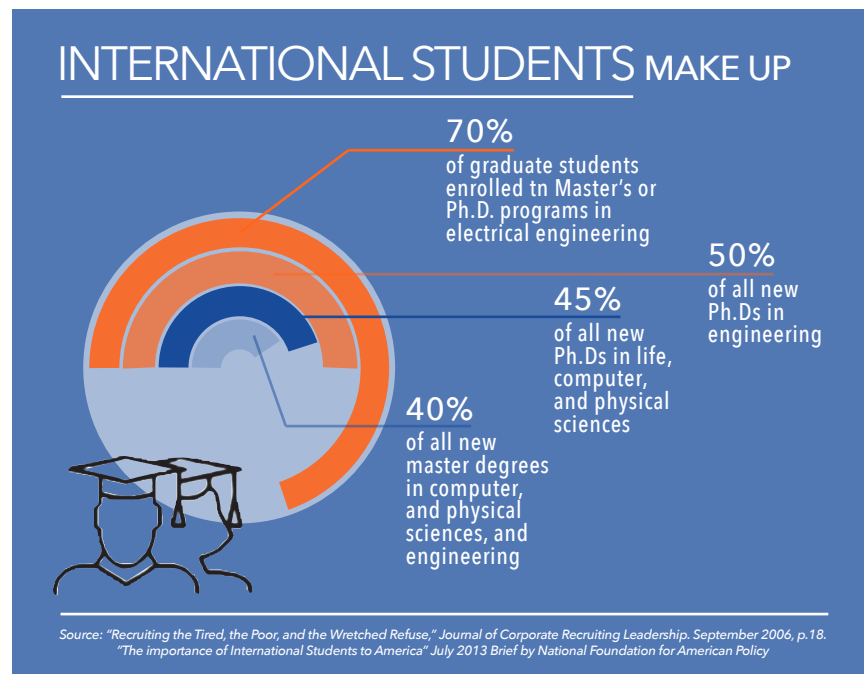


Figure 4:
International Students Predominate STEM Graduate Degrees



In Michigan, international students studying STEM represent a tremendous amount of the student population studying in these fields. **More than 60 percent of the STEM Ph.D. graduates in Michigan in recent years are international students, including 60.6 percent of engineering Ph.D.s awarded between 2006-2010.**⁹ Nearly half (47.3 percent) of STEM graduates at Michigan's most research-intensive schools are foreign-born.¹⁰

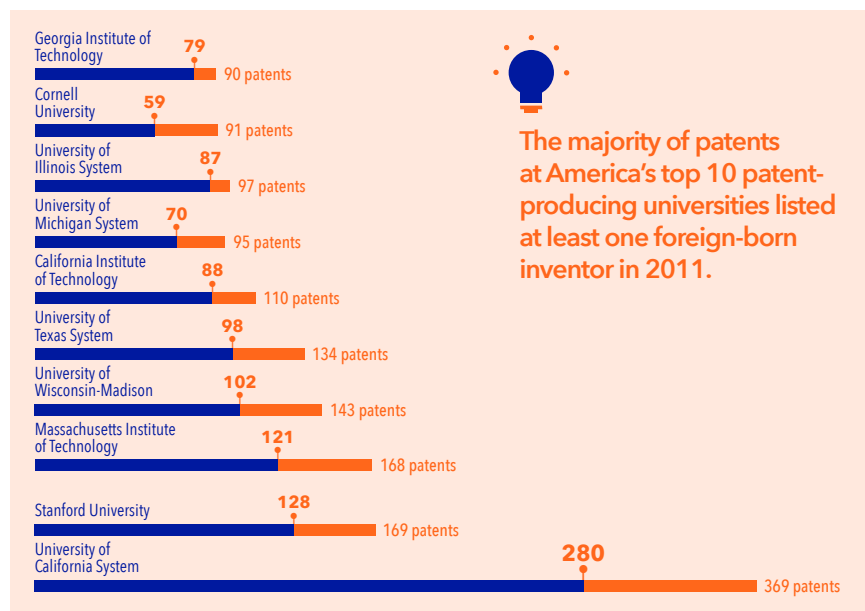
⁹ "Map the Impact of Immigration Across the Nation," Partnership for a New American Economy, (2012) at www.maptheimpact.org/state/michigan/.

¹⁰ Ibid.

INTERNATIONAL STUDENTS MAKE SIGNIFICANT ECONOMIC CONTRIBUTIONS WHILE STUDYING AT U.S. COLLEGES AND UNIVERSITIES

As students and faculty, foreign-born researchers play an important role in the development of cutting-edge research and commercialization of that research. In fact, on 70 of the 95 patents filed by the University of Michigan system in 2011, foreign-born researchers were listed as the inventor or co-inventor. This 73.7 percent ratio is typical of the nation's top ten leading research universities, where the average was 76 percent.¹¹

Figure 5:
International Students Are Critical to R&D Success at America's Top Research Universities



Foreign-born researchers are credited as inventors on the vast majority of patents from our nation's top research universities in critical areas, including information technology (more than 5 out of every 6 patents in 2011), pharmaceutical drugs or drug compounds (almost 8 out of every 10 patents in 2011), and molecular biology and microbiology (3 out of every 4 patents in 2011). Similar results were found in semiconductor device manufacturing (87 percent of top research university patents in 2011), pulse or digital communications (83 percent) and optics (77 percent).¹³

¹¹ "Patent Pending: How Immigrants Are Reinventing the American Economy," Partnership for a New American Economy, (June 2012), page 1 at <http://www.renewoureconomy.org/sites/all/themes/pnae/patent-pending.pdf>.

¹² "Immigrant Nation, American Success: Ph.D.s and Patents," Vilcek Foundation at <http://cdn.vilcek.org/images/content/1/0/v2/1074798/ImmigrantNation-AmericanSuccess-Ph.D.Patents.pdf>.

¹³ "Patent Pending," Partnership for a New American Economy, page 11.

Figure 6:
International Students Are Critical to Patent Production in Key Fields
at America's Top Research Universities



14

In addition to their contributions to university research and diversity in the classroom, while international students are still studying on U.S. campuses, they provide tremendous economic benefits and create jobs for the communities in which they study, due to tuition and everyday living expenditures. In the fall of 2014, **Michigan alone received some \$1.032 billion in economic benefits, supporting more than 13,500 jobs directly or indirectly** through their contributions, according to NAFSA: Association of International Educators.¹⁵

The Ohio Board of Regents report on international students notes that simply increasing the share of international students to six percent of the total postsecondary student population (1.2 percent higher than the national average) would “increase the total economic contributions of international students (to the Ohio economy) by \$420 million, to more than \$1.2 billion total, and support an additional 5,751 jobs. An eight percent increase would result in an \$835 million increase in economic contributions, plus an 11,447 increase in new jobs.”¹⁶ Clearly there is much to gain through international student growth.

INTERNATIONAL STUDENT RETENTION IS THE PATHWAY TO BUILDING A HIGH-TECH ECONOMY AND A GROWTH ECONOMY OF THE FUTURE

The groundbreaking survey research by Vivek Wadhwa at Duke University and Anna Lee Saxenian at University of California-Berkeley on immigrant high-tech entrepreneurs that suggests that 25 percent of all the nation's high-tech firms created between 1995 and 2005 were founded by immigrants underscores the potential of international student retention.¹⁷ While Michigan ranked third in the percent of high-tech firms founded by immigrants with 32.8 percent of its high-tech firms launched between 1995 and 2005 possessing an immigrant founder—a startling statistic given the state was only about 5 percent foreign-born at the time—Silicon Valley led the nation with 52.4 percent of its high-tech startups during the period possessing an immigrant founder.

¹⁴ “Immigrant Nation, American Success: Ph.D.s and Patents,” Vilcek Foundation at <http://cdn.vilcek.org/images/content/1/0/v2/1074798/ImmigrantNation-AmericanSuccess-Ph.D.Patents.pdf>.

¹⁵ “International Student Economic Value Tool,” NAFSA accessed Nov. 16, 2015 at http://www.nafsa.org/Explore_International_Education/Impact/Data_And_Statistics/NAFSA_International_Student_Economic_Value_Tool/#stateData.

¹⁶ John Carey, “Recommendations for Ohio's Postsecondary Globalization Initiative,” Report Prepared by the Ohio Board of Regents, (December 2014), page 5, found at <https://www.ohiohighered.org/sites/ohiohighered.org/files/uploads/global/GREATreport.pdf>.

¹⁷ Vivek Wadhwa, AnnaLee Saxenian, Ben Rissing, and Gary Gereffi, “America's New Immigrant Entrepreneurs,” Duke Science, Technology & Innovation Paper No. 23, (January 4, 2007) at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=990152.

Follow-up research with these startup founders suggests that the average immigrant high-tech entrepreneur created their business 13 years after entering the U.S. and **that the top reason for coming to the U.S. was to get an education.**¹⁸ This suggests that international student retention is a significant and critical pathway to building a vibrant high-tech economy.

