

The Economic Footprint of Michigan's Fifteen Public Universities

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Commissioned by:
Presidents Council, State Universities of Michigan



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I. Executive Summary

Michigan is home to some of the earliest institutions of public higher education in the country. Michigan's public universities began with the establishment of the University of Michigan in Detroit in 1817, while Michigan was still a territory. The most recent addition was Saginaw Valley State University near Saginaw in 1963. Michigan's network of public higher education institutions now includes 15 four-year universities scattered across the state. They collectively enroll over 300,000 students.

Michigan's public universities enhance the quality of life for students, alumni, and residents in many ways. While the total historical, cultural, social, and economic benefits that these universities provide to the state are in some ways immeasurable, we *can* measure the economic footprint of Michigan's public universities. This footprint includes:

- spending by the schools, employees, and students;
- activity by Michigan companies that rely upon Michigan universities for their business;
- jobs and salaries at the universities themselves; and,
- to an extent, jobs and salaries in the cities and towns that the universities occupy.

The economic footprint of Michigan's public universities is manifest in the everyday lives of hundreds of thousands of Michigan residents. The cities and towns surrounding these universities are replete with stores, contractors, and households that depend on the presence of the universities and their students for income. Michigan's public universities employ residents and spend billions of dollars that support local businesses in literally every county in the state.

REPORT PURPOSE

The Presidents Council, State Universities of Michigan (PCSUM) commissioned Anderson Economic Group (AEG) to perform a comprehensive and rigorous analysis of the economic footprint of the state's 15 public universities. In this report, we quantify the total economic footprint of the 15 universities, estimating the total spending, earnings, and employment that they support in the State of Michigan. We also provide aggregate information about the universities' students and alumni.

ECONOMIC FOOTPRINT VS. NET ECONOMIC IMPACT

This report presents our estimate of the economic footprint of Michigan's public universities, which includes *all* spending, employment, and earnings at the universities, as well as the indirect effects of that activity. For a definition of indirect effects, see "Definition of Economic Footprint" on page 13.

The methodology in this report differs markedly from the net economic impact estimates we report in other studies, such as the annual University Research Corridor (URC) benchmarking and economic impact reports. A university's *economic footprint* is defined as the employment, earnings, and spending in a region that are related to all economic activity by that university. A university's *net economic impact* is defined as the employment, earnings, and spending in a region *caused* by the university, and excludes all employment, earnings, and spending that would have occurred in a region even without the university's presence.

For example, in the absence of a given university, operations at other universities in the state would expand to receive more students; the land that university occupies might instead contain houses, a park, or farmland; and some employees that work at that university would have a job elsewhere in the state. The net economic impact captures the extent to which the economic activity supported by a university *exceeds* the economic activity that would have occurred in its absence. The footprint, on the other hand, captures all spending regardless of what might occur in the universities' absence.

See "Economic Footprint of Public Universities in Michigan" on page 13 for a longer discussion of the difference between economic footprint and net economic impact.

OVERVIEW OF APPROACH

In order to estimate the economic footprint of Michigan's public universities, we consider all of the spending by the universities and students and estimate what proportion of it occurs in the state. Data on universities, students, and alumni were provided by the 15 public universities in Michigan. This data was corroborated by the Integrated Postsecondary Education Data System (IPEDS), a federal data source on higher education institutions.

We then estimate the total direct and indirect spending, employment, and earnings supported by public universities in the state using industry-specific and regional multipliers. See "Appendix A. Methodology" on page A-1 for more details on our methods and important assumptions.

The economic footprint presented in this report is for the 2012 fiscal year (FY 2012). For most schools, this covers spending from July 1, 2011 through June 30, 2012.¹

OVERVIEW OF FINDINGS

We found that Michigan's public universities make a significant contribution to the state's economy. Our main findings are as follows:

1. Some universities use a different 12-month period for fiscal year reporting purposes.

1. The 15 public universities in Michigan supported \$24 billion in spending in the state in 2012.

The 15 public universities in Michigan spent \$7 billion on payroll for Michigan residents and \$3 billion at Michigan companies for goods and services in 2012. In addition, students that attended these universities spent approximately \$4 billion in the state, for a total of \$14 billion in direct spending in Michigan. This activity had an indirect effect of nearly \$10 billion, as it supported spending by employees and vendors of Michigan universities, as well as vendors that serve students.

The result is a combined \$23.9 billion in spending in Michigan supported by economic activity at the 15 public universities in the year 2012.

TABLE 1. Economic Footprint of Michigan’s 15 Public Universities, Spending in Michigan, FY 2012 (billions)

	Direct	Indirect	Total
Payroll Spending	\$7.0	\$3.0	\$10.0
Non-payroll Spending	\$3.1	\$3.5	\$6.5
Student Spending	<u>\$4.3</u>	<u>\$3.1</u>	<u>\$7.4</u>
TOTAL	\$14.4	\$9.5	\$23.9

Source: Michigan’s public universities, BEA RIMS II Multipliers, AEG Estimates

Analysis: Anderson Economic Group, LLC

Note: Numbers do not sum to totals due to rounding.

See “Spending” on page 16 for more information.

2. The 15 public universities in Michigan collectively supported almost 122,000 full-time equivalent jobs and more than \$12 billion in earnings in the state in 2012.

Spending by the universities, their students, and their vendors results in jobs and earnings at the universities themselves and at local businesses. We estimate that, in addition to the 71,000 full-time equivalent (FTE) employees that work for the universities, there are 51,000 FTE employees statewide whose jobs are supported by university and student spending. This represents a total of 122,000 FTE jobs in the state that are related to public university activities.²

Similarly, in addition to the \$7 billion in salaries and wages paid directly to Michigan residents by the schools each year, we estimate that an additional \$5 billion in earnings in Michigan is supported by university and student spending.

2. Full-time equivalent (FTE) employment at universities is defined as all full-time employees plus one-third of part-time employees.

This represents a total of \$12 billion in earnings in the state that are related to public university activities.

TABLE 2. Economic Footprint of Michigan’s 15 Public Universities, Employment and Earnings in Michigan, FY 2012

	Direct	Indirect	Total
Jobs (FTE)	70,720	51,029	121,749
Earnings (billions)	\$7.0	\$5.2	\$12.2

*Source: Michigan’s public universities, BEA RIMS II Multipliers, AEG Estimates
Analysis: Anderson Economic Group, LLC*

See “Earnings and Jobs” on page 17 for more information.

3. The 1.3 million alumni of Michigan’s public universities residing in Michigan represent 62% of the college-educated population in the state, and earned a total of \$47 billion in salaries and wages in the year 2012.

Of the 2.1 million alumni of Michigan public universities worldwide, over half of them continue to live and work in Michigan. They collectively had \$47 billion in earnings in the state in 2012, which is 25% of the state’s total annual earnings. In addition, over three in five residents with a bachelor’s degree or higher in Michigan attained that degree at one of the state’s 15 public universities.

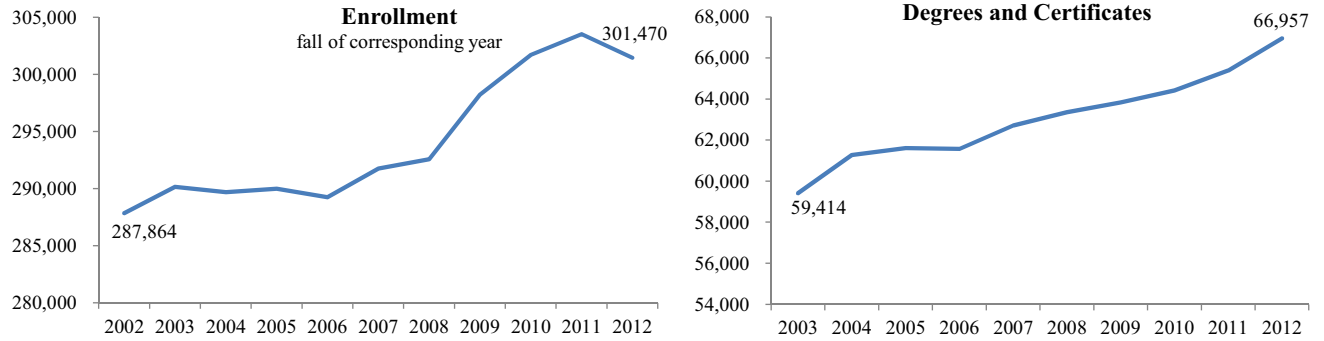
See “Alumni of Public Universities in Michigan” on page 25 for more information.

4. Public university enrollment grew by 5% from fall 2002 to fall 2012 despite a shrinking state population. Annual degree completions increased even faster in this time period, by 13%.

Michigan’s public universities enroll over 300,000 students. This is the sixth-highest enrollment total of any state’s public universities in the nation. Enrollment has grown over the past ten years, despite the state’s shrinking population. In addition, degree and certificate completions continue to grow quickly for Michigan’s public universities. The universities awarded 21,000 advanced degrees and 46,000 bachelor degrees in the year 2012, up from 19,000 and 38,000, respectively, in 2003.

Figure 1 on page 5 shows the increase in enrollment and degrees at the 15 state universities in Michigan since 2003. See “Students and Degrees at Public Universities in Michigan” on page 18 for more information.

FIGURE 1. Enrollment and Degrees at Public Universities, 2003-2012



Source: IPEDS, Michigan's public universities
Analysis: Anderson Economic Group, LLC

**ABOUT ANDERSON
ECONOMIC GROUP**

Anderson Economic Group, LLC is a research and consulting firm specializing in economics, public policy, finance and business valuation, and market and industry analysis. The firm has offices in Chicago, Illinois, and East Lansing, Michigan. AEG has conducted economic and fiscal impact studies for private, public, and non-profit clients across the United States. For more information, please visit www.AndersonEconomicGroup.com.

II. The State Universities of Michigan: An Overview

The Presidents Council, State Universities of Michigan (PCSUM) provides a common organization for the presidents and chancellors of Michigan's public universities to discuss higher education finance and policy issues. The 15 member schools are:

1. Central Michigan University
2. Eastern Michigan University
3. Ferris State University
4. Grand Valley State University
5. Lake Superior State University
6. Michigan State University
7. Michigan Technological University
8. Northern Michigan University
9. Oakland University
10. Saginaw Valley State University
11. The University of Michigan-Ann Arbor
12. The University of Michigan-Dearborn
13. The University of Michigan-Flint
14. Wayne State University
15. Western Michigan University

Each year, these universities educate more than 300,000 students and award tens of thousands of degrees to students from every county in the state, every state in the country, and many countries across the world. State universities are located across the state, and many of them have satellite campuses which further extend their reach. Map 1 on page 7 shows the campus locations of the public universities in Michigan.³

3. This map includes all main campuses and satellite campuses. It excludes extension centers. We define a satellite campus as an additional campus that offers full degree programs and has full time students on-site. We consider an additional campus to be an extension center if it is affiliated with a community college, high school, community center or a partnership between multiple universities; or if it does not offer full degree programs on-site.

Map 1. Campus Locations for Michigan's Public Universities



Source: Esri, Inc.; public universities' websites; online research.
Analysis: Anderson Economic Group, LLC

UNIVERSITY EXPENDITURES

In the process of providing education, performing research, and engaging in many other activities, the 15 public universities in Michigan bring significant resources to bear in every county in the state. In this section, we discuss spending by public universities on payroll and non-payroll goods and services, as well as student spending. Later in the report, we discuss the economic footprint of these expenditures.

