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ANDERSON ECONOMIC GROUP

Embracing Entrepreneurship:

The URC's Growing Support for Entrepreneurs in Michigan and Throughout the World

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Foreword

I am extremely pleased to introduce this report on the hottest topic in today's economy: entrepreneurship. As a two-time graduate of a URC university, and the founder of two companies, I feel a special kinship with fellow alumni entrepreneurs, and know first-hand how their struggles can produce innovation, employment, and advancement for our society.

Until recently, America's thought leaders tended to concentrate on the role of big business in the economy. Certainly, my home state of Michigan greatly benefited from large corporations like General Motors, Ford, and Chrysler. However, small businesses generate the majority of new jobs in the United States. Furthermore, recently-started companies are often the fastest-growing in the economy, as well as those generating a disproportionate share of investment and innovation.

While we have excellent data on the revenues, products, and employees of well--established businesses, we have not kept very good tabs on our entrepreneurs. This study, one of the largest ever attempted, fills in a lot of what has been missing.

What we found is very encouraging. The alumni of the three major research universities in Michigan—Michigan State University, the University of Michigan, and Wayne State University—are now, and have been for decades, starting and sustaining businesses at an impressive rate. In particular:

- Nearly one in five—19%—of URC alumni have started a new business. This statistic is hugely impressive when you consider the number of alumni from these universities, and the multi-decade breadth of the alumni we surveyed.
- Contrary to the popular myth that most entrepreneurs are twenty-something *wunderkinds*, the highest rate of entrepreneurship was among the more experienced alumni: graduates from the 1960s and 1970s.
- URC alumni entrepreneurs have a wide global reach, starting businesses in all 50 U.S. states, and over 100 different countries.
- Over half of the businesses started by alumni are in fields that are different than the degree they received when they graduated. This suggests that the classical university ideals of creating an educated workforce also benefits society by increasing both innovation and the number of employers.
- There is some evidence that recent graduates are starting businesses several years earlier in their careers. This suggests that the efforts by the universities to acquaint students with entrepreneurship, and provide them with encouragement and resources on the topic, is starting to pay off.

These results arise from a neutrally-worded, very-large sample survey of graduates from the 1930s through the 2010s. With the cooperation of the universities and their alumni offices, this survey was sent to nearly half a million of the 1.2 million living alumni of the three universities. We received over 40,000 valid responses on a range of topics, including whether they had started or acquired a company during their careers, and were neither encouraged nor discouraged

from indicating if they were entrepreneurs. Of course, all survey data is subject to some uncertainty. However, the careful steps taken by our research team, the URC, and other partners, accompanied by the very large number of responses, mean that we can be confident in our findings.

The traditional role of universities has been to prepare students to participate in civil society, and to enhance the base of knowledge and culture in that society. Consistent with that aim, this study shows that Michigan's major research universities are preparing their graduates to enrich society by founding businesses that become both pillars of the community, and foundations of the economy of the future.

Patrick L. Anderson

Patrick L. Anderson founded Anderson Economic Group, LLC in 1996, and serves as the CEO of that company. He also founded Supported Intelligence, LLC in 2012, and serves as the executive chairman of that firm.

Mr. Anderson is the author of numerous published works, including the just-released The Economics of Business Valuation *from Stanford University Press. He was recognized in 2004 and again in 2008 for "outstanding writing in business economics" by the National Association for Business Economics. Mr. Anderson received his bachelor's and master's degrees from the University of Michigan.*

I. Executive Summary

ABOUT THIS SERIES

This report is part of a series of studies that began in 2007 regarding the impact of the URC institutions (Michigan State University, University of Michigan, and Wayne State University) on specific sectors of the Michigan economy. Past reports have highlighted the life sciences industry, advanced manufacturing, alternative energy, and other sectors. This report focuses on entrepreneurs, who affect nearly every sector in the economy.

REPORT PURPOSE

Universities play an important role in many aspects of our economic prosperity, from advancing technology to educating a productive workforce. What is less often examined is their role in another source of economic progress: entrepreneurship. Entrepreneurs build a business from an idea, a new product, or improve upon an existing business. They coordinate product development, secure funding, build a team, and face many more challenges while starting and growing a business.