But it's not just high-tech firms that we should consider. Immigrant entrepreneurship has been an absolutely critical and integral component of America's economic history and success. Immigrants to the U.S. and their children founded more than 40 percent of the 2010 Fortune 500 companies, and these companies today employ more than 10 million people worldwide, generating \$4.2 trillion in revenue, which is greater than the GDP of every country in the world outside the U.S. except China and Japan.¹⁹ Here in Michigan eight of the 19 Fortune 500 companies within the state (42.1 percent) were started by so-called "New American" founders (immigrants or their first generation children).²⁰

INTERNATIONAL STUDENT RETENTION CAN BUILD IMPORTANT DIASPORA NETWORKS THAT GENERATE FOREIGN TRADE AND INVESTMENT

Trade and foreign direct investment are increasingly crucial to the economic vitality of American metros. Migration is now much more common and kinetic than in any past era. Immigrants—including international students—serve as intermediary actors that connect home and host cultures, economies, and society. This is especially true for highly-skilled, highly-educated immigrants with deep and profound economic and social connections in their home country.²¹

Economists and researcher have pointed out that immigrants and diaspora networks can help grow international trade and foreign direct investment in several ways. They often possess valuable information about market structure, consumer preferences, business ethnics, and local customs, which can help identify market opportunities and significantly lower language and cultural barriers. They decrease the costs of negotiating and enforcing a contract through their social links, networking skills, and knowledge of local laws and practices.²²

The importance and benefits of diaspora communities to local economies have only recently begun to be understood and acknowledged. AnnaLee Saxenian at the University of California-Berkeley has pioneered research that links the entrepreneurial activities of U.S.-educated foreigners in Silicon Valley with their home regions through what she labels as "brain circulation."²³ Using case studies and surveys, Saxenian argues that immigrant entrepreneur networks play a critical role in the growth of technology industries linking Silicon Valley to new technology hubs in Bangalore (India), Hsinchu Technology Park (Taiwan), and Shanghai (China).²⁴

¹⁸ Vivek Wadhwa, Richard Freeman, and Ben Rissing, "Education and Tech Entrepreneurship," Ewing Marion Kauffman Foundation, (May 2008) at http://www.kauffman.org/~media/kauffman_org/research%20reports%20and%20covers/2008/06/education_tech_ent_061108.pdf.

¹⁹ "The 'New American' Fortune 500," renewoureconomy.org. Partnership for a New American Economy, June 2011, <http://www.renewoureconomy.org/wp-content/uploads/2013/07/new-american-fortune-500-june-2011.pdf>.

²⁰ Data produced by the Partnership for the New American Economy for the Welcoming Economies Global Network (WE Global) based upon the 2011 Fortune 500.

²¹ Beata S. Javorcik, Caglar Ozden, Mariana Spatareanu and Christina Neagu, "Migrant Networks and Foreign Direct Investment," Policy Research Working Paper Series 4046, Washington DC: The World Bank, (2006).

²² Ibid.

²³ AnnaLee Saxenian, *The New Argonauts: Regional Advantage in a Global Economy*, Cambridge: Harvard University Press, (2007). See also AnnaLee Saxenian, "Silicon Valley's New Immigrant Entrepreneurs," San Francisco: Public Policy Institute of California, (1999); AnnaLee Saxenian, "From Brain Drain to Brain Circulation: Transnational Communities and Regional Upgrading in India and China," *Studies in Comparative International Development*, Summer (2005); AnnaLee Saxenian, "The Bangalore Boom: From Brain Drain to Brain Circulation," in Kenneth Kenniston and Deepak Kumar, *Bridging the Digital Divide: Lessons from India, Bangalore*: National Institute of Advanced Study, (2000).

²⁴ Ibid.

Some of the most important local economic benefits accruing from strong diaspora networks come when those networks are connected to and work with mainstream economic partners. While there is significant local economic benefit when a global entrepreneur sets up his exporting or importing business in a local community, some of the most profound contributions from diaspora communities are felt when these actors help local mainstream businesses develop new and important trade and investment relationships abroad. It is rare, however, that a U.S. business recognizes the value that international talent can bring in assisting a business in penetrating global markets, developing relationships with foreign customers and suppliers, or in attracting foreign investment. Some regions, however, are developing programs to capitalize on these opportunities.

Increasingly, U.S. higher education institutions are educating future business, scientific, and political leaders from the world's fastest-growing emerging economies. Metro leaders should be strategic in leveraging foreign students while they are here so that their local economies can compete in the global marketplace . . . Some schools have developed programs using foreign students' knowledge by creating courses or employment opportunities with local businesses that want to build international strategies.²⁵

These realities suggest that international students present a powerful, but largely untapped, opportunity for U.S. companies and regions to grow trade and investment that will create U.S. jobs and prosperity. As international trade and foreign direct investment continue to play a growing role in the global economy and America's economic growth, the value and importance of the opportunities will grow. The value and impact of diaspora networks and the economic benefits that they bring to a local community is only now being fully understood and the strategies and practices that help integrate, welcome, nurture, and grow diaspora networks into the local economic mainstream are just now being launched. Yet, helping international students to work with local companies while pursuing their education or afterwards through international student retention can be a significant catalyst for regional economic growth.

OTHER STATES AND REGIONS ARE FOLLOWING MICHIGAN'S LEAD

The 2011 launch of GTRI marked what we believe is the first independent economic development effort to focus on connecting international students with unmet local talent needs. The increasing realization of the tremendous value that international students represent to regional economic growth, however, is beginning to spawn additional efforts across the country.

In 2014, the Ohio Legislature unanimously passed and Governor John Kasich signed House Bill 484, a mid-term budget bill that, in addition to funding higher education, included in its boilerplate requirements that the Chancellor of the Ohio Board of Regents consult with a broad stakeholder team to study current international student recruitment practices and retention activities to "consider implications of, and opportunities for, encouraging international students to remain in the state after graduation." In December 2014, Chancellor John Carey, on behalf of the Ohio Board of Regents, issued the recommendations of a 30-person stakeholder group in his 34-page "Recommendations for Ohio's Postsecondary Globalization Initiative."²⁶

²⁵ Ruiz (2014).

²⁶ Carey (2014).

The report estimates that “correcting Ohio’s lagging retention of international students currently studying in the state to a rate slightly above the national average would (annually) generate almost \$100 million in the state’s economy and support 1,200 new jobs.”²⁷ The report goes on to note that a strong retention strategy would create between 4,500 and 8,900 new jobs within six years, as well as increase Gross State Product by \$700 million to \$1.4 billion over the next 30 years.²⁸

The St. Louis Mosaic Project, a regional collaboration of chamber, business, economic development, immigrant and refugee services organizations, and elected officials designed to make the St. Louis region home to the nation’s fastest-growing immigrant population, also has begun to tackle international student retention. In September 2015, researchers at the University of Missouri-St. Louis published research and recommendations about the hiring practices of local employers and St. Louis Mosaic has worked to highlight these observations and bring local universities and businesses together to enhance international student retention.

Similar discussions on how to increase international student retention are underway in Lansing, Cincinnati, Toledo, Dayton, Pittsburgh, Philadelphia, and beyond.

Despite the tremendous benefits that accrue to local economies from increasing retention of international students most regions and companies lack any strategy for recruiting, integrating, and retaining international students into their talent pool—essentially ignoring the world’s most robust supply of talent that exists right in their backyards. A select group of companies that understand the value proposition that international students present, however, have designed and implemented HR and recruiting strategies in a manner that incorporates the unique pathways that international students must travel. As noted by one such employer interviewed by University of Missouri-St. Louis researchers, hiring international students from local universities represents a significant opportunity, “We use Midwest schools for our hiring needs, because international students from local universities are already familiar with St. Louis. They stay longer, their retention rate is higher.”²⁹

WHAT IS OPT AND WHY DO WE TRACK IT?

Most international students—78.1 percent of those studying in the U.S. in 2012—study under an F-1 visa, while the others use a travel-study visa for cultural exchanges (J-visa) or a vocational study visa (M-visa).³⁰ There are an unlimited number of F-1 visas that can be issued annually, but international students using them must be accepted by an approved school, document they have sufficient funds to cover twelve months of expenses, and demonstrate academic preparedness to succeed in the program.

The F-1 visa does not provide a direct path to permanent residency and has limited use for employment purposes, but given the research that the most common pathway for immigrant high-tech entrepreneurs was to first study in the U.S. as an international student, then work in the U.S. for more than a decade, there are hundreds of thousands of former international students who have utilized an F-1 visa as part of their journey to pursue the American Dream. While there are challenges for international students to migrate into the American workforce and economy on a long-term basis, there are on-ramps and GTRI is committed to promoting the awareness and use of these opportunities as a means to growing our economy.

²⁷ Ibid.

²⁸ Ibid.

²⁹ Jennifer Morton and Ekin Pellegrini, “Global Talent Hiring in St. Louis: Current Challenges and Recommendations to the Region for Retaining International Students Post-Graduation,” (September 2015) at http://www.stlmosaicproject.org/cmss_files/attachmentlibrary/September%202015%20-%20Retaining%20International%20Students.pdf.