University Operations

Year-round, universities make significant expenditures. They spend money for the following purposes:

- Payroll, which includes spending on salaries, wages, and benefits;
- Non-payroll, which includes goods and services provided by third-party vendors. Non-payroll expenditures include the following categories:⁴
 - Instruction;
 - Research;
 - Academic Support, which includes operating expenses for activities and services that support the primary missions of instruction, research, and public service, such as retention and preservation of educational materials, dental clinics that support instruction of dental students, academic administration including offices of deans, and course and curriculum development;
 - Public Service, which includes expenses for community services, cooperative extension services, and public broadcasting services;
 - Student Services, which includes operating expenses associated with admissions, registrar activities, cultural events, student organization, career guidance, and other social development outside of formal instruction;
 - Institutional Support, which includes general administrative services, legal and fiscal operations, and other operating expenses for operational support for institutions;
 - Auxiliary Enterprises, which include self-supporting operations such as residence halls, student services, and unions;
 - Operation and Maintenance (O&M) of Plant;
 - Hospital Services;
 - Athletics; and
 - Construction.

The majority of expenditures in fiscal year (FY) 2012 were for payroll (61%). The largest non-payroll expenditures were for construction and hospital services. Figure 2 on page 9 shows the proportion of public university spending by function for FY 2012.

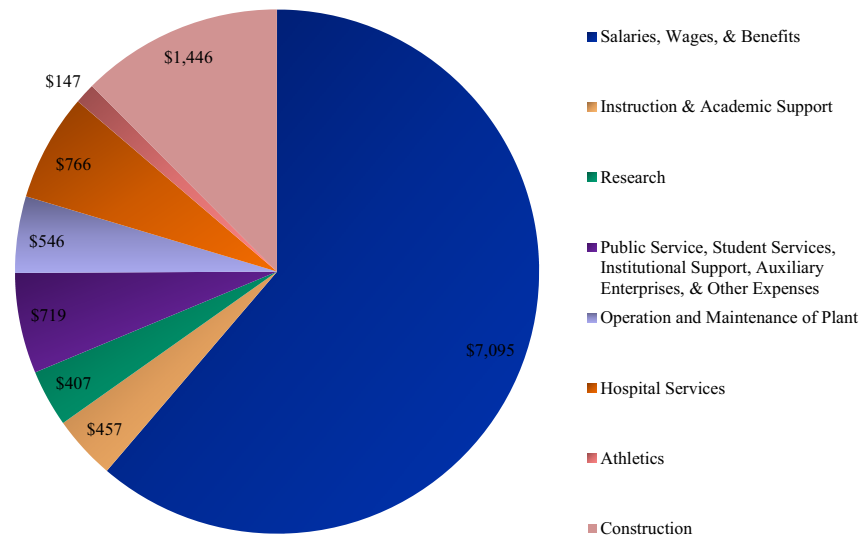
4. See the National Center for Education Statistics IPEDS glossary for further details. <http://nces.ed.gov/ipeds/glossary>.

For payroll spending, the greatest amount of spending tends to occur in the counties in which campuses are located. For non-payroll spending, areas in which universities are located have high concentrations of spending, but there is a larger proportion of goods and services sourced from Southeast Michigan (Wayne County, in particular) than other areas. See “Appendix A. Methodology” on page A-1 for how we estimated spending in each category.

University Employees and Payroll. In fall 2012, the state universities collectively employed 71,691 full-time-equivalent (FTE) faculty and staff members.⁵ These employees earned nearly \$5.4 billion dollars in salaries and wages, and received an additional \$1.7 billion in employee benefits. This spending, as shown on Map 2 on page 11, reaches every county in the state. The employment and earnings that remain in Michigan contribute to the state universities’ economic footprint in the state, which is discussed in “Economic Footprint of Public Universities in Michigan” on page 13.

University Non-payroll Spending. In total, the state public universities spent nearly \$4.5 billion on non-payroll goods and services in FY 2012. The largest amount was spent on construction, at 32% of total non-payroll spending. As shown on Map 3 on page 12, non-payroll spending reached every county in Michigan. The vendor payments that stay in Michigan contribute to the universities’ economic footprint in the state, which we discuss in “Economic Footprint of Public Universities in Michigan” on page 13.

FIGURE 2. Spending by Public Universities in Michigan, FY 2012 (millions)



Source: Michigan's public universities
 Analysis: Anderson Economic Group, LLC

5. Each part-time employee counts as 1/3 FTE. Each full-time employee counts as 1 FTE.

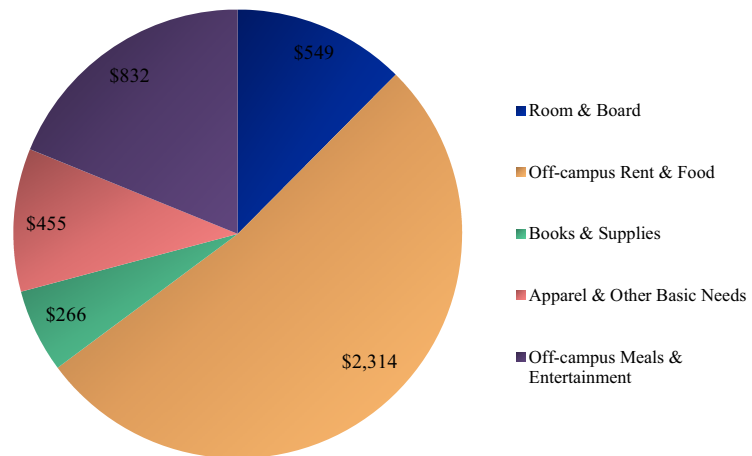
STUDENT SPENDING

As we discuss in “Student Enrollment” on page 18, the public universities in Michigan educate students from across the state, the country, and the world. While tuition is a significant portion of the cost of attending the universities, these students spend money on- and off-campus on other goods and services in the following categories:

- Room and board on campus;
- Off-campus rent and food;
- Books and supplies;
- Apparel and other basic needs; and
- Meals and entertainment off campus.

We estimate that students spent over \$4.4 billion in 2012 on non-tuition goods and services while attending state universities in Michigan. The majority of student spending (52%) was on off-campus rent and food, followed by spending on off-campus meals and entertainment, and room and board, which accounted for 18.8% and 12.4% of student spending, respectively. Figure 3 below shows student spending at the universities. See “Appendix A. Methodology” on page A-1 for how we estimated spending in each category.

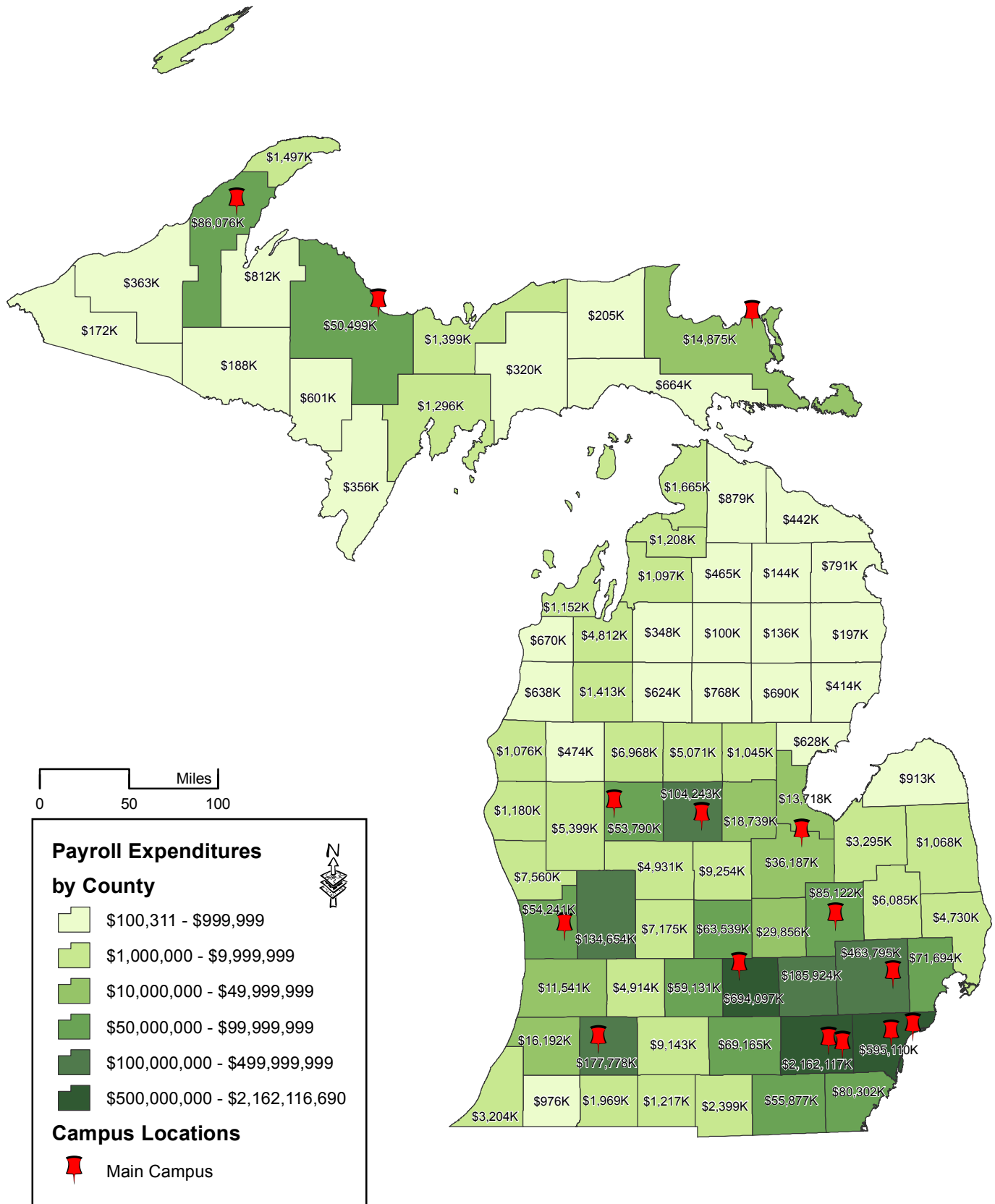
FIGURE 3. Spending by Students at Public Universities in Michigan, FY 2012 (millions)



Source: Michigan's public universities, College InSight, 2012 Consumer Expenditure Survey, AEG Estimates
Analysis: Anderson Economic Group, LLC

Most of this spending remains in Michigan, contributing to economic activity in the state. The economic footprint of student spending is discussed in “Economic Footprint of Public Universities in Michigan” on page 13.