Defining Entrepreneurship. For the purpose of this report, we define entrepreneurship as creating a business or acquiring an existing company. We define the entrepreneur as the owner, founder, or co-founder of a firm.[1]

This report examines the ways in which Michigan's URC universities contribute to and support entrepreneurship. Specifically, this report:

- Examines the contribution that URC alumni entrepreneurs have made, by summarizing the results of a large-scale alumni survey on the number, size, type, nature, economic footprint, and location of the thousands of businesses that were founded or acquired by URC alumni;
- Describes the contribution that universities have always made to entrepreneurship by creating technologies that underlie new products and services and educating students that will go on to start or run businesses; and
- Describes the role that URC universities are now playing with increased vigor in fostering entrepreneurship by offering specialized curricula and providing other programs and initiatives that support entrepreneurs as they strive to get their businesses off the ground.

OVERVIEW OF APPROACH

This report examines the URC universities' contributions to entrepreneurship by analyzing extensive survey data on entrepreneurial activity and its connection to URC universities by profiling alumni, and examining the existing curriculum, programs, and other support provided by the universities. To acquire data on URC alumni, the URC hired an independent survey firm, Survey Sciences Group, LLC (SSG), to conduct an "Alumni Impact Survey." The goal of this alumni survey was to better understand their occupations, industries, entrepreneurial endeavors, and geographies.

1. Our discussion of URC alumni entrepreneurs is based on responses from an Alumni Impact Survey, which is described on this page in "Overview of Approach." The survey asked alumni whether or not they had started or acquired a business.

AEG reviewed the survey questions to ensure question framing and phrasing would not bias the results.[2] SSG administered the survey, which had 40,752 complete responses out of the nearly half a million (452,608) URC alumni surveyed.[3]

SSG provided AEG with the survey data, which we used to identify common characteristics of URC alumni entrepreneurs, as well as estimate the economic footprint of firms started by alumni in terms of revenue, payroll, and employees. This is discussed in detail in "To see the survey questions pertaining to URC alumni entrepreneurs, see Exhibit 2 "2013 URC Alumni Survey Instrument, Section B: Entrepreneurship," on page B-4. We discuss the survey instrument itself in Appendix B." on page A-5. This report also uses data from the URC universities and interviews with URC faculty involved in entrepreneur programs at each university.

SUMMARY OF FINDINGS

1. The primary connection of the URC universities to entrepreneurship is educating a large number of people who are more likely than average to start or acquire a business.

19.1% OF URC ALUMNI RESPONDENTS HAVE FOUNDED OR CO-FOUNDED A BUSINESS.

Of the 45,432 respondents who completed the question, 8,673 responded positively when asked whether or not they had ever started a business. As the survey is representative of the URC population as a whole, we can estimate the total number of URC alumni that have founded or co-founded a business. Of the URC's 1.2 million living alumni, we estimate nearly 229,000 have started at least one business. This does not include alumni entrepreneurs who have acquired a business.

SURVEY RESPONDENTS REPORTED STARTING 14,435 BUSINESSES TO-DATE, WHICH AMOUNTS TO 1.67 BUSINESSES ON AVERAGE PER ALUMNI ENTREPRENEUR.

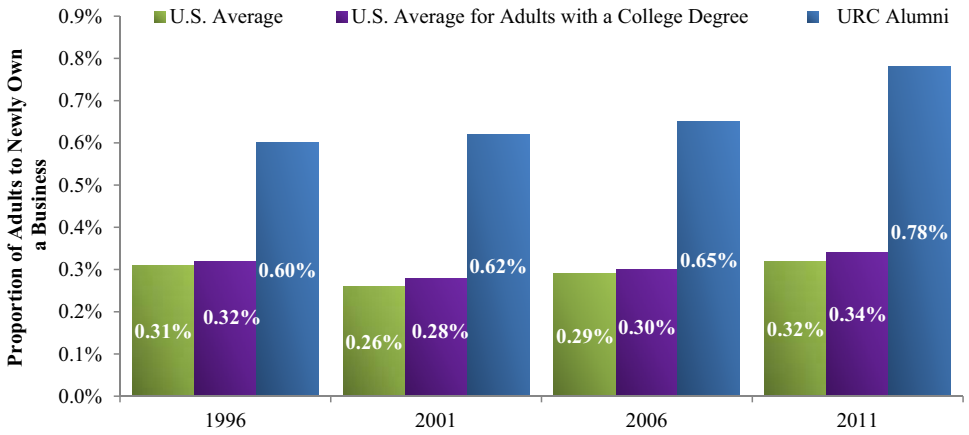
According to the survey, URC alumni entrepreneurs have started 1.67 businesses on average. We estimate that more than 380,000 firms have been started to-date by URC alumni entrepreneurs.[4]