³⁰ Percent of F-1 visas calculated from Office of Immigration Statistics, “Nonimmigrant Admissions to the United States: 2012, Annual Report,” Washington, DC: Department of Homeland Security, (2013) at www.dhs.gov/sites/default/files/publications/ois_ni_fr_2012.pdf.

International students using an F-1 visa generally are allowed to seek on-campus employment, off-campus employment because of severe economic hardship, and certain employment sponsored by international organizations. Beyond these very limited employment opportunities, international students are allowed to work for off-campus employers and companies through the Curricular Practical Training (CPT) and Optional Practical Training (OPT) programs available under their F-1 visa.

CURRICULAR PRACTICAL TRAINING (CPT)

The CPT program enables international students to work full- or part-time while completing their degree program. Employment must be related to an established curriculum, be in the student's major field of study, and be approved by the designated school official who coordinates with the employer. CPT participants are usually limited to working 20 hours or fewer per week during the regular terms, while full-time employment is usually authorized during the summer. Graduate students in advanced candidacy status are typically allowed to work full-time during the regular term if employment is an integral part of their degree program. Students who enroll in full-time employment under the CPT program for more than 12 months are ineligible to apply for OPT.³⁷

OPTIONAL PRACTICAL TRAINING (OPT)

The OPT program allows international students to work full-time in the United States for up to 12 months (for non-STEM degree holders) or 36 months (for STEM degree holders) after receiving their U.S. bachelors, masters, or doctoral degree. The 36-month period for STEM degree holders is part of a proposed rule that the Obama Administration has promulgated and that is expected to take effect in the summer of 2016. It was drafted in response to litigation striking down a prior 17-month STEM extension instituted in 2008 for STEM degree holders whose employers utilized the federal E-verify system. There is no limit on the number of OPT authorized per year, but the program requires approval by the foreign student's school and the Department of Homeland Security. F-1 visa holders are eligible for this post-graduation work authorization after each successively higher degree program they complete.

The first so-called STEM extension was implemented in 2008 by President George W. Bush. It extended the period of OPT for STEM students to help bridge the gap between OPT and pending H-1B visa petitions and to help address the tremendous demands for STEM talent by U.S. employers. President Obama expanded the number of academic majors included in the STEM extension in 2010. In August 2015 a federal district court struck down the STEM extension adopted by President Bush for failing to properly seek public comment in creating the rule. The court stayed its decision for six months, noting that the substance of the rule was within the federal government's administrative powers. In October 2015, the Department of Homeland Security published a new proposal STEM extension rule that would increase the 17-month STEM extension for those using E-Verify to 24 months—meaning foreign STEM students would be able to work in the U.S. for a total of 36 months. The proposed rule would again require employers to use E-Verify and also would increase oversight of the program, seek the development of formal mentoring and training plans for OPT recipients, wage protections for OPT workers, and create new prohibitions against replacing U.S. workers. Over 50,000 comments have been filed since the proposed rule was published. The Obama Administration has asked that the federal district court stay its decision an extra 90 days and it is expected that the new 24-month STEM will go into effect this summer.

³⁷ Ruiz (2014).

During the 2008 to 2012 period, there were roughly 375,000 OPTs—an average of 75,000 per year—granted in the United States for foreign students receiving bachelors and graduate degrees. **The Brookings Institution estimates that roughly one out of every three international students uses the OPT program**, based on the fact that an average of 230,000 F-1 student visas were approved annually from 2008 to 2012.³² As of November 2013, there were an estimated 100,000 F-1 students using the OPT program nationally.³³

GTRI has promoted utilization of the OPT to both international students and local employers because it is the most common and easiest pathway to long-term integration of international student talent into the regional economy. The OPT can function as a bridge to attracting and retaining international students. Providing international students with a potential opportunity to work after graduation could draw them to studying in the U.S. By utilizing an OPT, international students have the opportunity to gain business knowledge while potentially demonstrating the needed skills that would motivate an employer to apply for an H-1B visa or consider other strategies to retain them. Moreover, experience in the U.S. workforce is often a highly-valued opportunity for international students who will be returning home to join the workforce in their home countries.

For employers, OPT allows them to utilize international student talent to fill unmet talent needs without having to worry about the delays and costs of other visa programs. An international student who returns to her home country after working for an American employer under her OPT benefits that American employer by serving as a connection to their home country and its businesses, trade, and investment opportunities. In short, the OPT represents a low-risk, low-cost engagement for the international student and U.S. employer to mutually benefit and to explore a longer-term relationship.

Once the OPT employment begins, the student and employer may want to consider longer-term options. This often can mean considering the H-1B visa, an employment-based visa that allows employers to hire foreigners to work in specialty occupations on a temporary basis. H-1B visas are granted in up to three-year increments with the option to extend up to six years. Referred to as a “dual intent” program, the H-1B visa allows foreigners to work temporarily on a non-immigrant visa while taking steps toward permanent residency through employer sponsorship or other means. The challenge with the H-1B visa is that demand far exceeds supply. In April 2016, employers submitted some 236,000 applications for 65,000 slots (with the winners chosen by lottery). There are an additional 20,000 visas for workers with advanced degrees from U.S. colleges and universities, however, these are also subject to the lottery. Preparation of an H-1B petition usually requires legal assistance, as well as paying an up front filing fee. It requires timing and preparation, as applications are due April 1 (and are typically no longer accepted five working days later) for positions that begin October 1.

GTRI encourages employers to consider the H-1B for international students hired under the OPT early in their OPT experience. For international students in STEM fields (67.7 percent of the OPT users in our data set) utilizing the STEM extension, this often can mean the employer can pursue two or three opportunities to attempt to win the “H-1B lottery” during the OPT, to secure longer employment for the international student graduate. Moreover, if the student has received a graduate degree—approximately 82 percent of the OPT users from our target universities over the past four years according to our data—the employer can seek out one of the 20,000 H-1B visas reserved annually for those with graduate degrees from U.S. institutions.

While the pathway for an employer and international student to utilize both the OPT and H-1B programs to create lifelong employment (or an employment relationship lasting more than a decade) is uncertain, it is neither the only option to long-term employment, nor the only mutually-rewarding relationship. First, a small minority of international students on OPT will find other pathways to permanent legal residency, including marriage or family petitions or the visa lottery.

³² Ibid.

³³ Note the annual number of F-1 visa students using OPT can be larger than the annual number granted because those who utilize the STEM extension are able to use the OPT for 29 months.

Second, employers with an international footprint may employ the international student at an overseas location after the OPT expires and bring the international student back after a year outside of the U.S. using an L-visa. Third, employers with only domestic operations can continue to seek an H-1B for an international student after they have returned to their home country. Finally, even if the employment relationship between the international student and the employer ends with the expiration of the OPT and the international student returns to their home country, the experience can be mutually beneficial as the employer now has a friend and ally working in a foreign country who can help connect the employer to trade and investment opportunities, and the international student has gained important work experience in, as well as knowledge of, the U.S. market.

GTRI uses the OPT data from its participating universities to establish and monitor the trend lines of the matriculation of international students into the U.S. workforce—nationally, across Michigan, and within the region. While the OPT is by no means a comprehensive measure of this matriculation—inevitably some international students will be hired directly under H-1B visas, others will marry U.S. citizens or attain some family reunification visa, some will continue their studies pursuing second degrees, etc.—the use of the OPT can be an important trend indicator and likely represents the most common pathway by which international students make it into the U.S. workforce.

While GTRI's work seeks to connect international students with Southeast Michigan employers to fulfill unmet talent needs, there is no practical way for GTRI to precisely measure the exact number of jobs that it has helped to fill. Much of the employment and interviewing process by nature and appropriately happens naturally and outside of the scope of GTRI-sponsored events, introductions, and interactions. Moreover, the ultimate goal for GTRI is that these connections happen naturally and its programs are no longer needed to make Southeast Michigan a global leader in utilizing available international talent. Until that time, however, the OPT data provides the most accurate and important measure of how the region and participating universities are doing at connecting global academic talent to employer needs.

WHAT DOES THE OPT DATA TELL US ABOUT HOW WE ARE DOING?

The Brookings Institution's 2014 report on "The Geography of Foreign Student in U.S. Higher Education: Origin and Destinations" provided the first broad analysis of OPT data comparing metros across the country. According to the Brookings' analysis of OPT data in 118 metros that contained the largest number of international students, fully 45 percent of international students using the OPT program stayed in their school's metropolitan area to work after graduating with a bachelors, master, or doctoral degree for the 2008-2012 period.³⁴ According to Brookings' data, the Detroit Metro ranked 9th on this list nationally, retaining 58.5 percent of its international students based on the Brookings research.³⁵

In analyzing the potential for international student retention to serve as a significant economic growth factor and source of critical talent needs, however, we believe that Southeast Michigan's employers, corporate leaders, economic developers, and policymakers need to go beyond simply looking at the retention rate of international students studying from within the Metro. In fact, the approximately 17,000 international students studying at the University of Michigan's Ann Arbor campus, Michigan State University, and Eastern Michigan University—who collectively represent at least 80 percent of the international students studying at colleges and universities that comprised GTRI's original seven partner universities—fall outside Brookings' data as being in the same metro as Detroit and in fact are in the Ann Arbor MSA. In fact, more than half of the 32,000 international students in Michigan study in the Ann Arbor and East Lansing areas.³⁶

³⁴ Ruiz (2014).