Map 2. Payroll Expenditures by Michigan County, 2012

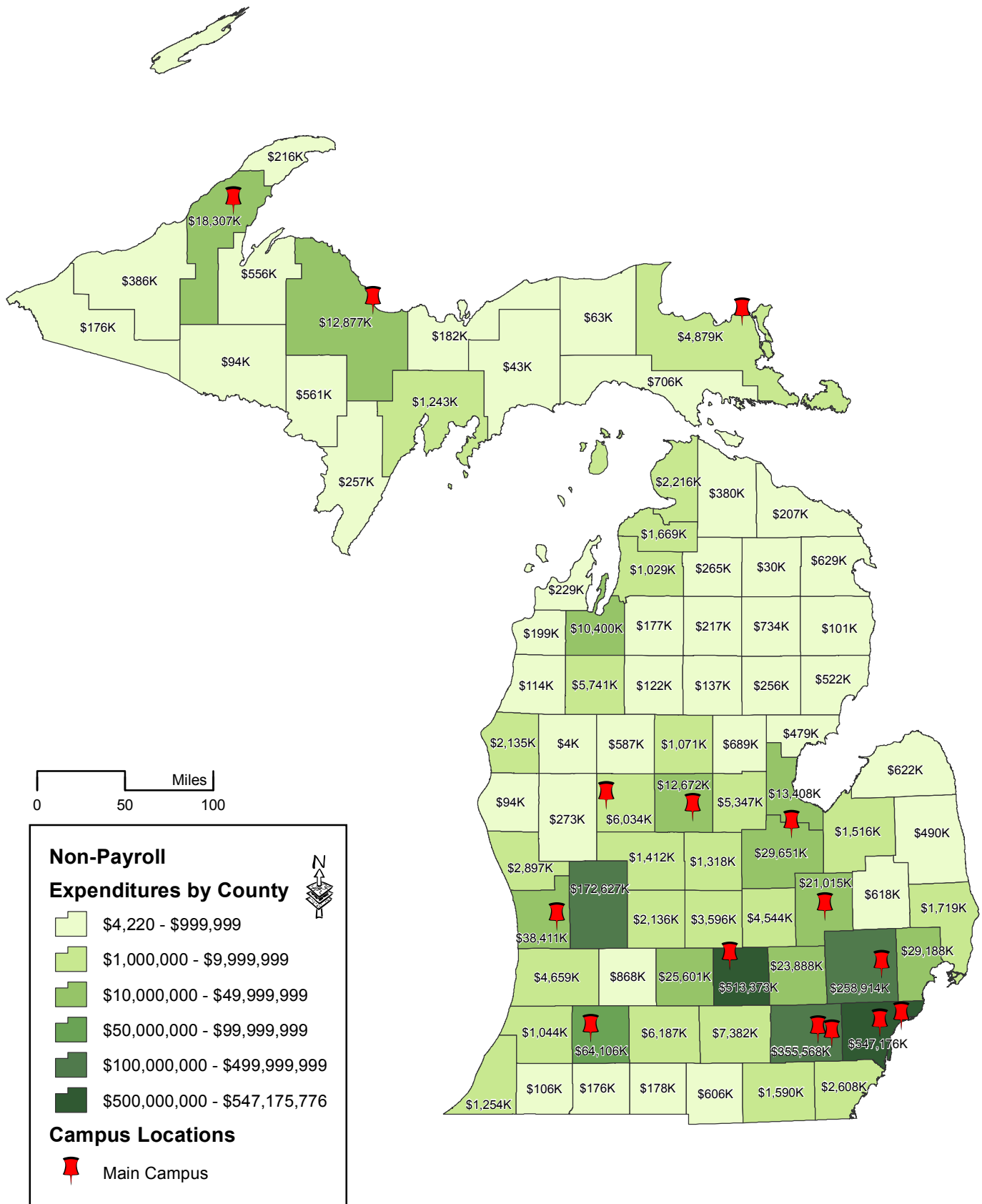


Source: Esri, Inc.; Michigan's Public Universities

Analysis: Anderson Economic Group, LLC

Note: Totals by county may not add to direct economic footprint due to differences in reporting methods. See Appendix A, "Methodology."

Map 3. Non-Payroll Expenditures by Michigan County, 2012



Source: Esri, Inc.; Michigan's Public Universities
 Analysis: Anderson Economic Group, LLC

Note: Totals by county may not add directly add to direct economic footprint due to differences in reporting methods. See Appendix A, "Methodology."

III. Economic Footprint of Public Universities in Michigan

In the previous section, we discussed the total operations and spending of the public universities and their students. In this section, we will discuss how university operations translate into a large economic footprint in the State of Michigan. While educating students, performing research, and engaging in countless other activities, Michigan's public universities support a significant amount of spending, jobs, and earnings in Michigan. We aggregate the spending, jobs, and earnings associated with the following sources of economic activity to estimate the universities' economic footprint:

- Payroll spending;
- Non-payroll spending; and
- Student spending.

Michigan's 15 public universities also have a large number of alumni that continue to live and work in Michigan. We discuss the size of the alumni base and their earnings in Michigan in "Alumni of Public Universities in Michigan" on page 25.

DEFINITION OF ECONOMIC FOOTPRINT

The economic footprint described in this section includes all spending, employment, and earnings associated with public university operations and student spending. The state universities and their students contribute to the Michigan economy in two ways:

1. The *direct* effect of the universities' economic activity includes spending, employment, and earnings that are directly attributable to the universities' operations in the state, including hiring Michigan residents and paying Michigan companies for goods and services.
2. The *indirect* effect of the universities' economic activity occurs as dollars recirculate throughout the Michigan economy. Suppliers for the universities are part of a supply chain and have vendors of their own who benefit indirectly from university spending. In addition, employees use their wages to buy groceries from the local grocery store, and contractors may use their revenues from the universities to buy new equipment or expand their office space. Even then, dollars continue to circulate as grocery store owners and equipment providers now have more money to purchase goods and services in the state.

We estimate the total spending, earnings, and jobs supported by public universities in Michigan by adding the direct and indirect effects. See "Appendix A. Methodology" on page A-1 for details of our estimation methods.

Difference Between Economic Footprint and Net Economic Impact

In this report, we present the *economic footprint* of Michigan's public universities. In other studies, such as our annual University Research Corridor (URC) benchmarking and economic impact report, we estimate the *net economic impact* of institutions in a defined region.⁶

A university's *economic footprint* is defined as the employment, earnings, and spending in a region that are related to *all* economic activity by that university. A university's *net economic impact* is defined as the employment, earnings, and spending in a region *caused* by the university, and excludes all employment, earnings, and spending that would have occurred in a region even without the university's presence.

For example, in the absence of a given university, operations at other universities in the state would expand to receive more students; the land that university occupies might instead contain houses, a park, or farmland; and many of the employees that work at that university would have a job elsewhere in the state. That university's net economic impact captures the extent to which the economic activity related to a university *exceeds* the economic activity that would have occurred in its absence. For the annual URC report, for example, we calculate net economic impact by first estimating total local spending by the universities that make up the URC, and then subtracting out all spending that would likely occur in the region in the absence of those universities.

In this report, we estimate the *economic footprint* of all public universities in the state. This includes *all* spending, employment, and earnings at those universities, as well as the indirect effects of that activity. We present economic footprint instead of net economic impact because the characteristics of a hypothetical Michigan economy in the absence of any four-year public universities is too unpredictable to properly analyze. We generally do not apply net economic impact analysis to an entire statewide sector.

Since we estimate economic footprint instead of net economic impact, we cannot say with confidence whether the spending we attribute to the universities would have happened even in the universities' absence, as we can with a net economic impact estimate. We can, however, say that the economic footprint describes the scope of economic activity by the universities and their students in the state, as well as the indirect effects of that spending on local vendors and households.

6. Erin Grover, Colby Spencer, and Alex Rosaen, "Empowering Michigan: Sixth Annual Economic Impact Report of Michigan's University Research Corridor," Anderson Economic Group, January 4, 2013.

UNIVERSITY AND STUDENT SPENDING IN MICHIGAN

To estimate the state universities’ economic footprint in Michigan, we include only spending and employment that occurs *in the state*. Our estimates for spending in the state are presented below. Further details on specific categories of expenditures can be found in “Appendix A. Methodology” on page A-1.

University Payroll Spending

As discussed in “University Expenditures” on page 8, in 2012, the state public universities employed 71,691 FTE faculty and staff, and spent \$7.1 billion on payroll expenses. Close to 99% of these employees reside in Michigan. Specifically, we estimate that 70,720 faculty and staff are Michigan residents, and \$7.0 billion in payroll expenditures occur in the state.

University Non-Payroll Spending

Earlier in the report, we discussed the magnitude of the university expenditures on non-payroll goods and services, estimating total expenditures in FY 2012 to be \$4.5 billion. We estimate that 68%, or \$3.1 billion, of that spending goes to Michigan vendors. The proportion of spending that stays in Michigan is lower for non-payroll spending than for payroll spending because many universities source goods and services from outside of Michigan. We do not include out-of-state spending in our economic footprint estimates.

Spending by Students

As described in “Student Spending” on page 10, the students at Michigan’s public universities spend over \$4.4 billion annually. We estimate that \$4.3 billion of that is spent in Michigan.

TOTAL ECONOMIC FOOTPRINT IN MICHIGAN

Direct spending—spending by universities and students in the state—further spurs additional, indirect economic activity, as described in “Definition of Economic Footprint” on page 13. The total economic footprint of the public universities in Michigan in terms of spending, earnings, and jobs is summarized in Table 3 below. The rest of this section provides further details on aspects of the economic footprint.

TABLE 3. Total Economic Footprint for Public Universities in Michigan, FY 2012

	Direct	Indirect	Total
Spending (billions)	\$14.4	\$9.5	\$23.9
Earnings (billions)	\$7.0	\$5.2	\$12.2
Jobs (FTE)	70,720	51,029	121,749

Source: Michigan’s public universities, College InSight, BEA RIMS II Multipliers

Analysis: Anderson Economic Group, LLC

Spending

University payroll and non-payroll spending, along with student spending, total \$14.4 billion in Michigan. When we add indirect spending in the Michigan economy to direct spending, total spending comes to \$23.9 billion for FY 2012. Table 4 below shows the total footprint by source for public universities in Michigan.

TABLE 4. Total Spending Supported by Public Universities in Michigan, FY 2012 (billions)

	Direct	Indirect	Total
Payroll Spending	\$7.0	\$3.0	\$10.0
Non-payroll Spending	\$3.1	\$3.5	\$6.5
<u>Student Spending</u>	<u>\$4.3</u>	<u>\$3.1</u>	<u>\$7.4</u>
Total	\$14.4	\$9.5	\$23.9

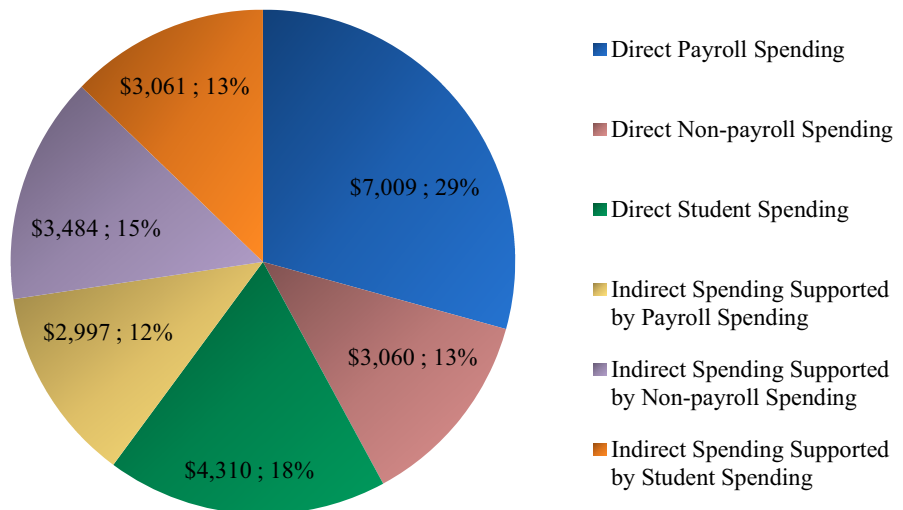
Source: Michigan's public universities, College InSight, BEA RIMS II Multipliers

Analysis: Anderson Economic Group, LLC

Note: Numbers do not sum to totals due to rounding.

As shown above, each spending source contributes significantly to the economic footprint of the public universities in Michigan. Figure 4 below shows the proportion of the economic footprint attributable to each category of spending, highlighting that direct payroll spending accounts for the greatest proportion of the footprint, followed by direct student spending.