THE RATE OF ENTREPRENEURIAL ACTIVITY AMONG URC ALUMNI IS MORE THAN TWICE THAT OF THE U.S. AVERAGE SINCE 1996.

2. Respondents were invited to participate in a general alumni survey. Questions included in the survey did not require respondents to self-identify as entrepreneurs. See "Survey Methods and Potential Sources of Bias" on page A-3.
3. Not all respondents answered every question.We discuss partial and complete survey responses, as well as how the response rate is more than sufficient for our sample size in "Responses" on page A-2.
4. See "To see the survey questions pertaining to URC alumni entrepreneurs, see Exhibit 2 "2013 URC Alumni Survey Instrument, Section B: Entrepreneurship," on page B-4. We discuss the survey instrument itself in Appendix B." on page A-5 for information about our estimates.

As shown below in Figure 1, the rate of entrepreneurial activity, or proportion of people that become new business owners each year, is twice as high among URC alumni than the U.S. average.[5] These new business owners include people who either started a new business or acquired an existing one.

FIGURE 1. Rate of Entrepreneurial Activity 1996 to 2011



Data: U.S. Total from the Kauffman Foundation of Entrepreneurship; 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

As shown above, from 1996 to 2011, the entrepreneurial activity among URC graduates ranged from 0.60% and 0.78%. During that same time, the average among U.S. adults ranged from 0.26% to 0.32%, and the average among adults with a college education was between 0.32% and 0.34%. This does not point to the URC universities as the "sole cause" for alumni entrepreneurial activity, particularly when only a small proportion of URC alumni have a degree only from a URC university.[6] It does suggest, however, that obtaining a degree from a world-class higher education institution may make a difference in entrepreneurial activity.

2. URC alumni appear to be more successful than the average entrepreneur in the U.S.: the URC success rate for firms that have been operating since 2005 is nearly 70% in comparison to the national average of just under 45%.

5. The Kauffman Foundation of Entrepreneurship measures entrepreneurial activity as U.S. adults between the ages of 20 and 64 that did not own a business in the previous year, but *did* own a business in the year they were being polled. This was calculated by the Kauffamn Foundation both for all U.S. adults as well as those with at least a college degree. Source: Robert W. Fairlie, "Kauffman Index of Entrepreneurial Activity 1996-2011," *Kauffman Foundation of Entrepreneurship*, March 2012.
6. See "Educational Attainment Outside of the URC" on page 19.

Firms started in 2005 by URC graduates are approximately 1.5 times as successful at remaining in operation as the average business started in the same year.[7] Of the businesses started or purchased by URC alumni in 2005, 69% reported still being in operation at the time of the survey. The U.S. Census reported 43% of all U.S. businesses started that year to be in operation five years later (2010).

This high success rate still holds when we look beyond firms started or acquired in 2005 to all firms reported in the survey. Of the firms ever started or acquired by URC alumni, 58% were still in operation and run by their founders at the time of the survey, and 11% are still in operation but have been acquired from URC alumni by other companies or entrepreneurs. This gives a combined "success rate" of 69% among firms ever run by URC entrepreneurs. If we apply the survey success rate to our estimates of total firms started by the URC, we estimate about 220,000 are still in operation and 42,000 have been acquired.

3. While nearly half of the companies started by URC alumni are located in Michigan, the URC's entrepreneurial reach touches all 50 U.S. states and 100 different countries.