³⁵ Additional data on Metro Detroit, Metro Ann Arbor, and Metro Lansing from the Ruiz's 2014 Brookings report can be found in Appendix A.

³⁶ In fact, Washtenaw County is so proximate and interconnected to Detroit and Macomb, Oakland, and Wayne Counties that Global Detroit has always included it as part of its target region for programs and research.

International student retention for Southeast Michigan employers—particularly with its focus on STEM and the size of these research institutions—by any appreciable measure must include these universities. The 2013 GTRI OPT report revealed several important insights from three data periods from 2011-2012 provided by the original seven GTRI university partners. Specifically, the original analysis revealed:

- International student graduates from GTRI's original partner universities who used their OPT to work in the U.S. after graduation were nearly as likely to work in Michigan (58 percent) as the most recent analysis of in-state domestic student graduates (63 percent) and almost three times as likely to work in Michigan as out-of-state domestic students (22 percent).
- A significant number of Michigan's international student graduates who use the OPT program have received STEM-related degrees. In fact, international student graduates from GTRI's original partner universities who used their OPT to work in the U.S. after graduation were more than four times as likely to have STEM degrees (59 percent) as domestic students nationally (13.7 percent) and more than three times that of domestic students in Michigan (18 percent).
- The vast majority (82 percent) of Michigan's international student graduates who use the OPT program have received a graduate-level degree from the Michigan university they attended.
- Given the prevalence of STEM degrees (58 percent) and graduate degree holders (82 percent) among OPT users from GTRI's original partner universities, these international students represent some of the most talented and in-demand workers on the planet.

The remainder of this report chronicles an update of these findings attained through the cooperation of GTRI's original several participating universities. We see that some of these extraordinary findings have only become even more significant and exciting. In short, the findings of this report suggest that international student retention represents an even more important source of economic opportunity for Southeast Michigan's economy today than when the initial GTRI OPT data report was issued in 2013!

RISING ENROLLMENT

U.S. colleges and universities have witnessed significant growth in the number of international students over the past decade. Michigan colleges and universities also have seen steady growth in the enrollment of international students. According to the Institute of International Education, the number of international students increased 72.6 percent over the last ten years from 565,000 international students in the U.S. during the 2005-06 academic year to 975,000 during the 2014-15 academic year.³⁷ U.S. colleges and universities educate more than 20 percent of all students studying abroad worldwide.³⁸ While overall enrollment of domestic students also increased during this time, there was a 50 percent increase in the percentage of all U.S. higher-education students who were international, as international students account for 4.8 percent of more than 20 million college students in the 2014-15 academic year compared to 3.2 percent in the 2005-06 academic year.³⁹

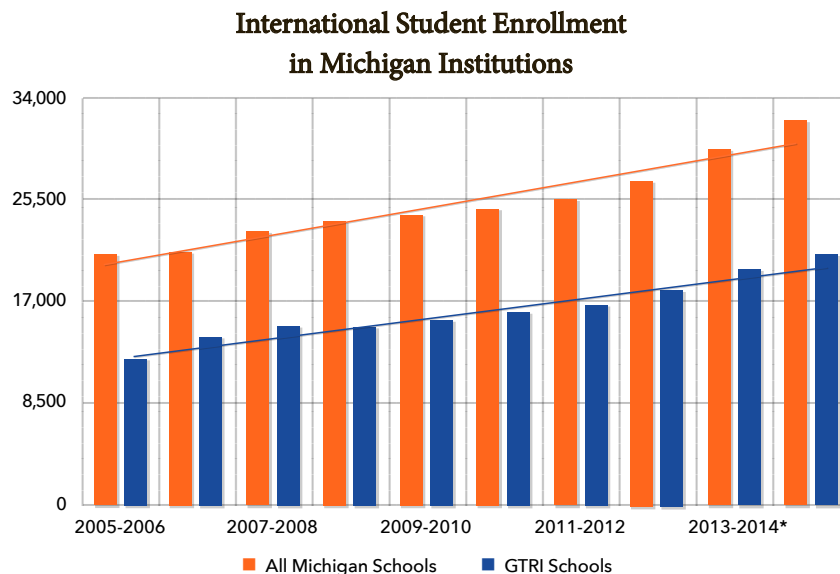
³⁷ "International Student Enrollment Trends, 1948/49-2014/15," Institute of International Education, (2015). Open Doors Report on International Educational Exchange at <http://www.iie.org/opendoors>.

³⁸ Neil G. Ruiz, "Immigration Facts on Foreign Students," Washington: Brookings Institution, (2013) at www.brookings.edu/metro/foreignstudents; Institute of International Education, Open Doors: Report on International Educational Exchange, New York: Institute of International Education, (2013).

³⁹ IIE (2015).

Like the rest of the country, international student enrollment continues to soar in the state of Michigan. According to the last five years of data from the Institute of International Education, the number of international students in Michigan has grown from 24,214 in the 2009-2010 academic year to 32,015 in the 2014-2015 academic year or by 32.2 percent over the last five years.

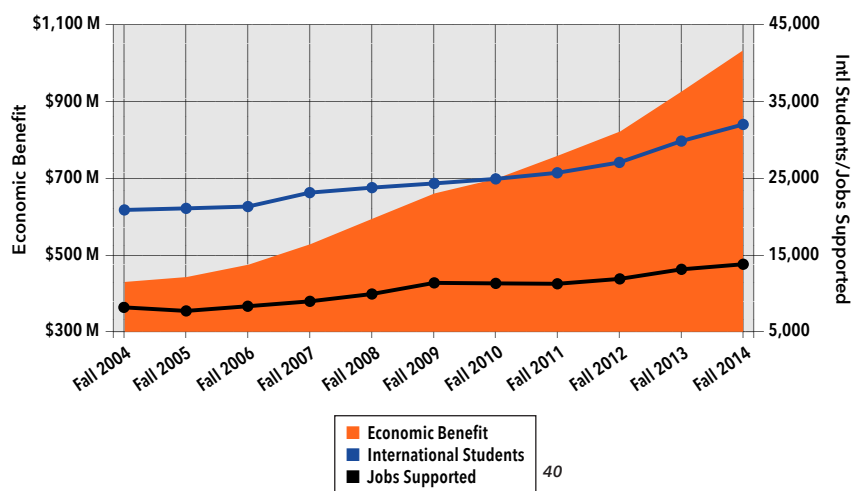
Figure 7:
Growing International Student Enrollment at Michigan Colleges and Universities



Note: Lawrence Tech University not reporting for “GTRI Schools” figure until 2010-2011; *UM – Dearborn not reporting for “GTRI Schools”; † Oakland University not reporting for “GTRI Schools.”

The economic impact of these contributions has grown by an estimated 56.9 percent during this time and are estimated to support over 13,500 Michigan jobs by the tuition, fees, and other expenditures of these international students during the 2014-2015 academic year.

Figure 8:
The Economic Benefits of International Student Enrollment in Michigan – A Ten-Year Trend

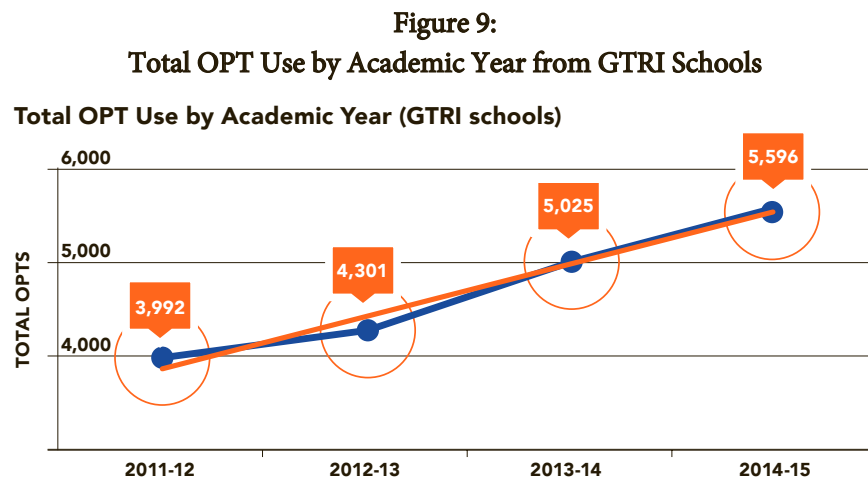


⁴⁰ The chart tracks the economic contributions, enrollment data, and jobs supported over a ten-year timeframe. International student enrollment data is provided by Open Doors, published by the Institute of International Education in partnership with the Bureau of Educational and Cultural Affairs, U.S. Department of State. The chart is available at http://www.nafsa.org/Explore_International_Education/Impact/Data_And_Statistics/NAFSA_International_Student_Economic_Value_Tool/.