FIGURE 4. Economic Footprint of Public Universities in Michigan, FY 2012 (millions)



Source: Michigan's public universities, College InSight, BEA RIMS II Multipliers
Analysis: Anderson Economic Group, LLC

Earnings and Jobs

As the universities, their employees, and their students spend money on goods and services in the state, they support jobs and earnings for Michigan residents. The combined footprint for public universities is 121,749 jobs for Michigan residents, and \$12.2 billion in earnings. Table 5 below shows the direct and indirect effects public universities have on jobs and earnings in Michigan.

TABLE 5. Total Earnings and Employment Supported by Public Universities in Michigan, FY 2012

	Direct	Indirect	Total
Earnings (billions)	\$7.0	\$5.2	\$12.2
Employment	70,720	51,029	121,749

*Source: Michigan's public universities, BEA RIMS II Multipliers
Analysis: Anderson Economic Group, LLC*

IV. Students and Degrees at Public Universities in Michigan

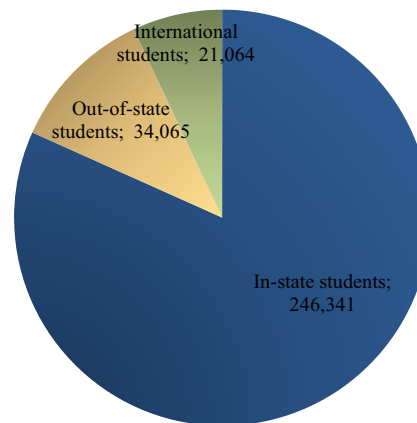
In 2012, the state's public universities educated more than 300,000 students, and awarded nearly 67,000 degrees and certificates. In this section, we discuss the student body of Michigan's 15 public universities.

STUDENT ENROLLMENT

The public universities in Michigan enroll hundreds of thousands of students every year. Compared to the public universities in the fifty states across the U.S., the group of public universities in Michigan enrolled the 6th-highest number of total students in fall 2011.⁷

As shown in Map 4 on page 22, Map 5 on page 23, and Map 6 on page 24, the students at these universities represent every county in Michigan, every state in the U.S., and nearly 160 countries across the world. Of the students enrolled in fall 2012, 81% were from Michigan, 11% were from other states in the U.S., and 7% were international. This out-of-state enrollment share is below average, compared to that for public universities in other states. Figure 5 below shows the breakdown of student residency.

FIGURE 5. Student Origins at Public Universities in Michigan, Fall 2012



Source: Michigan's public universities
Analysis: Anderson Economic Group, LLC

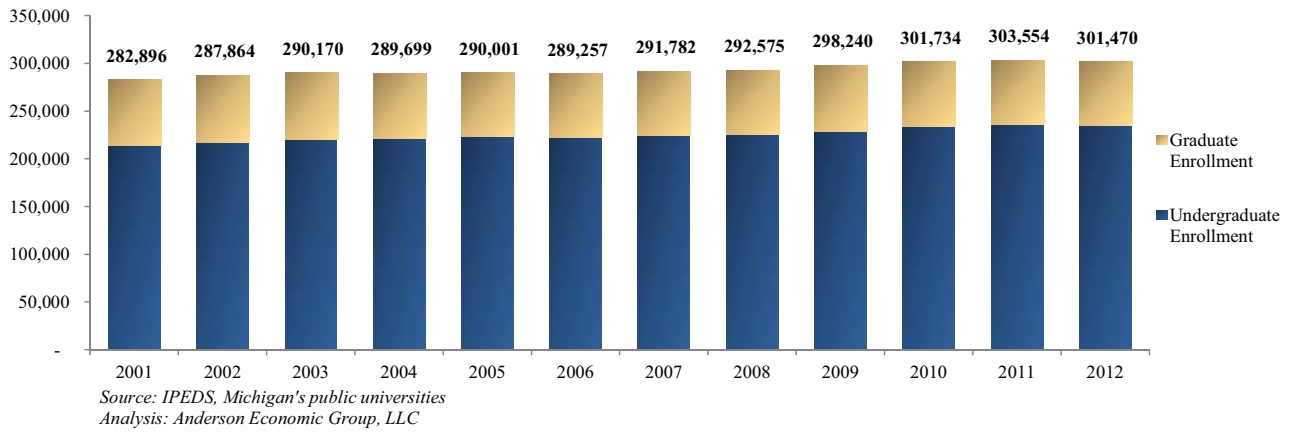
In fall 2012, there were 301,470 students enrolled in state universities in Michigan. Of those students, 78% were undergraduate students. This proportion is slightly higher than it was a decade ago, since there are more than 20,000 additional undergraduate students at public universities than there were in 2001. Stu-

7. National Center for Education Statistics, IPEDS, Fall Enrollment, 2011.

Students and Degrees at Public Universities in Michigan

dent enrollment increased by almost 7% between 2001 and 2012, as shown in Figure 6 below.

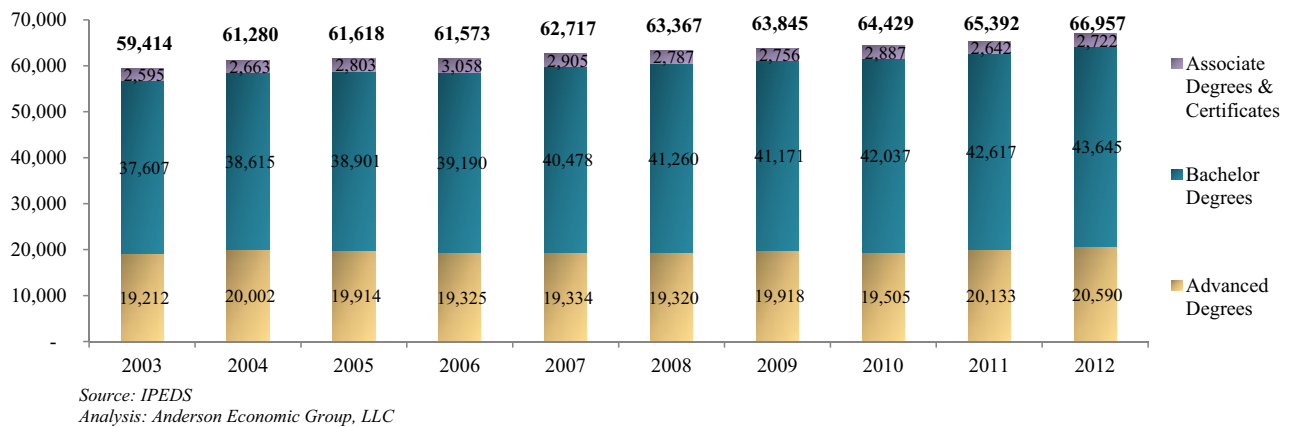
FIGURE 6. Enrollment at Public Universities in Michigan, Fall 2001-Fall 2012



DEGREES

In 2012, state universities in Michigan awarded nearly 67,000 degrees and certificates, a 13% increase since 2003. The largest growth during this time period was in the number of bachelor degrees awarded, which grew by more than 16% between 2003 and 2012. Figure 7 below shows the growth in completions by level.

FIGURE 7. Completions by Level of Degree at Public Universities in Michigan, 2003-2012

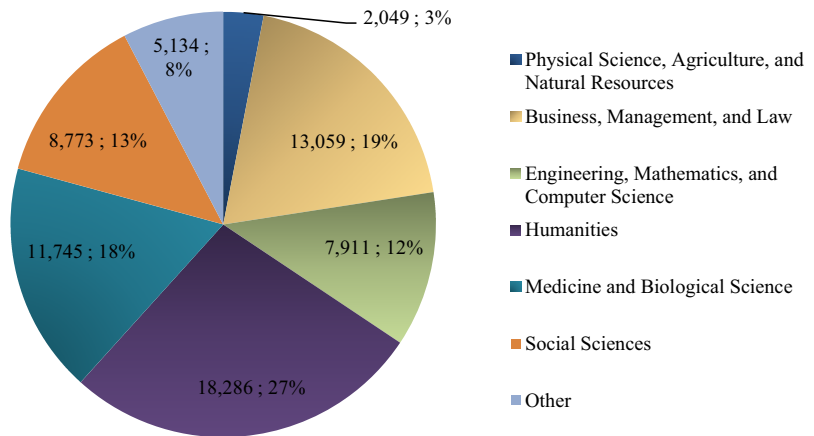


State universities offer degrees and certificates in nearly every subject. We categorize degrees and certificates in the following categories:

- Physical Science, Agriculture, and Natural Resources;
- Business, Management, and Law;
- Engineering, Mathematics, and Computer Science;
- Humanities;
- Medicine and Biological Science;
- Social Sciences; and,
- Other.⁸

Of the 67,000 degrees and certificates awarded to 2012 graduates, 27% were in the humanities fields, which include degrees and certificates in english, education, theology, performing arts, and history, among others. The second largest degree category was business, management, and law. Figure 8 below shows the proportion of degrees and certificates for each degree category.

FIGURE 8. Degrees and Certificates by Field of Study at Public Universities in Michigan, 2012



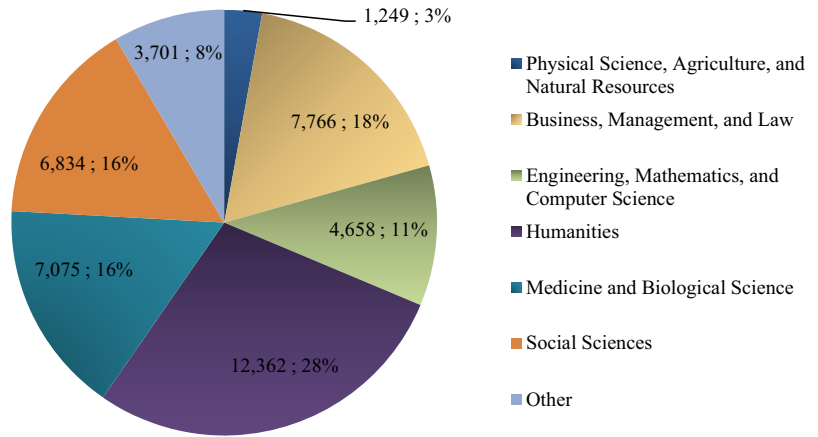
Source: IPEDS
Analysis: Anderson Economic Group, LLC

As shown in Figure 9 and Figure 10 on page 21, the proportion of degrees by field of study differs between bachelor and advanced degrees. For each level, humanities degrees make up the largest portion. Business, law, and management degrees; medicine and biological science degrees; and engineering, mathematics, and computer science degrees represent a higher share of advanced degrees

8. See “Academic Program Definitions” on page A-1 for a list of the degrees included in each field of study.

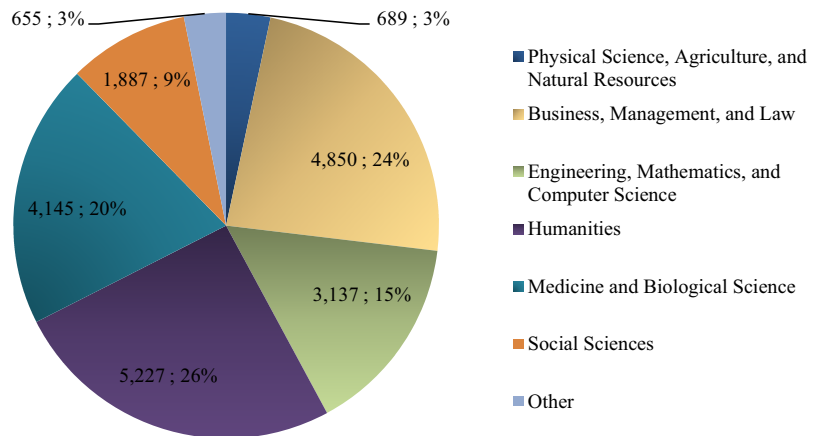
than bachelor degrees. Undergraduates receive a higher proportion of degrees in social sciences.