Over 10,000 businesses were started in the U.S. by survey respondents. Canada, India, and China had the second most business starts by URC grads with 116, 75, and 50 businesses, respectively. There were at least four, and in most cases many more, businesses started by URC alumni in each U.S. state. Other than Michigan, URC alumni started the most companies in California, New York, and Illinois, with at least 500 companies started by survey respondents in each.

Many new businesses were started by alumni in large metropolitan areas such as Los Angeles, New York, Chicago, San Francisco, Houston, and Washington, D.C. See Map 2, "URC Alumni Company Starts by U.S. State," on page 24 and Map 3, "URC Alumni Company Starts by U.S. City," on page 25.

4. URC-alumni firms employed an estimated 5.5 million people in 2012.

Respondents reported employing 201,173 people in 2012. This is an underestimate of the total employed for all URC-alumni-started firms that were operating in 2012 because it only represents the firms in the survey. We estimate that the firms operated by URC alumni in 2012 employed 5.5 million, which is roughly equal to the population of Finland. For more information on our methods please see "To see the survey questions pertaining to URC alumni entrepreneurs, see Exhibit 2 "2013 URC Alumni Survey Instrument, Section B: Entrepreneurship," on page B-4. We discuss the survey instrument itself in Appendix B." on page A-5.

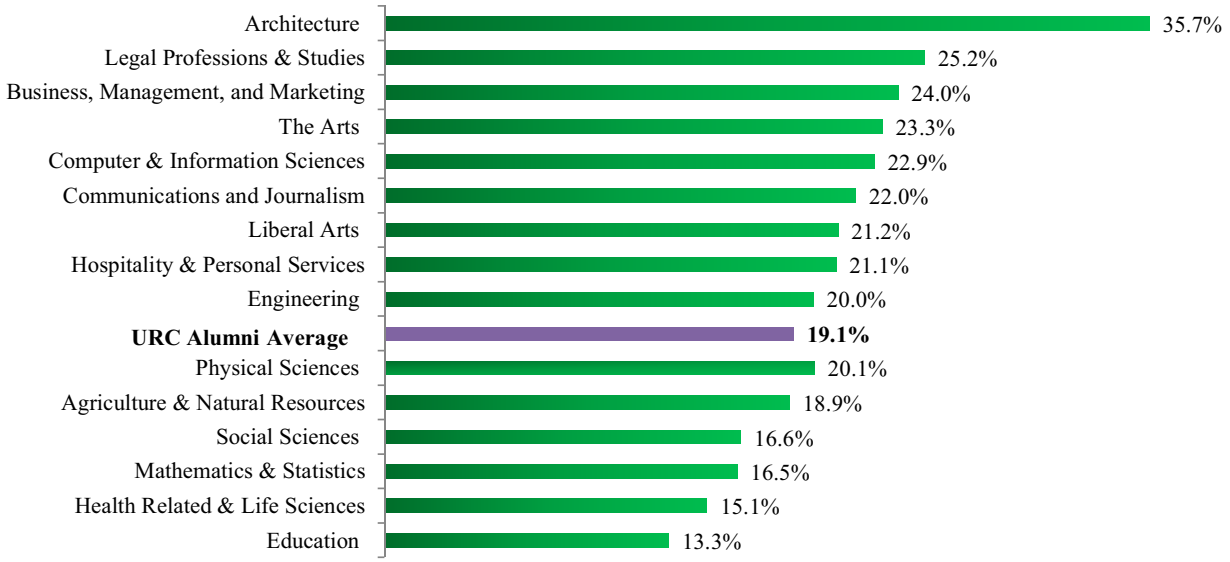
7. Business Dynamic Statistics, which is collected by the U.S. Census Bureau, publishes annual data on firm exits and entrances. The most recent data available was for 2010. Therefore, we used 2005 start dates to determine the most current five-year success rates for U.S. firms on average. To access this data see: http://www.census.gov/ces/dataproducts/bds/data.html.

5. URC graduates that have started a business come from all majors and work in all industries, suggesting that the URC universities excel in preparing graduates with a broad base of skills useful in business.