GROWING UTILIZATION OF OPT

GTRI uses OPT data from its original seven participating universities as the single most important measure to track the progress towards its mission of retaining more talented international students to help grow Southeast Michigan's economy. While OPT data reporting to GTRI has not been without inconsistencies, the underlying trend lines are undeniable—the use of OPT has been a steady and impressive increase over the past three years.

Based upon data from six of the participating universities,⁴¹ the number of international students using OPT from these schools nearly 50 percent in just the last three years. While a precise growth number is difficult and somewhat pointless to pinpoint (as it can depend greatly upon the whims of a single semester's worth of data), the trends are clear and impressive—significantly increasing numbers of international students at GTRI universities are utilizing the OPT portion of their student visa.⁴²



INCREASING UTILIZATION OF THE OPT AS A PORTION OF INTERNATIONAL STUDENTS

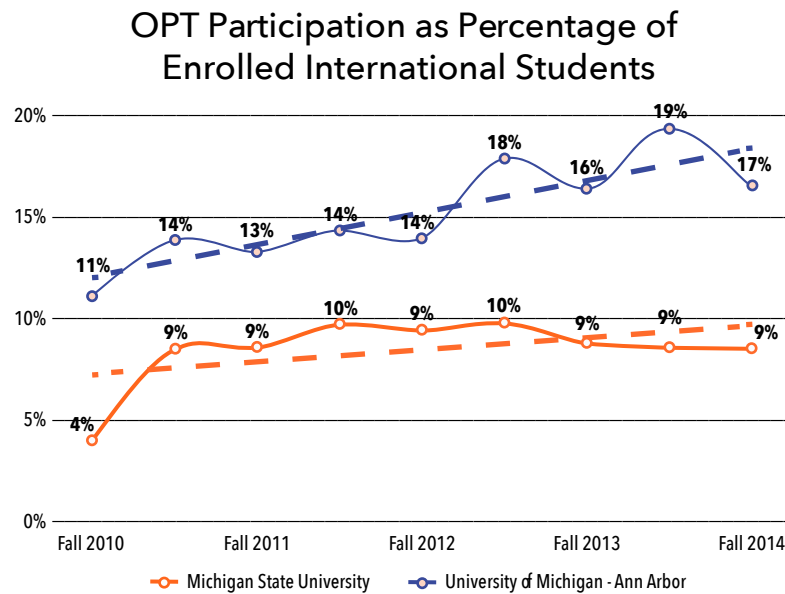
As noted earlier, GTRI schools and Michigan colleges and universities are all experiencing rapid growth in the overall number of international students. This growth, however, does not fully explain increasing use of OPT among international students. For the University of Michigan and Michigan State University—the two largest international student populations of any Michigan colleges and universities accounting, at times, for more than half of all international students in Michigan—OPT use has been steadily increasing in proportion to rising international student numbers. When OPT use is weighted by enrollment (Figure 11), it is clear that a growing percentage of all international students are using OPT and that there has been significant growth in OPT utilization.⁴³

⁴¹ Since March 2011, GTRI has been collecting OPT data in the spring and fall of every year. Data has been requested from the original seven participating schools through spring 2015 and reporting has been voluntary. Although each school was provided with the same data request form, each may have interpreted information on its own terms (e.g., whether to count a student with an OPT, but no specific employer at the time or only to count those with secured employment). A full table of the data for each reporting period provided by institution is in Appendix B. Data for each reporting period was not available at time of this publication from Oakland University, so its OPTs are not counted for total OPT use by semester (Figure 9), but are included in the Appendix.

⁴² There appears to be seasonal trends in the data where Spring OPT numbers are larger than Fall OPT numbers. For that reason it is best to compare either Fall 2011 with Fall 2014 or Spring 2011 with Spring 2015 to establish the three- and four-year trends. Using the Fall comparisons, OPT usage grew 43.1 percent over the three years between 2011-2014 (for an annual average of 14.4 percent). Using the Spring comparisons, OPT usage grew 74.9 percent over the four years between 2011-2015 (for an annual average of 18.7 percent). Using academic year numbers as in Figure 10 suggests that the number of OPTs has grown 40.2 percent in three years between the 2011-12 academic year to 2014-15 academic year.

⁴³ The data simply takes the number of OPTs reported and divides by the number of international students enrolled. While the percentages used in Figure 10 can be misleading since OPT would lag behind the enrollment numbers by the number of years it takes to graduate and international students can be in programs lasting one year to as long as four or more years. Yet, the percentage of OPTs compared to overall enrollment should reflect trends.

Figure 10:
Increasing Utilization of OPT as Portion of Growing International Student Populations at UM and MSU

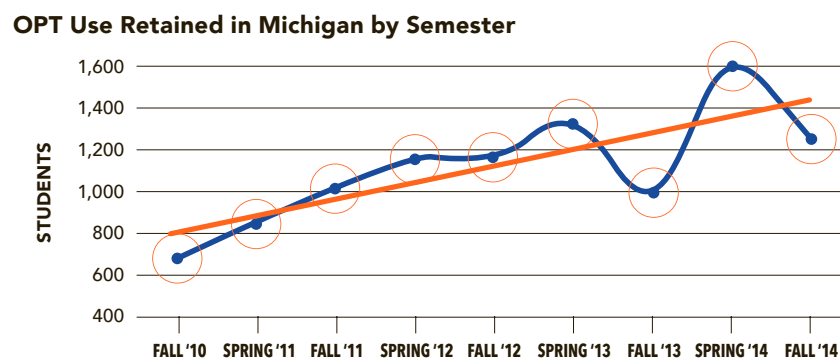


MICHIGAN EMPLOYERS USING INCREASING NUMBERS OF OPTS TO ADDRESS TALENT GAP

The growing number of international students and growing probability that each international student will utilize their optional practical training to work after graduation has positively impacted Michigan companies and employers seeking to fill unmet talent needs, grow the international diversity of the workforce, and grow their companies.

The numbers of international students using their OPT to work in Michigan from GTRI universities has nearly doubled in the past four years. Noting the data appears to have some seasonal fluctuations, there was 88.6 percent growth in the number of OPTs hired by Michigan employers from these schools in the three-year period between Spring 2011 and Spring 2014 (averaging nearly 30 percent growth per year over the three years), while there was 84.3 percent growth in the number of OPTs hired by Michigan employers from these schools in the four-year period between Fall 2010 and Fall 2014 (averaging over 20 percent growth per year over the four years).

Figure 11:
Michigan Employers Using Increasing Numbers of OPTs to Address the Talent Gap



One of the highlights of the GTRI's 2013 data report was the realization that international students using the OPT were nearly as likely to work in Michigan (as opposed to one of the other 49 states) after graduation (58 percent) as the most recent analysis (at the time) of in-state domestic student graduates (63 percent) and almost three times as likely to work in Michigan after graduation as out-of-state domestic students (22 percent).

In analyzing the last four semesters of OPT data, we see continued strength in retention of OPT students by Michigan employers, noting that **56.4 percent of the students using OPT in Fall 2013 through Spring 2015 were employed by Michigan companies**. Adding the new data to the prior report, we find that 57.2 percent of all OPT students working for Michigan companies since Spring 2011 through Spring 2015.

INTERNATIONAL STUDENTS ARE PRIMARILY WORKING IN SOUTHEAST MICHIGAN

Southeast Michigan employers are clearly the primary beneficiaries from the international student talent using OPTs from the GTRI universities. While the data provided by GTRI universities has some inconsistencies and challenges in analyzing the employers and municipal location of where international students are working on their OPT, our best analysis suggests that **well over 75 percent of all OPT placements from these schools are in Southeast Michigan** (Macomb, Oakland, Washtenaw, and Wayne Counties).

Below is a list of the top 15 cities for OPT users from the GTRI schools for the Fall 2014 data reporting period.⁴⁴ What is clear is that **over 65 Michigan cities benefit from OPT labor from just these GTRI universities**.

Figure 12:
Top 15 Michigan Cities for OPT Users
Fall 2014 Semester

Rank	City	OPTs
1	Troy	74
2	Detroit	54
3	East Lansing	34
4	Farmington Hills	31
5	Auburn Hills	28
6	Ann Arbor	25
7	Dearborn	21
8	Southfield	19
9	Novi	18
10	Livonia	18
11	Warren	11
12	Ypsilanti	9
13	Rochester Hills	8
14	Plymouth	8
15	Northville	7

⁴⁴ According to the data for Fall 2014 semester there were 2,796 OPTs from the schools (minus Oakland University). Deleting OPTs for those whose city was unidentified left 1,351 OPTs, of which 479 were in Michigan. The Top 15 Michigan Cities for OPT Users chart is based upon these records.