FIGURE 9. Bachelor Degrees by Field of Study at Public Universities in Michigan, 2012



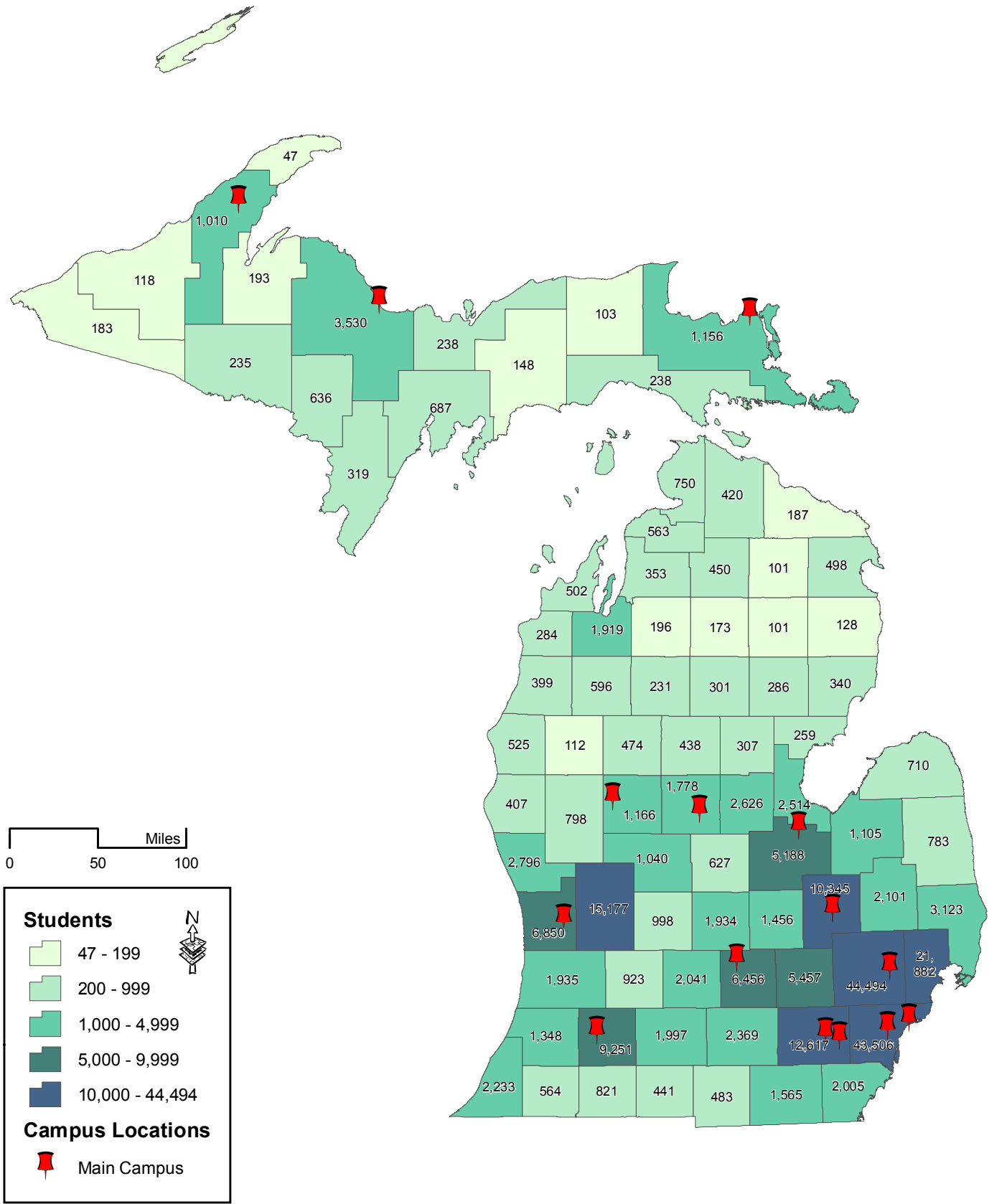
Source: IPEDS
Analysis: Anderson Economic Group, LLC

FIGURE 10. Advanced Degrees by Field of Study at Public Universities in Michigan, 2012



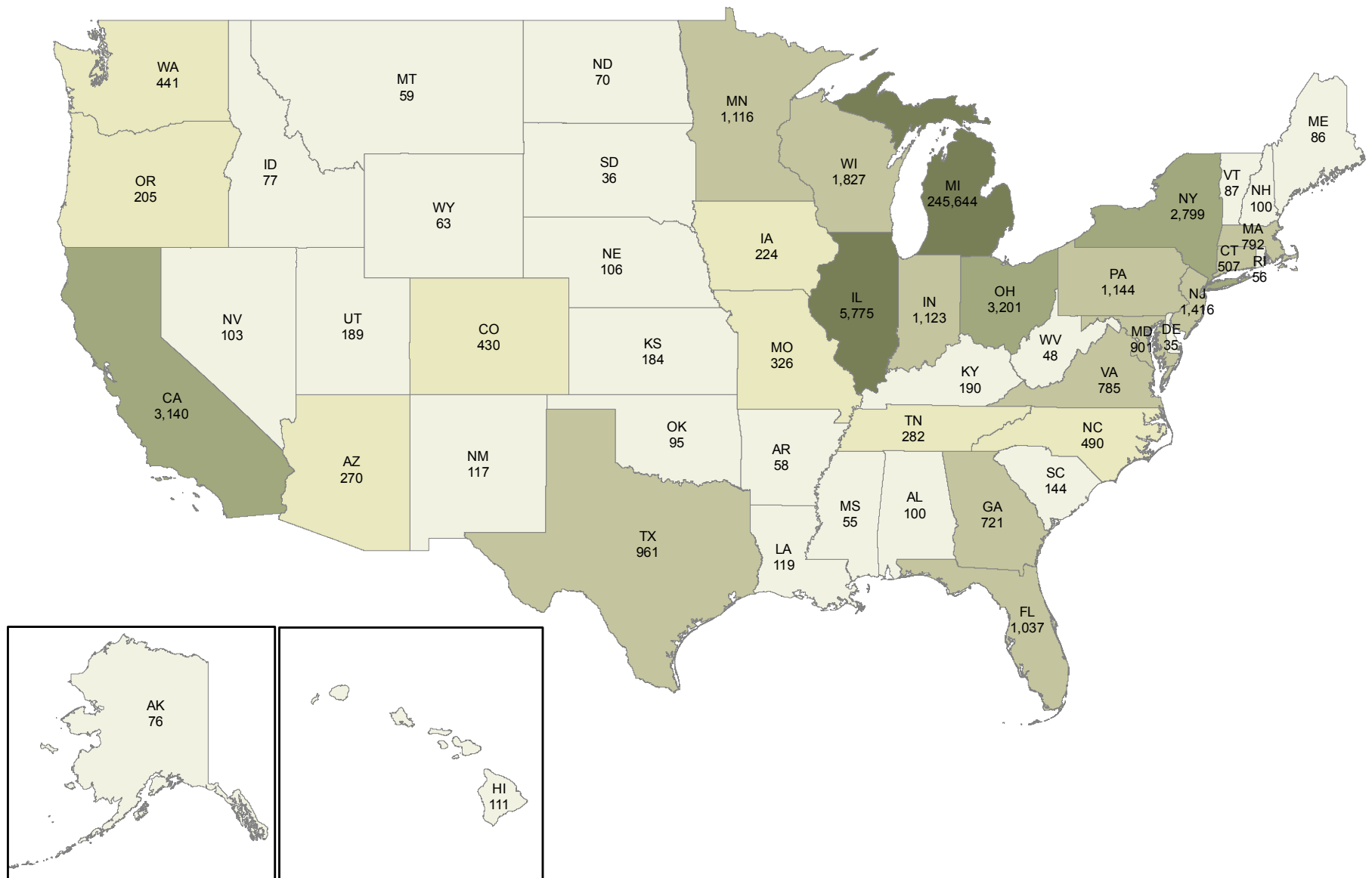
Source: IPEDS
Analysis: Anderson Economic Group, LLC

Map 4. Students by Michigan County, Fall 2012



Source: Esri, Inc.; Michigan's Public Universities
 Analysis: Anderson Economic Group, LLC

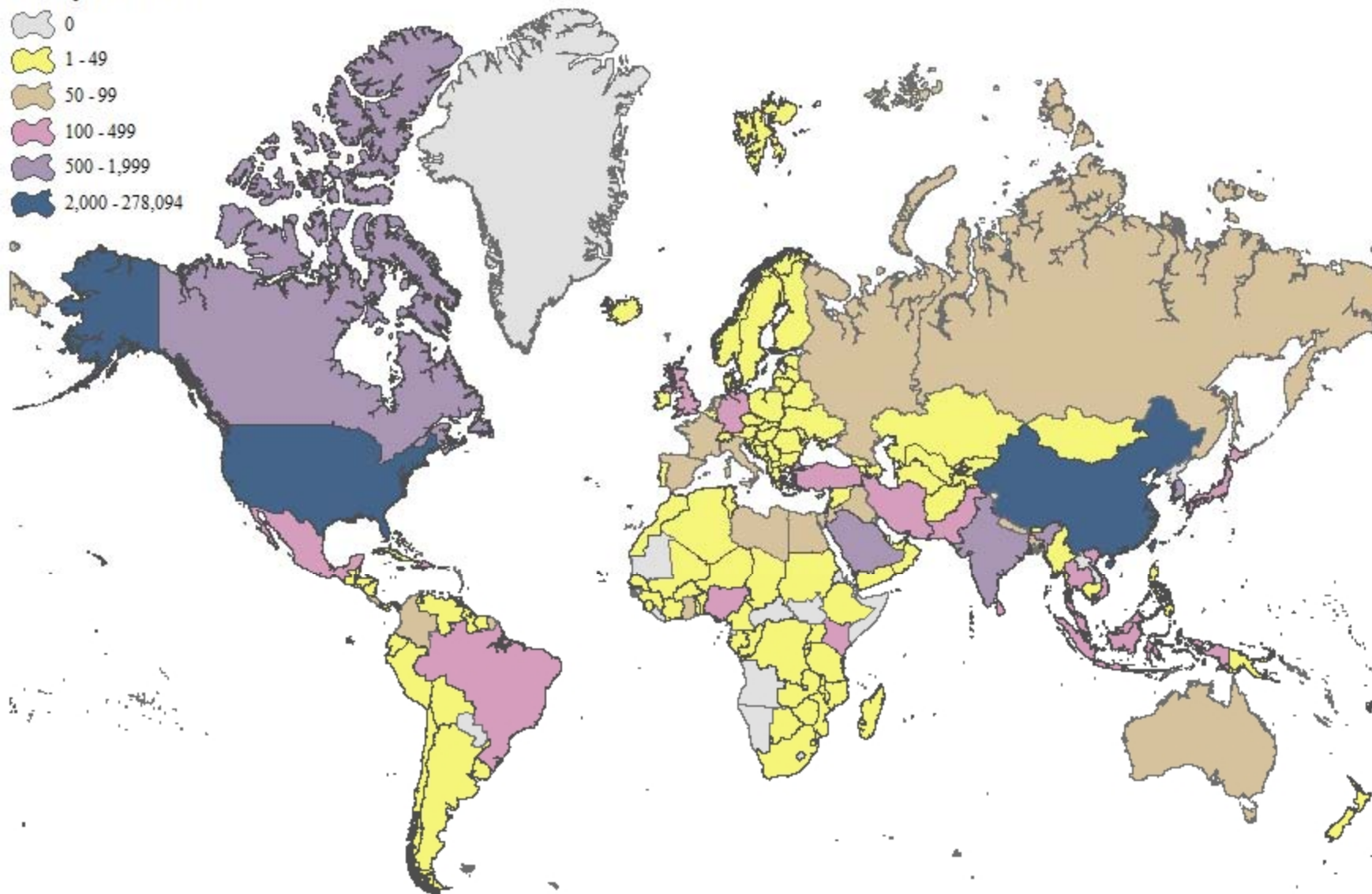
Map 5. Students by U.S. State, Fall 2012



Source: Esri, Inc.; Michigan's Public Universities
Analysis: Anderson Economic Group, LLC

Map 6. Students by Country, Fall 2012

*Students by
Country, Fall 2012*



Source: Esri, Inc.; Michigan's Public Universities
Analysis: Anderson Economic Group, LLC

V. Alumni of Public Universities in Michigan

In “Students and Degrees at Public Universities in Michigan” on page 18, we discussed the student body of Michigan’s public universities. Many of these students graduate and continue to live and work in Michigan after graduation, contributing to the local and state economies. In this section, we discuss the size and scope of the alumni base for public universities in Michigan.