ACCORDING TO THE SURVEY DATA, THERE WERE 10 DEGREE CATEGORIES WITH GRADUATES THAT HAD A HIGHER RATE OF STARTING A BUSINESS ON AVERAGE.

As previously discussed, 19.1% of URC survey respondents indicated that they had started at least one business. As shown below in Figure 2, certain majors have a higher rate of entrepreneurial activity than this, while others had lower. Not surprisingly, alumni were more likely to have started a business if they held a degree in law, business, or architecture than an alum who majored in social sciences. What is surprising is that alumni who majored in the sciences and other technology-related fields did not have a higher likelihood of starting a business than the average URC alum.

FIGURE 2. Share of Alumni in Each Degree Category That Have Started at Least One Business



Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

AN ENTREPRENEUR'S MAJOR DOES NOT CLEARLY POINT TO THE INDUSTRY IN WHICH HE OR SHE WILL START A BUSINESS.

For *most* URC alumni, their college major is not closely related to the industry in which they start or acquire a business. This indicates that the overall URC experience, rather than an individual major, helps to prepare students for careers. Table 1 on page 6 shows the most common industries for URC alumni to start businesses in and the most prevalent major of those business owners. We also indicate the share of entrepreneurs who were in those prevalent majors.

TABLE 1. Majors of URC Alumni That Started a Company for Selected Industries

Industry of First Company Started	Most Prevalent Majors for Each Industry	Share of Entrepreneurs with Prevalent Major(s)	Share of Entrepreneurs with Other Majors
Information Communications	Engineering and Liberal Arts	19.5% and 15.7%	64.8%
Finance and Insurance	Business, Management, and Marketing	37.1%	62.9%
Educational Services	Education and Social Sciences	28.0% and 19.2%	52.7%
Health Care and Social Services	Health Related and Life Sciences	41.5%	58.5%

Data: 2013 URC Alumni Survey

Analysis: Anderson Economic Group, LLC

THE URC UNIVERSITIES SUPPLY ENTREPRENEURS AND OTHER EMPLOYERS WITH INDIVIDUALS EDUCATED AND TRAINED TO CONTRIBUTE TO THE ECONOMY.

The URC universities contribute to Michigan's economy by supplying an educated workforce to the state. Some of these workers will be involved in start-up entities, while others will bring innovation and other skills to existing companies. The three fields of study with the highest demand among employers are Business, Computer Science, and Engineering, according to a survey conducted by the National Association of Colleges and Employers.[8] In FY 2011, the URC awarded 8,937 degrees in these "high demand" fields or 28% of all degrees. For further discussion see "Cultivating Talent" on page 42.

6. In the past decade, the URC universities built upon their conventional roles to provide more active support for entrepreneurship by adding entrepreneurial programs and services for students, faculty, alumni, and the surrounding community. During that period, graduates of URC universities have begun to start their businesses sooner.

URC SCHOOLS HAVE ADDED NEARLY 40 PROGRAMS IN THE PAST DECADE TO ADDRESS THE NEEDS OF ENTREPRENEURS THROUGHOUT THE PROCESS OF STARTING A BUSINESS.

There are many challenges associated with starting a business, as well as keeping it in operation. Assistance with different components of starting a business is provided by the multitude of resources at the URC universities. Each of these programs directs focus to the key steps in forming a business. See Exhibit 1, "Catalogue of Entrepreneur Programs and Resources at the URC Universities," on page 51 for the specific support services offered, as well as who has access to them, including students, alumni, faculty, or the community.

8. The National Association of Colleges and Employers' *Job Outlook 2011 Report* surveyed approximately 200 employers from a variety of sectors. For degree category descriptions see Appendix A of Erin A. Grover, Colby W. Spencer, and Alex L. Rosaen, "Empowering Michigan, Sixth Annual Economic Impact Report of Michigan's University Research Corridor," *Anderson Economic Group*, East Lansing, January 4, 2013.