MANY MICHIGAN COMPANIES ARE BENEFITTING FROM INTERNATIONAL STUDENT TALENT

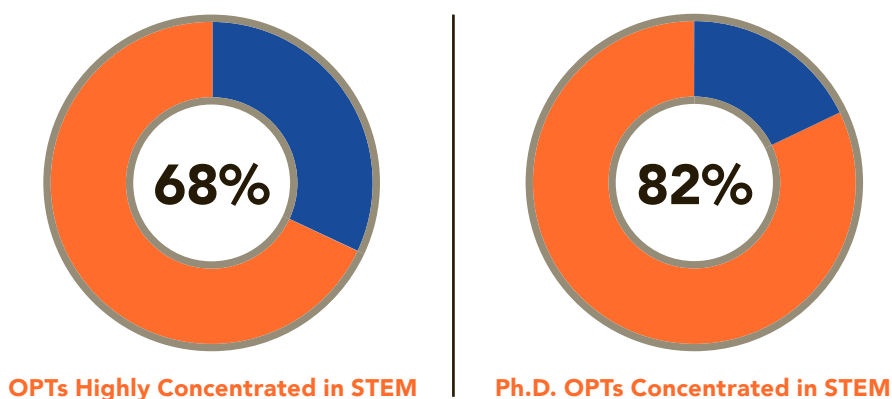
While the data about where international students are working is both incomplete⁴⁵ and little more than the name of a company and its location, we do know that hundreds of Michigan companies have hired international students on OPT. Looking at the Fall 2014 data set—a period where there were nearly 2,800 OPTs recorded—about half of the OPTs did not have a city or employer provided to GTRI. Of the 1,351 with employment location, 479 were working in Michigan. Remarkably, **226 different Michigan companies were utilizing OPT labor** according to the data. Clearly, the positive impact of OPT talent is widespread.

INTERNATIONAL STUDENTS ARE HELPING MICHIGAN COMPANIES ATTAIN HIGH DEMAND TALENT

As noted, Southeast Michigan, Michigan, and American companies are facing a significant shortage of STEM talent that can help firms grow their business, develop new products, create additional jobs, and increase pay. Additionally, international students with STEM degrees have the added benefit of qualifying for the STEM extension and can currently extend OPT from 12 months to 36 months under pending regulations proposed by the Obama Administration.

Between the Spring 2011 semester and the Spring 2015 semester, approximately **67.7 percent of all OPT users in the GTRI were STEM majors**. Remarkably the STEM rates rise for OPT users who attained graduate degrees (masters or Ph.D.s). In fact, **84.0 percent of the Ph.D.s using OPTs in our data from Spring 2011 through Spring 2015 were STEM majors**. While less than half (45.7 percent) of undergraduate OPT users were STEM majors, more than two-thirds (68.6 percent) of the Masters students using OPT were STEM majors.

Figure 13:
OPTs Highly Concentrated in STEM



⁴⁵ While universities are required to report the name and location of the employer and to verify the students is working in their field of study, there is a window where a student has been granted an OPT and can still be looking for a job. Moreover, not every university has provided GTRI with the names of employers and some have redacted their employer names (but have provided the city of where the student is working on OPT).

CONCLUSION

This 2016 GTRI OPT data report offers several encouraging signs about international students and international student retention in Southeast Michigan. First, Michigan has benefitted from increasing numbers of highly-talented, highly-skilled international students studying at its colleges and universities. These students have been using the OPT portions of their student visa at increasing rates and they are continuing to choose to work with Michigan employers at rates approaching in-state employers. In fact, our data indicates that the number of OPT users from our target universities working in Michigan has nearly doubled in just three short years!

Michigan employers are likely hiring increasing numbers of international students via the OPT process because they continue to possess the critical skills, talent, and degrees that companies need to fuel their growth and prosperity. A full 67.7 percent of the students in this data report are STEM majors.

Despite these advances, there are still untapped opportunities to connect this talent pool to the unmet talent needs of local employers. And while GTRI was the first independent nonprofit effort in the nation to focus on retaining international students, others are following Michigan's lead. In 2014, the Ohio Legislature mandated the Chancellor of the Ohio Board of Regents to report on the benefits of attracting and retaining more international students.⁴⁶ Released in December 2014, the Ohio G.R.E.A.T. report recommended that Ohio set a target of retaining 50 percent of its international students after graduation (up from its current rate of 31.3 percent, and 5 percent higher than the national average of the 120 largest metro regions as reported by the Brookings Institution report). Achieving this goal, the report argued, would generate almost \$100 million in economic activity and support more than 1,000 jobs.⁴⁷

For GTRI to achieve its full potential the program must help build stronger relationships between international students and Michigan's business and professional communities. Two important studies released in the last few months highlight that need. IMPRINT and World Education Services (WES) Global Talent Bridge, both national experts in the field of skilled-immigrant integration, released a first-of-its-kind study detailing the experiences of college-educated immigrants in six U.S. metros (including Metro Detroit). The Steps to Success report documents multiple factors that correlate with successful integration of immigrant professionals in the U.S. workforce and communities, including the fact that social capital (the size of an immigrant's social network) bears a remarkably strong correlation with the likelihood of an immigrant's professional success.⁴⁸

Additionally, researchers at the University of Missouri-St. Louis recommended increasing exposure between local employers and international students to help narrow talent gaps.⁴⁹ The researchers also noted that "[a]ll companies [interviewed] reported a significant interest in efficient collaborative partnerships with local universities. Specifically, companies would like more cooperation to access the talent pool."⁵⁰

⁴⁶ "Ideas that Innovate," Welcoming Economies Global Network, page 17, found at <http://www.weglobalnetwork.org/ideas-that-innovate/>.

⁴⁷ Carey (2014) at pp. 5-6.

⁴⁸ "Steps to Success: Integrating Immigrant Professionals in the U.S." Amanda Bergson-Shilcock and James Witte, IMPRINT and WES Global Talent Bridge (September 2015), page 2, at <http://www.imprintproject.org/stepstosuccess/>.

⁴⁹ Morton and Pellegrini at pp. 21-22.

⁵⁰ Ibid at 23.

MOVING FORWARD

GTRI is well poised to tackle these opportunities. With the support of the Detroit Revitalization Fellows Program and New Economy Initiative, Global Detroit has been able to bring on Gracie Xavier as a Detroit Revitalization Fellow and the Global Detroit Director of Corporate and Economic Development Strategy to spearhead GTRI. Global Detroit is extending the work of its Cultural Ambassadors program to help connect international students with professional connectors in the community to help the international students develop relationships with the professional community, as well as ethnic and social communities, off campus. Additionally, a variety of events to help international students interact with the region's professional community are planned. Finally, GTRI seeks to help educate area businesses on the legal pathways to employ international student talent, as well as to build cultural competencies and skills of both the international student and corporate HR communities to facilitate more effective and productive relationships.

The barriers to more effective utilization of international student talent that could help make Southeast Michigan a global leader in talent are more artificial than legal. Building awareness of the tremendous underutilization of international talent that plays such an integral part to the STEM academic programs, especially on the graduate level, at Michigan colleges and universities (as well as those across the nation) is the first step. Addressing the cultural barriers and misinformation that prevent more area employers from considering international student talent is a second step. A third step centers on helping international students to better understand the culture of the American business community and workplace. Finally, we must focus on creating a robust array of opportunities for international students to build relationships with our region and its professional and international communities.

There is much to do, but this report underscores the imperative and value of this strategy. GTRI has helped position the region to become a national leader in international student retention. We are committed to working with you to make that dream a reality.

APPENDIX A

INTERNATIONAL STUDENT RETENTION IN MICHIGAN METROPOLITAN AREAS

In 2014, the Brookings Institution released findings of Neil Ruiz, a senior policy analyst and associate fellow, analyzing a new database of foreign student visa approvals from 2001 to 2012 to analyze their distribution in the U.S., as well as the geography of their origin. The findings include data on metro Ann Arbor, metro Detroit and metro Lansing and highlight the number of international students, level of degree pursued, STEM penetration, foreign student retention from local universities, and top origin cities and countries.⁵¹

Ann Arbor, MI

View Data For: ☒ U.S. Metro Area Destinations of Foreign Students ☐ Cities of Student Origin ☐ Countries of Student Origin

Size of the Foreign Student Population

In Ann Arbor, 2008-2012

Number of F-1 Visa Holders

10,432

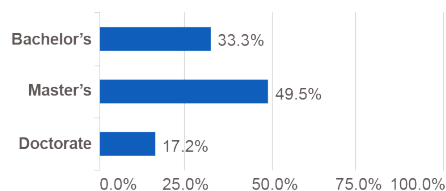
Rank: 21st of 118 metro areas

On foreign student "intensity," Ann Arbor ranked 20th, with 38.4 foreign students per 1,000 total students.

All told, these foreign students paid \$355,532,253 in tuition and \$168,608,241 in living costs.

Levels of Degree Pursued

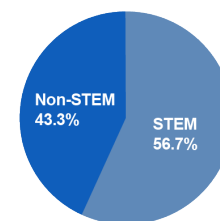
Share of foreign students in Ann Arbor pursuing a bachelor's, master's, or doctorate degree, 2008-2012



Top majors of foreign students: engineering (3,621 foreign students); business, management, marketing, and related support services (1,714); social sciences (793); mathematics and statistics (663); and computer and information sciences and support services (446).