STATE UNIVERSITY ALUMNI

Worldwide, there are more than 2.1 million living alumni that attended Michigan’s public universities. These alumni live in each county in Michigan, each state in the U.S., and more than 170 countries. Of the 2.1 million living alumni, nearly 1.3 million live in Michigan, representing roughly 18% of the Michigan population aged 22 and older.⁹ In addition, the 1.3 million alumni living in Michigan account for 62% of all residents in the state with a bachelor’s degree or higher.¹⁰

Most of the alumni living in Michigan (67%) graduated with a bachelor degree as the highest degree earned from a state university. An additional 29% of alumni graduated from state universities with an advanced degree as the highest earned, and 5% of alumni graduated with an associate’s degree or from a non-degree program. Figure 11 on page 26 shows the number of alumni living in Michigan by highest degree earned at a state university.¹¹

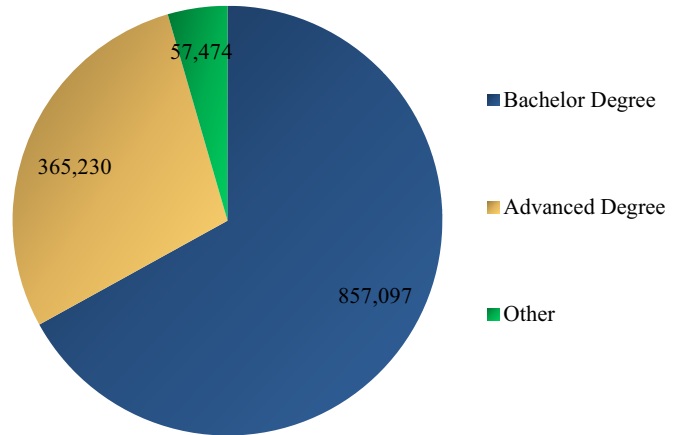
See “Map 7. Alumni by Michigan County” on page 27, “Map 8. Alumni by U.S. State” on page 28, and “Map 9. Alumni by Country” on page 29 to find where Michigan’s public university alumni currently reside.

9. According to the U.S. Census Bureau, Michigan had 7,025,433 residents aged 22 and up as of July 1, 2012.

10. According to the Current Population Survey (CPS), there were 1.98 million residents living in Michigan who had a bachelor’s degree or higher in the year 2012.

11. Unclassified alumni are due to graduates receiving associate’s degrees and certificates. Additionally, some universities consider those who took classes but did not receive a degree as alumni; these types of alumni are also included in our analysis. Our estimates are conservative, and do not account for degrees that may have been earned at other universities. See “Appendix A. Methodology” on page A-1.

FIGURE 11. State University Alumni Living in Michigan, by Highest Degree Achieved, 2012



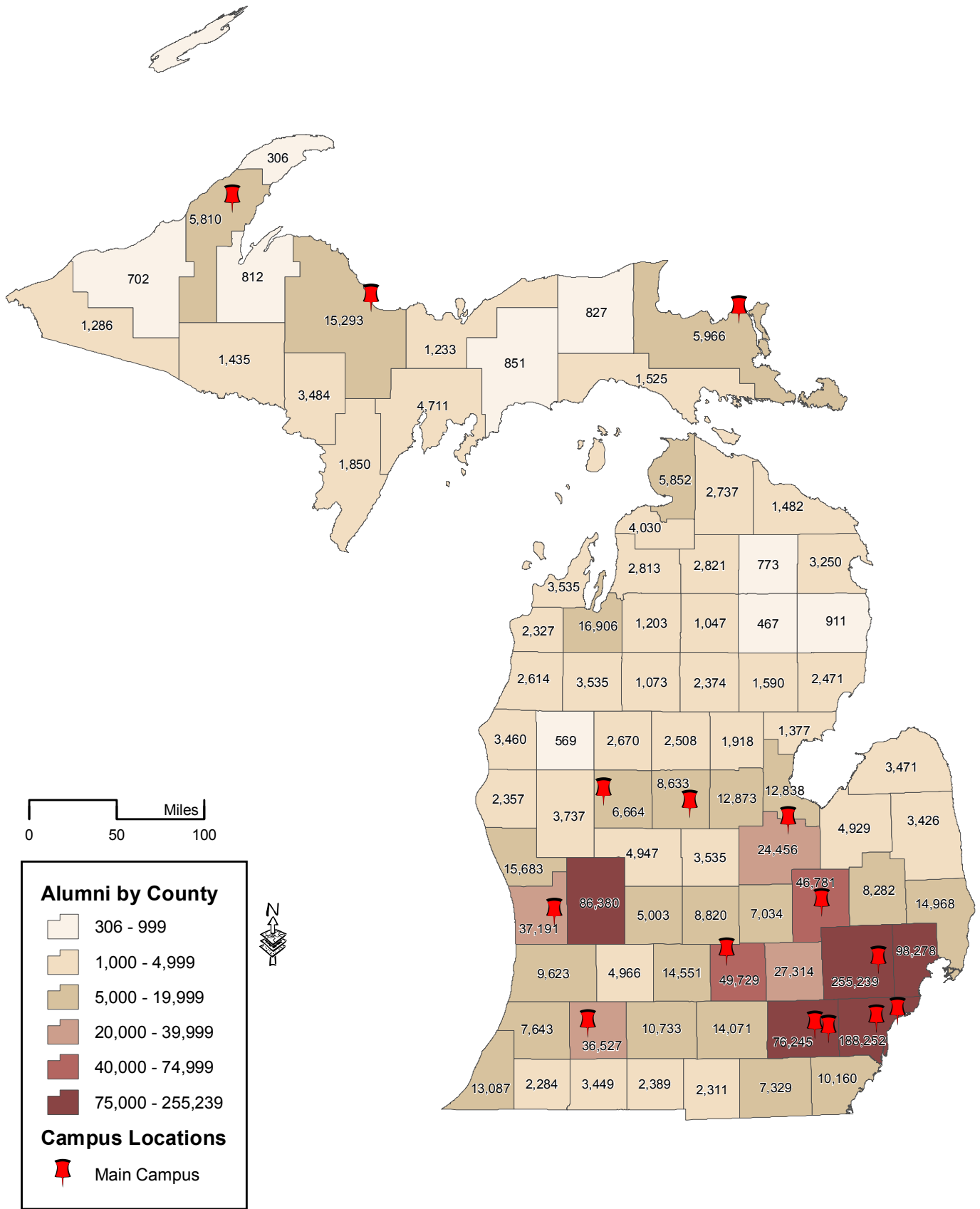
*Source: Michigan's public universities
Analysis: Anderson Economic Group, LLC*

ALUMNI EARNINGS

Alumni of the Michigan public universities are important to the state in many ways. One way to measure their importance is through the value of their work in the state. We estimate that in 2012, the 1.3 million alumni in Michigan earned almost \$47 billion, which represented more than 25% of total earnings in Michigan.¹² For further information on how we arrived at this estimate, see “Appendix A. Methodology” on page A-1.

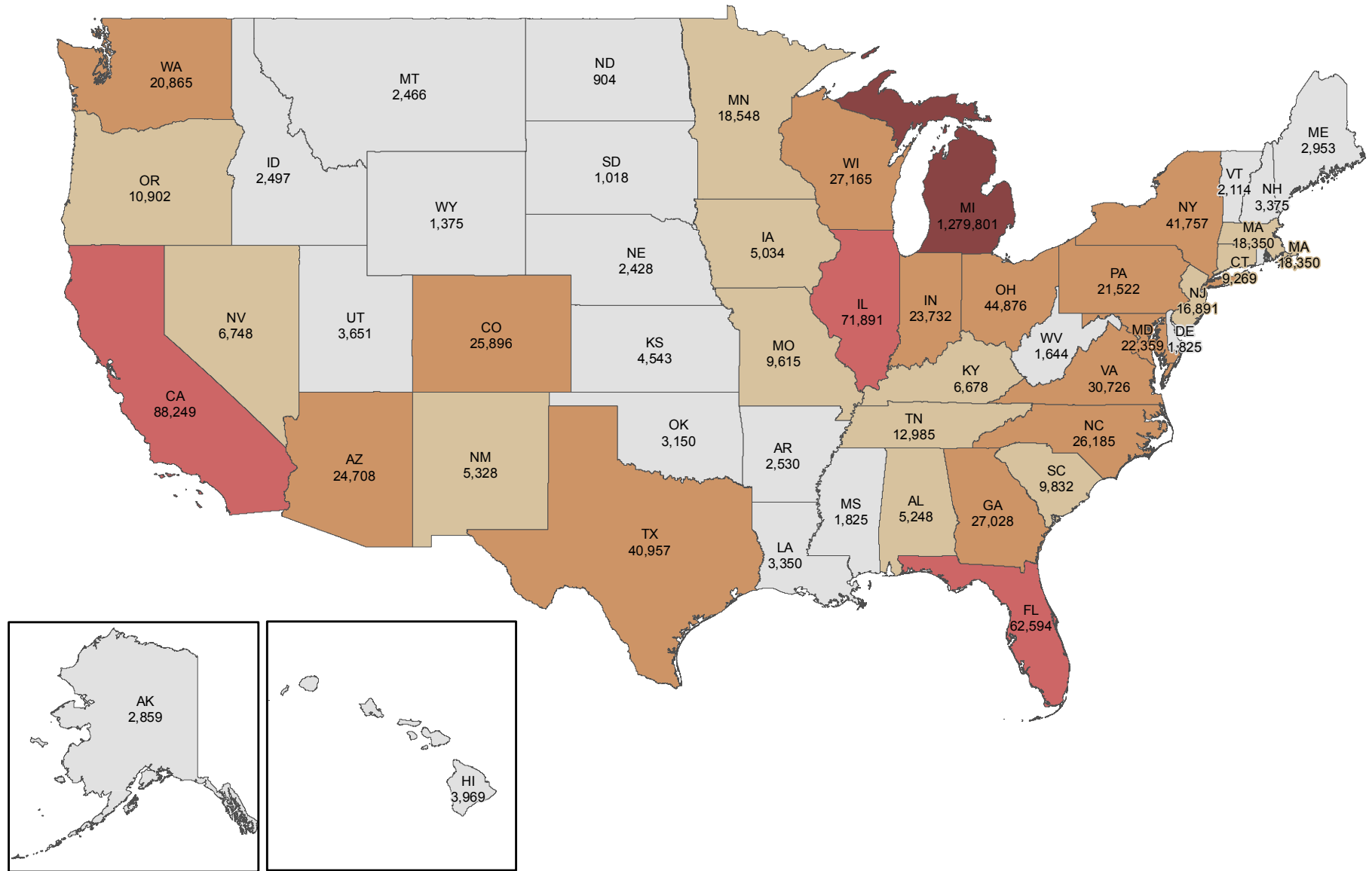
12. The Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW) estimated annual average wages in Michigan in 2012 to be \$183.9 billion.