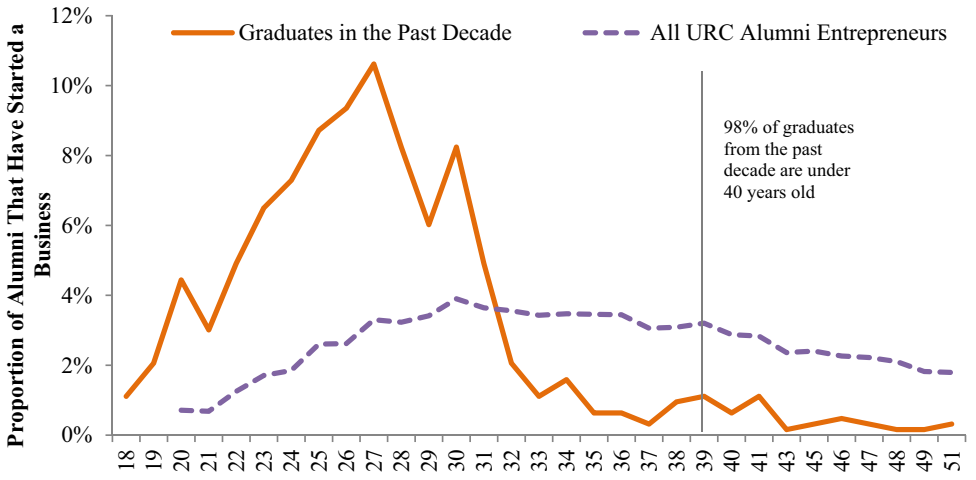
For further discussion see "Providing Tools: The Academic Foundation at the URC Universities" on page 38 and "Supporting The Entrepreneurial Process: The Evolving Role of the URC Universities" on page 50.

URC GRADUATES FROM THE PAST DECADE HAVE STARTED THEIR FIRST BUSINESSES FOUR TO EIGHT YEARS SOONER THAN URC ALUMNI IN THE PAST, CREATING MORE OPPORTUNITIES OVER THEIR LIFETIME TO ESTABLISH ADDITIONAL COMPANIES.

Among URC entrepreneurs who have graduated from a URC university in the past decade (2003 to 2012), 70% started their first company between the ages of 23 and 31. This means that URC alumni from the past decade are starting their first business between four and eight years sooner than the average alumni from a URC university. Additionally, among survey respondents, the younger a URC graduate starts a business, the more likely they are to have at least one co-founder.

Figure 3 below shows the share of firms started by alumni age at the firm's birth for URC alumni who have graduated in the past decade. In this figure we note that approximately 98% of graduates in the last decade are 40 and under.

FIGURE 3. Age of URC Alumni When Starting Their First Company



Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

ABOUT ANDERSON ECONOMIC GROUP

Anderson Economic Group, LLC (AEG) offers research and consulting services in economics, public policy, finance, and market analysis. For more information on AEG, see Appendix C and visit www.AndersonEconomicGroup.com.

II. An Introduction to Entrepreneurship

The emergence of innovating giants such as Bill Gates, Steve Jobs, Mark Zuckerberg, and the like, has rapidly re-introduced "entrepreneur" as a popular buzzword. Although entrepreneurs have had a substantial presence throughout U.S. economic history, there is no universal meaning of the words "entrepreneur" or "entrepreneurship." Therefore, to begin this section, we define both for the context of this report. We then describe the challenging and often frustrating process of starting a business. We also discuss the high rate of failure for small businesses, particularly during the first crucial years of the establishment process. We close with a brief introduction of how the URC universities foster entrepreneurship, which is contained in the last three chapters of this report.

DEFINING ENTREPRENEURSHIP

Entrepreneurship can mean different things to different people. The irish economist Richard Cantillon described entrepreneur as a risk-bearer as early as the eighteenth century.[9] Loosely translated from French, entrepreneur means "to undertake." Entrepreneurs embark on risky undertakings, with very little assurance of an end reward. Those undertakings generally, in some capacity, create wealth, whether it be in terms of knowledge, innovation, or employment.

An entrepreneur may create an innovative way of marketing, distributing, or branding an existing product, or invent something entirely new. Or an entrepreneur can be someone who acts with the perspective of a business owner, whether it be in a management, advisory, or investment capacity. Entrepreneurship can refer to the inclination to seek out opportunities to create a brand new business.