STEM Enrollment

Share of foreign students in Ann Arbor pursuing a degree in science, technology, engineering, or math

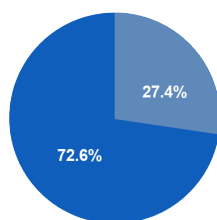


Rank: 18th of 118 metro areas.

Foreign Student Retention

Share of Ann Arbor's foreign student graduates who found employment under the OPT program that stayed to work in the metro area

☒ Stayed in the metro area
☐ Did not stay in the metro area



Rank: 69th out of 118 metro areas on this measure of foreign student retention.

The Optional Practical Training (OPT) Program allows F-1 visa holders to work full-time in the U.S. after graduation. STEM degree holders are permitted to stay for 29 months, while non-STEM degree holders are permitted to stay 12 months under the program.

Top Origin Cities and Countries of Foreign Students

ORIGIN CITY	NUMBER OF STUDENTS	ORIGIN COUNTRY	NUMBER OF STUDENTS
Seoul, South Korea	764	China	3,500
Shanghai, China	636	India	1,653
Beijing, China	589	South Korea	1,299
Taipei, Taiwan	238	Taiwan	449
Singapore, Singapore	205	Canada	406

Top Destination Institutions

SCHOOL NAME
Cleary University
Concordia University System
Eastern Michigan University
Kaplan Test Prep a division of Kaplan, Inc.
University of Michigan

⁵¹ Ruiz (2014).

Detroit-Warren-Livonia, MI

View Data For: ☒ U.S. Metro Area Destinations of Foreign Students

☐ Cities of Student Origin

☐ Countries of Student Origin

Size of the Foreign Student Population

In Detroit, 2008-2012

Number of F-1 Visa Holders

9,215

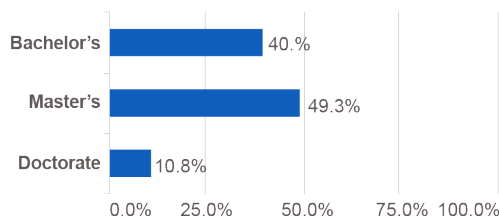
Rank: 25th of 118 metro areas.

On foreign student "intensity," Detroit ranked 111th, with 10.5 foreign students per 1,000 total students.

All told, these foreign students paid \$124,336,870 in tuition and \$70,234,612 in living costs.

Levels of Degree Pursued

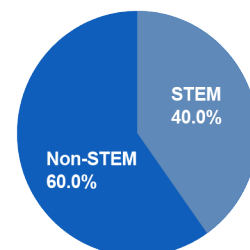
Share of foreign students in Detroit pursuing a bachelor's, master's, or doctorate degree, 2008-2012



Top majors of foreign students: engineering (1,997 foreign students); business, management, marketing, and related support services (1,722); health professions and related programs (955); computer and information sciences and support services (573); and liberal arts and sciences, general studies and humanities (477).

STEM Enrollment

Share of foreign students in Detroit pursuing a degree in science, technology, engineering, or math

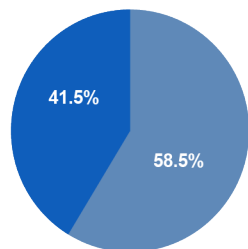


Rank: 68th of 118 metro areas.

Foreign Student Retention

Share of Detroit's foreign student graduates who found employment under the OPT program that stayed to work in the metro area

☒ Stayed in the metro area
☐ Did not stay in the metro area



Rank: 9th out of 118 metro areas on this measure of foreign student retention.

The Optional Practical Training (OPT) Program allows F-1 visa holders to work full-time in the U.S. after graduation. STEM degree holders are permitted to stay for 29 months, while non-STEM degree holders are permitted to stay 12 months under the program.

Top Origin Cities and Countries of Foreign Students

ORIGIN CITY	NUMBER OF STUDENTS	ORIGIN COUNTRY	NUMBER OF STUDENTS
Windsor, Canada	1,889	Canada	3,304
Taipei, Taiwan	301	China	1,539
Shanghai, China	255	India	1,338
Hyderabad, India	217	Saudi Arabia	514
Beijing, China	156	Taiwan	471

Top Destination Institutions

SCHOOL NAME
Lawrence Technological University
Oakland University
The University of Michigan-Dearborn
University of Detroit Mercy
Wayne State University

Lansing-East Lansing, MI

View Data For: ☒ U.S. Metro Area Destinations of Foreign Students

☐ Cities of Student Origin

☐ Countries of Student Origin

Size of the Foreign Student Population

In Lansing, 2008-2012

Number of F-1 Visa Holders

8,509

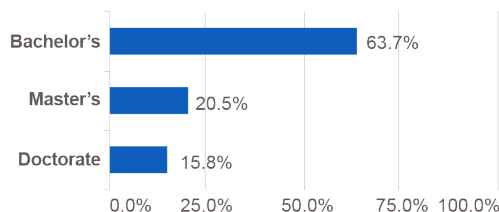
Rank: 29th of 118 metro areas.

On foreign student "intensity," Lansing ranked 24th, with 32.8 foreign students per 1,000 total students.

All told, these foreign students paid \$206,042,389 in tuition and \$99,369,433 in living costs.

Levels of Degree Pursued

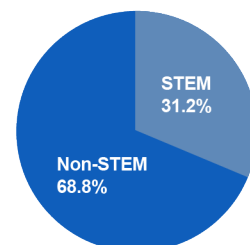
Share of foreign students in Lansing pursuing a bachelor's, master's, or doctorate degree, 2008-2012



Top majors of foreign students: business, management, marketing, and related support services (3,325 foreign students); engineering (1,099); communication, journalism, and related programs (676); social sciences (617); and mathematics and statistics (373).

STEM Enrollment

Share of foreign students in Lansing pursuing a degree in science, technology, engineering, or math

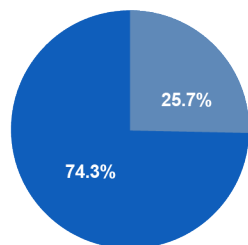


Rank: 94th of 118 metro areas.

Foreign Student Retention

Share of Lansing's foreign student graduates who found employment under the OPT program that stayed to work in the metro area

☒ Stayed in the metro area
☐ Did not stay in the metro area



Rank: 75th out of 118 metro areas on this measure of foreign student retention.

The Optional Practical Training (OPT) Program allows F-1 visa holders to work full-time in the U.S. after graduation. STEM degree holders are permitted to stay for 29 months, while non-STEM degree holders are permitted to stay 12 months under the program.

Top Origin Cities and Countries of Foreign Students

ORIGIN CITY	NUMBER OF STUDENTS	ORIGIN COUNTRY	NUMBER OF STUDENTS
Beijing, China	841	China	4,735
Seoul, South Korea	742	South Korea	1,323
Shanghai, China	456	India	415
Shenzhen, China	221	Taiwan	291
Hangzhou, China	180	Canada	186

Top Destination Institutions

SCHOOL NAME
Davenport University, Grand Rapids
Kaplan Test Prep a division of Kaplan, Inc.
Michigan State University
Michigan State University College of Law
Thomas M. Cooley Law School

APPENDIX B

ORIGINAL OPTIONAL PRACTICAL TRAINING AND INTERNATIONAL STUDENT DATA

The data collected for this report is original data from the seven participating GTRI universities. The data sets are not fully complete,⁵² but they provide one of the first look into specific universities' international student retention trends over time.

University	Total International Student Enrollment						Grand Total
	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	
Eastern Michigan University	1020	972	1001	1005	1020	912	5930
Lawrence Tech		325	347	354	744	621	2391
Michigan State University	5358	5748	6209	6759	7704	8146	39,924
Oakland University	382	380	348	379	511		2000
University of Michigan - Ann Arbor	6095	5995	6382	6827	7273	7423	39,995
University of Michigan - Dearborn	259	274	276	282		938	2029
Wayne State University	2368	2263	2216	2330	2372	2782	14,331
Grand Total	15,482	15,957	16,779	17,936	19,624	20,822	106,600

OPT BY SCHOOL TOTALS

University	OPT Count									
	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014	Spring 2015	Grand Total
Eastern Michigan University	195	172	157	170	164	190	155	153	164	1520
Lawrence Tech	111	76	74	94	107	135	105	138	93	933
Michigan State University	229	489	534	604	639	663	679	670	705	5212
Oakland University			76	69		58	61		74	338
University of Michigan - Ann Arbor	667	833	851	917	956	1225	1198	1412	1234	9293
University of Michigan - Dearborn	43	40	56	68	45	81	126	144	272	875
Wayne State University	351	349	361	280	257	241	227	287	324	2677
Grand Total	1596	1959	2033	2133	2168	2535	2490	2804	2792	20848

University	OPT Count			
	2011-2012	2012-2013	2013-2014	2014-2015
Eastern Michigan University	329	334	345	317
Lawrence Tech	150	201	240	231
Michigan State University	1023	1243	1342	1375
Oakland University	76	69	119	74
University of Michigan - Ann Arbor	1684	1873	2423	2646
University of Michigan - Dearborn	96	113	207	416
Wayne State University	710	537	468	611
Grand Total	3992	4301	5025	5596

⁵² Global Detroit bears responsibility for not included Oakland University's data in the overall calculations reflected in the report. Due to temporary staffing issues, data provided to Global Detroit in February 2016 was not included in some of these calculations. Our inability to fully include this data is noted in the report. Global Detroit and GTRI are working to develop more consistent data collection techniques and requests to ease the burden on our university partners.