Map 7. Alumni by Michigan County



Source: Esri, Inc.; Michigan's Public Universities
 Analysis: Anderson Economic Group, LLC

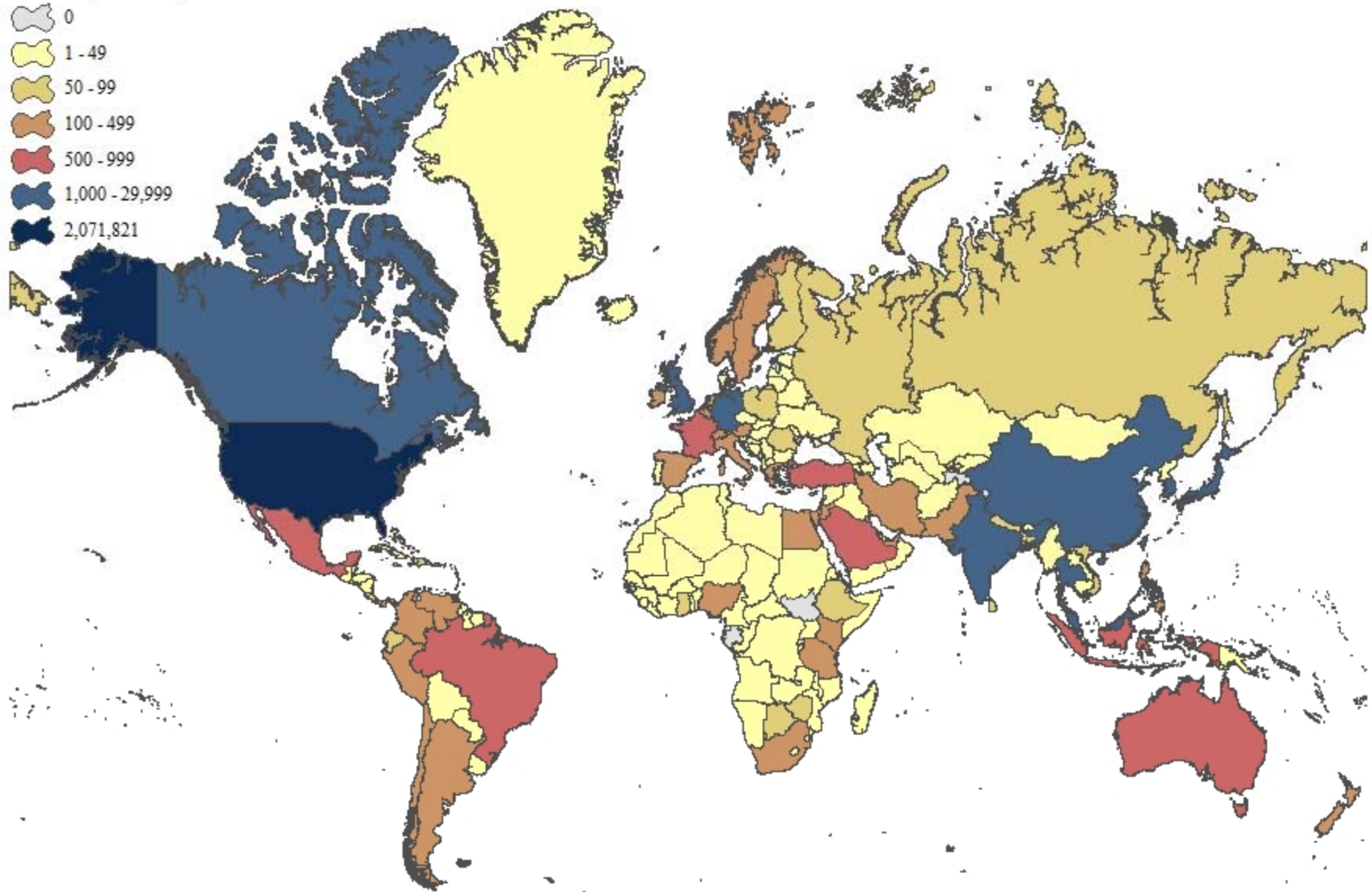
Map 8. Alumni by U.S. State



Source: Esri, Inc.; Michigan's Public Universities
 Analysis: Anderson Economic Group, LLC

Map 9. Alumni by Country

Alumni by Country



Source: Esri, Inc.; Michigan's Public Universities
Analysis: Anderson Economic Group, LLC

Appendix A. Methodology

This appendix describes how data sources were used to create the maps included in this report and the methodology used to complete our economic footprint analysis.

GEOGRAPHICAL ANALYSIS

All of the maps in this report were created using Geographic Information Software (GIS), using data provided by the state universities.

Map 2, “Payroll Expenditures by Michigan County, 2012,” on page 11 is based on payroll data provided by the state universities for FY 2012. If universities provided information by county, we used that data directly. If universities provided the information by zip code, we used only the payroll data for valid zip codes, and apportioned it to the matching Michigan county. We used the same approach for Map 3, “Non-payroll Expenditures by Michigan County, 2012,” on page 12.¹³

Map 4, “Students by Michigan County, Fall 2012,” on page 22; Map 5, “Students by U.S. State, Fall 2012,” on page 23; and Map 6, “Students by Country, Fall 2012,” on page 24 were created using data provided by the state universities. Universities provided the data for the residence of students enrolled in Fall 2012. We did not include students whose addresses were invalid (i.e. 4-digit zip code). There was not a significant number of these students.

Map 7, “Alumni by Michigan County,” on page 27; Map 8, “Alumni by U.S. State,” on page 28; and Map 9, “Alumni by Country,” on page 29 were made following the same methodology as the maps showing students by location.

ACADEMIC PROGRAM DEFINITIONS

The academic program areas used in “Degrees” on page 19 are based on the National Center for Education Statistics’ Classification of Instructional Programs (CIP) codes that they use in their Integrated Postsecondary Education Data System (IPEDS). The composition of each program area is as follows:

The *Physical Science, Agriculture, and Natural Resources* academic program area includes the following fields of study: agriculture, agriculture operations, and related sciences; natural resources and conservation; and physical sciences.

The *Business, Management, and Law* academic program area includes the following fields of study: legal professions and studies; business, management, marketing, and related support services; and public administration.

The *Engineering, Mathematics, and Computer Science* academic program area includes the following fields of study: architecture and related services; computer

13. The payroll and non-payroll spending by county may not add up to the spending footprint due to reporting differences between what the universities provided, and what is reported in IPEDS.

and information sciences and support services; engineering; and mathematics and statistics.

The *Humanities* academic program area includes the following fields of study: area, ethnic, cultural, and gender studies; communication, journalism, and related programs; education; foreign languages, literatures, and linguistics; family and consumer sciences/human sciences; English language and literature/letters; liberal arts and sciences, general studies and humanities; library science; multi/interdisciplinary studies; philosophy and religious studies; theology and religious vocations; human services, general; visual and performing arts; and history.

The *Medicine and Biological Science* academic program area includes the following fields of study: biological and biomedical sciences; and health professions and related clinical sciences.

The *Social Sciences* academic program area includes the following fields of study: social sciences; psychology; public policy analysis; and social work.

The *Other* academic program area includes the following fields of study: personal and culinary services; parks, recreation, leisure, and fitness studies; Homeland security, law enforcement, firefighting, and related protective services; construction trades; mechanic and repair technologies/technicians; precision production; transportation and materials moving; communications technologies/technicians and support services; engineering technologies/technicians; military technologies and applied sciences; community organization and advocacy; public administration and social service professions, other; and science technologies/technicians.

ESTIMATING ECONOMIC FOOTPRINT

We define *economic footprint* as the aggregate spending, jobs, and earnings in Michigan that are associated with the activity of the 15 public universities in Michigan. Economic footprint includes both direct effects and indirect effects, as described below:

1. The *direct* effect of the universities' economic activity includes spending, employment, and earnings that are directly attributable to the universities' operations in the state, including hiring Michigan residents and paying Michigan companies for goods and services.
2. The *indirect* effect of the universities' economic activity occurs as dollars recirculate throughout the Michigan economy. Suppliers for the universities are part of a supply chain and have vendors of their own who benefit indirectly from university spending. In addition, employees use their wages to buy groceries from the local grocery store, and contractors may use their revenues from the universities to buy new equipment or expand their office space. Even then, dollars continue to circulate as grocery store owners and equipment providers now have more money to purchase goods and services in the state.

To estimate indirect spending, we multiplied direct spending by final demand output multipliers released by the U.S. Department of Commerce's Regional Input-

Output Modeling System (RIMS II). We estimated the indirect jobs and earnings using RIMS II direct-effect multipliers.

Spending

We estimate the direct and indirect spending for the following sources of economic activity:

- University payroll spending;
- University non-payroll spending; and
- Student spending.

Our economic footprint analysis is shown in detail in Table A-3 on page A-6.

Payroll Spending. In order to estimate the amount of payroll spending (wages, salaries, and employee fringe benefits) in the State of Michigan, we relied on data from the state universities, who provided us with the data they submit to IPEDS for FY 2012. We then used the data they provided for wages by zip/county to estimate the proportion of payroll going to Michigan residents. We multiplied this proportion by total payroll reported to IPEDS to estimate the wages and benefits going to Michigan residents.

Non-payroll Spending. In order to estimate the non-payroll spending in Michigan, we used data provided by the state universities. Universities provided payments by zip code. We applied the proportion of payments to vendors in the state, according to university data, to the amount of non-payroll spending reported in IPEDS for FY 2012. We used school data and professional judgment to determine any differences in the percentage of spending remaining in state by function.¹⁴

Student Spending. To calculate the student spending in Michigan, we used data provided by the state universities on the number of students that lived on- and off-campus at state universities. We then estimated the student spending for several categories of living expenses:

- Room and board;
- Off-campus rent and food;
- Books and supplies;
- Apparel, food & grocery, and other basic needs; and
- Meals & entertainment off-campus.

14. For example, public service expenditures, which include community services, extension services, and broadcasting, are more likely to occur in Michigan. For athletics, many of the recruiting expenses may actually take place outside of Michigan. Research may involve purchasing specialized equipment outside of the state. These are the considerations we kept in mind while determining the proportion of in-state spending by function.

For each category, we estimated total spending for the total number of students, with the exception of books and supplies, which we calculated on an FTE-basis. Data for books and supplies is from College InSight.¹⁵

We obtained room and board costs for on-campus graduate and undergraduate students from the state universities. Spending on apparel, food and grocery, basic needs, and meals and entertainment off-campus are taken from the 2012 Consumer Expenditure Survey (CES) on annual expenditures by educational attainment. We multiplied each of these values by 75% to account for time that the students spend on campus during the year. To estimate the amount spent by undergraduates living on campus, we used CES data for apparel and needs, as well as meals off-campus and entertainment for all consumers, to be conservative.¹⁶ For students living off-campus, we assumed that spending was 10% higher for housing and food, and apparel and needs, and 20% higher for off-campus meals and entertainment.

We assumed that graduate students paid, on average, 10% more for books and supplies than undergraduate students. For apparel and needs, as well as off-campus meals and entertainment, we used the same CES data, but assumed an educational attainment level of bachelor's degree. We also assumed that off-campus expenses were 10% higher for apparel and needs, and 20% higher for meals off-campus and entertainment. All values are in 2012 U.S. dollars.

We assumed all room and board spending was in Michigan. For the rest of the categories, we assumed that some spending took place outside of Michigan, allowing for vacations, trips, and online purchases. We also allowed for 35% of books and supplies to be purchased online, resulting in spending outside the state.

Employment

To estimate the employment in Michigan supported by the state universities, we used the number of FTE employees that work for the state universities. We also used data from the universities to determine what proportion of those employees live in Michigan.

We then applied the BEA RIMS II direct-effect employment multipliers to estimate the additional indirect statewide employment in industries supported by the state universities. For school faculty and staff, we used the multiplier for the

15. College InSight is an initiative of the Institute for College Access & Success, and provides data sourcing from IPEDS, Pell Grant files, Fiscal Operations Report and Application to Participate files, and Common Data Set files. Data can be found at college-insight.org.

16. Spending for "all consumers" is lower than for those with a bachelor's degree. We assume undergraduate students do not yet have a bachelor's degree, and therefore used the value for all consumers.

“junior colleges, colleges, universities, and professional schools” industry. For the University of Michigan Health System, we applied the multiplier for the “hospitals” industry. Table A-1 below shows the calculations for direct and indirect employment.

TABLE A-1. Employment Supported by Public Universities in Michigan, FY 2012

	Total	% in Mich.	Total in Mich.	Direct-effect multiplier	Direct and Indirect Jobs in Mich.
FTE Faculty	19,281	98.2%	18,924	1.649	31,201
FTE Staff	<u>52,410</u>	<u>98.8%</u>	<u>51,796</u>	<u>1.748</u>	<u>90,548</u>
Total FTE Jobs	71,691	98.6%	70,720	1.722	121,749

*Source: Michigan's public universities, BEA RIMS II Multipliers
Analysis: Anderson Economic Group, LLC*

Earnings

To estimate the earnings impact of the public universities, we used the wages, salaries, and benefits paid to university employees. We also used data from the public universities to determine what proportion of those employees live in Michigan.

We then applied the BEA RIMS II direct-effect employment multipliers to estimate the additional indirect earnings in Michigan generated by university activity. For school faculty and staff, we used the multipliers for the “junior colleges, colleges, universities, and professional schools” industry. For the University of Michigan Health System, we applied the multiplier for the “hospitals” industry. Table A-2 below shows the calculations for direct and indirect earnings.

TABLE A-2. Earnings Supported by Public Universities in Michigan, FY 2012 (millions)

	Total	% in Mich.	Total in Mich.	Direct-effect multiplier	Direct and Indirect Earnings in Mich.
Earnings	\$7.095	98.8%	\$7.009	1.739	\$12.185

*Source: Michigan's public universities, BEA RIMS II Multipliers
Analysis: Anderson Economic Group, LLC*

TABLE A-3. Economic Footprint of the Public Universities in Michigan

Spending					
	2012 Spending	% in Michigan	2012 Spending in Michigan	Multiplier	Total Spending
Salaries and Wages	\$ 5,350,735,939	98.8%	\$ 5,286,744,399	1.23	\$ 6,511,683,076
Employee Benefits	\$ 1,744,697,169	98.7%	\$ 1,721,824,431	2.03	\$ 3,493,581,770
<i>Total Payroll Spending</i>	<i>\$ 7,095,433,109</i>		<i>\$ 7,008,568,830</i>		<i>\$ 10,005,264,846</i>
Instruction & Academic Support	\$ 457,365,490	68.3%	\$ 312,468,595	2.03	\$ 633,530,076
Research	\$ 407,168,458	69.8%	\$ 284,277,823	2.15	\$ 612,476,570
Public Service, Student Services, Institutional Support, Auxiliary Enterprises, & Other Expenses	\$ 718,738,282	74.0%	\$ 531,621,995	2.16	\$ 1,147,346,589
Operation and Maintenance of Plant	\$ 546,157,080	63.6%	\$ 347,492,695	2.08	\$ 723,966,280
Hospital Services	\$ 766,307,000	57.0%	\$ 436,794,990	2.14	\$ 934,304,484
Athletics	\$ 146,749,895	60.1%	\$ 88,266,594	2.22	\$ 196,057,759
Construction	\$ 1,445,745,569	73.3%	\$ 1,059,286,025	2.17	\$ 2,296,743,960
<i>Total Non-Payroll Spending</i>	<i>\$ 4,488,231,774</i>		<i>\$ 3,060,208,716</i>		<i>\$ 6,544,425,717</i>
Room & Board	\$ 549,024,847	100.0%	\$ 549,024,847	1.59	\$ 874,761,289
Off-campus Rent & Food	\$ 2,313,698,376	100.0%	\$ 2,313,698,376	1.59	\$ 3,686,415,622
Books & Supplies	\$ 266,317,783	65.0%	\$ 173,106,559	1.88	\$ 325,994,272
Apparel & Other Basic Needs	\$ 454,769,776	99.0%	\$ 450,222,079	1.88	\$ 847,858,219
Off-campus Meals & Entertainment	\$ 832,082,463	99.0%	\$ 823,761,639	1.99	\$ 1,635,413,981
<i>Total Student Spending</i>	<i>\$ 4,415,893,246</i>		<i>\$ 4,309,813,499</i>		<i>\$ 7,370,443,383</i>
Earnings					
	Total	% in Michigan	Total Earnings in MI	Multiplier	Total Earnings
Total Earnings	\$ 7,095,433,109	98.8%	\$ 7,008,568,830	1.739	\$ 12,185,494,320
Jobs					
	Total	% in Michigan	Total Jobs in MI	Multiplier	Total Jobs
Faculty	19,281	98.2%	18,924	1.649	31,201
Staff	52,410	98.8%	51,796	1.748	90,548
Total	71,691	98.6%	70,720	1.722	121,749
Total Economic Footprint					
	Spending	Earnings	Jobs		
Direct	\$ 14,378,591,046	\$ 7,008,568,830	70,720		
Indirect	\$ 9,541,542,901	\$ 5,176,925,490	51,029		
Total	\$ 23,920,133,946	\$ 12,185,494,320	121,749		

Source: Michigan's public universities, College InSight, BEA RIMS II Multipliers, 2012 Consumer Expenditure Survey
 Analysis: Anderson Economic Group, LLC

ALUMNI AT PUBLIC UNIVERSITIES IN MICHIGAN

Michigan's public universities provided us with detailed alumni data by Michigan county, by U.S. state, and by country. We used this information to estimate the number of alumni living in Michigan, as well as their earnings.

Alumni Earnings

We estimated alumni earnings in Michigan using data from the universities and the Current Population Survey. Each university provided us with the number of alumni in Michigan by highest degree earned at the universities. We then calculated total earnings by multiplying the number of alumni by educational attainment by the statewide average employment rate by educational attainment level and the average earnings in Michigan for those who are employed by educational attainment level, as reported in the CPS. Note that this entails the assumption that the average employed graduate from one of the fifteen public universities has the same employment rate and average earnings as the average Michigan resident of a similar educational attainment level.

TABLE A-4. Alumni and Alumni Earnings in Michigan by Degree Earned, 2012

	Number of alumni in Michigan ^a	% Employed	Average Earnings	Total Earnings (millions)
Certificates/Assoc.	58,548	68.3%	\$30,784	\$1,231
Bachelor	856,931	69.9%	\$46,688	\$27,974
Advanced	<u>365,182</u>	73.1%	\$65,045	<u>\$17,352</u>
Total	1,280,661			\$46,556

*Source: Michigan's public universities, Current Population Survey
Analysis: Anderson Economic Group, LLC*

- a. Due to differences in reporting guidelines and address validity, the numbers used to calculate alumni earnings do not match the number of alumni by Michigan county.

Appendix B. About the Authors

ANDERSON ECONOMIC GROUP

Anderson Economic Group, LLC was founded in 1996 and today has offices in East Lansing, Michigan and Chicago, Illinois. AEG is a research and consulting firm that specializes in economics, public policy, financial valuation, and market research. AEG's past clients include:

- *Governments* such as the states of Michigan, North Carolina, Kentucky, and Wisconsin; the cities of Detroit, Cincinnati, Norfolk, and Fort Wayne; counties such as Oakland County, Michigan, and Collier County, Florida; and authorities such as the Detroit-Wayne County Port Authority.
- *Corporations* such as GM, Ford, Delphi, Honda, Taubman Centers, The Detroit Lions, PG&E Generating; SBC, Gambrinus, Labatt USA, and InBev USA; Spartan Stores, Nestle, automobile dealers and dealership groups representing Toyota, Honda, Chrysler, Mercedes-Benz, and other brands.
- *Nonprofit organizations* such as Michigan State University, Wayne State University, University of Michigan, Van Andel Institute, the Michigan Manufacturers Association, United Ways of Michigan, Service Employees International Union, Automation Alley, and the Michigan Chamber of Commerce.

Please visit www.AndersonEconomicGroup.com for more information.

AUTHORS

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Mr. Horwitz is a Consultant at Anderson Economic Group, working in the Public Policy and Economic Analysis practice area. Mr. Horwitz' work includes research and analyses for a range of AEG clients representing both the public and private sectors.

Mr. Horwitz's recent work includes an assessment of the effects of personal property tax reform in Michigan, an assessment of the effects of proposed reforms to state pension and retiree health care systems, analyses of the fiscal condition and tax policies of Michigan's state and local governments, and a review of tax incentive programs administered by the states of Michigan and Kentucky, respectively.

Prior to joining AEG, Mr. Horwitz was the Coordinator of Distribution for the Community Center of St. Bernard near New Orleans, where he oversaw the distribution of donated food, clothes, and household supplies to low-income residents of St. Bernard Parish and New Orleans' Lower Ninth Ward.

Mr. Horwitz holds a Master of Public Policy from the Harris School of Public Policy at the University of Chicago and a Bachelor of Arts in Physics and Philosophy from Swarthmore College.

Samantha Superstine

Ms. Superstine is a Senior Analyst at Anderson Economic Group, working in the Public Policy and Economic Analysis practice area. Her background is in economic analysis and tax policy, and energy policy and infrastructure development.

Ms. Superstine's recent work includes economic and fiscal impact analyses of proposed tax policies and business plans, assessing potential modifications to current state budgets and policies, and evaluating and benchmarking economic performance for regions across the nation.

Prior to joining AEG, Ms. Superstine worked primarily in the non-profit sector. Past projects have involved working with the City of Chicago to develop infrastructure and policies that supported energy efficiency initiatives and economic development. She has also analyzed policies for transportation-related infrastructure, and its connection to U.S. economic and national security.

Ms. Superstine holds a Bachelor of Arts degree in economics from the University of Michigan. She also attended the University of Chicago, where she earned a Master of Public Policy degree, with honors, from the Harris School of Public Policy.