UNIVERSITY STEM BY SEMESTER

Count of STEM VALUE Row Labels	Column Labels NON STEM	STEM	Grand Total	Percent of Total
Eastern Michigan University	427	929	1356	69%
3/1/11	74	121	195	62%
8/1/11	61	111	172	65%
3/1/12	36	121	157	77%
8/1/12	47	123	170	72%
3/1/13	56	108	164	66%
8/1/13	57	133	190	70%
3/1/14	43	112	155	72%
8/1/14	53	100	153	65%
Lawrence Tech	82	740	740	90%
8/1/11	7	69	76	91%
3/1/12	7	67	74	91%
8/1/12	8	86	94	91%
3/1/13	9	98	107	92%
8/1/13	10	125	135	93%
3/1/14	12	93	105	89%
8/1/14	15	123	138	89%
3/1/15	14	79	93	85%
Michigan State University	2847	2366	5213	45%
3/1/11	117	112	229	49%
8/1/11	281	208	489	43%
3/1/12	310	224	534	42%
8/1/12	338	267	605	44%
3/1/13	350	289	639	45%
8/1/13	362	301	663	45%
3/1/14	365	314	679	46%
8/1/14	344	326	670	49%
3/1/15	380	325	705	46%
Oakland University	25	121	146	83%
3/1/12	13	64	77	83%
8/1/12	12	57	69	83%
University of Michigan - Ann Arbor	2723	6570	9293	71%
3/1/11	229	438	667	66%
8/1/11	258	575	833	69%
3/1/12	245	606	851	71%
8/1/12	255	662	917	72%
3/1/13	262	694	956	73%
8/1/13	319	906	1225	74%
3/1/14	337	861	1198	72%
8/1/14	452	960	1412	68%
3/1/15	366	868	1234	70%
University of Michigan - Dearborn	69	723	792	91%
3/1/12	5	51	56	91%
8/1/12	7	61	68	90%
3/1/13	2	43	45	96%
8/1/13	9	72	81	89%
3/1/14	6	120	126	95%
8/1/14	12	132	144	92%
3/1/15	28	244	272	90%
Wayne State University	472	2491	2963	84%
3/1/11	50	301	351	86%
8/1/11	47	302	349	87%
3/1/12	66	295	361	82%
8/1/12	43	237	280	85%
3/1/13	50	206	256	80%
8/1/13	45	196	241	81%
3/1/14	38	189	227	83%
8/1/14	87	487	574	85%
3/1/15	46	278	324	86%
Grand Total	6645	13940	20585	68%

PERCENT OF OPTS THAT ARE STEM

Count of STEM VALUE Row Labels	Column Labels NON STEM	STEM	Grand Total	Percent of Total
3/1/11	470	972	1442	67.4%
8/1/11	654	1265	1919	65.9%
3/1/12	682	1428	2110	67.7%
8/1/12	710	1493	2203	67.8%
3/1/13	729	1438	2167	66.4%
8/1/13	802	1733	2535	68.4%
3/1/14	801	1689	2490	67.8%
8/1/14	963	2128	3091	68.8%
3/1/15	834	1794	2628	68.3%
Grand Total	6645	13940	20585	67.7%

OPT BY DEGREE LEVEL

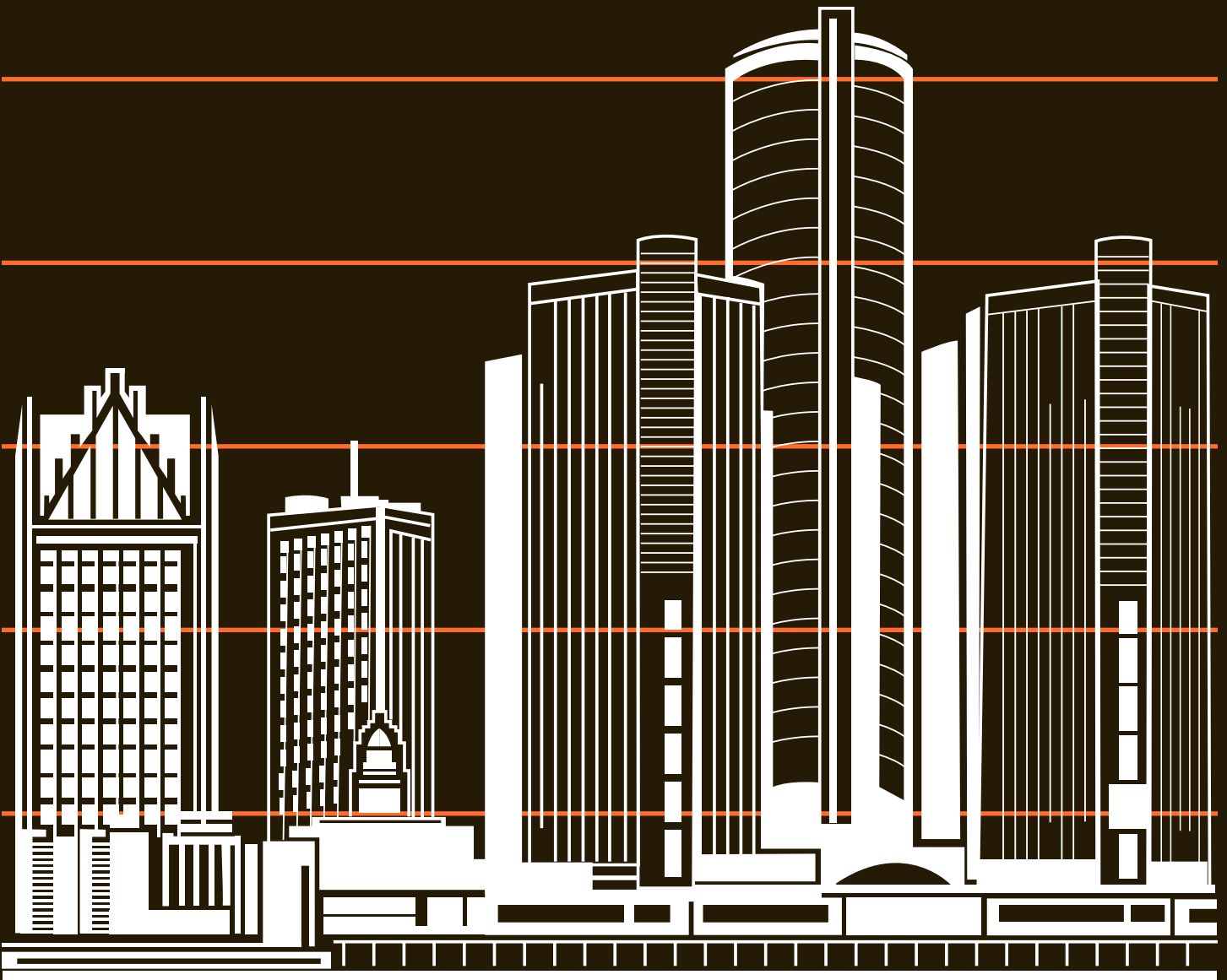
Count of STEM VALUE Row Labels	Column Labels Bachelors	Doctors	Masters	Other	Grand Total
Eastern Michigan University	220	6	1120	10	1356
NON STEM	144		273	10	427
STEM	76	6	847		929
Lawrence Tech	62	4	756		822
NON STEM	13		69		82
STEM	49	4	687		740
Michigan State University	1546	1691	1901		5138
NON STEM	1180	325	1267		2772
STEM	366	1366	634		2366
Oakland University	31	14	101		146
NON STEM	6	2	17		25
STEM	25	12	84		121
University of Michigan - Ann Arbor	1616	2042	5633	2	9293
NON STEM	581	341	1799	2	2723
STEM	1035	1701	3834		6570
University of Michigan - Dearborn	45	19	728		792
NON STEM	11		58		69
STEM	34	19	670		723
Wayne State University	177	962	1824		2963
NON STEM	72	91	309		472
STEM	105	871	1515		2491
Grand Total	3697	4738	12063	12	20510

non-STEM	2007	759	3792	6570
STEM	1690	3979	8271	13940
% non-STEM	54.3%	16.0%	31.4%	32.0%
% STEM	45.7%	84.0%	68.6%	68.0%
% Undergrad	18.0%			
% Grad	82.0%			



**GLOBAL
DETROIT**

4444 2nd Ave.
Detroit, MI 48201
globaldetroit.com
@GlobalDET



This report sponsored by:

FRAGOMEN
WORLDWIDE