For the purpose of this report, **we define entrepreneurship as creating a business or acquiring an existing firm; the entrepreneur is defined as the owner, founder, or co-founder of that firm.** The URC Alumni Survey did not ask respondents to self-identify as an "entrepreneur," rather it asked within a battery of questions if they started a company or purchased a business.[10] Furthermore, how self-employed individuals answered those questions would dictate whether they would be included in our discussion of URC alumni entrepreneurs.

Entrepreneurs are critical elements to the success, prosperity, growth, and opportunity in any economy. Every firm from a doctor's private practice to an innovative bio-tech company contributes to the market by providing goods and/or services to consumers, as well as support employment. Even failing or failed

9. Vivian, Walsh, *The New Palgrave Dictionary of Economics, 2011 Version,* pp. 150-154.

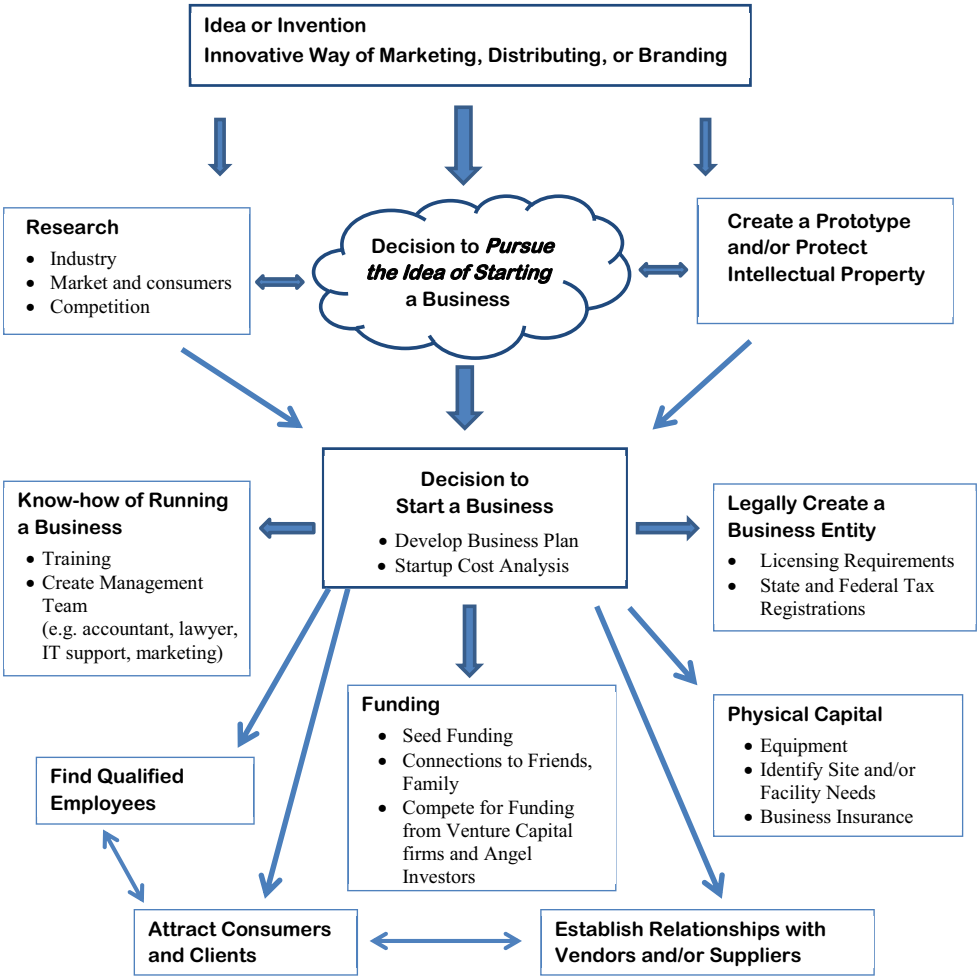
10. The introductory letter given to each respondent from their alma mater's president described the purpose of the survey to be to collect information about alumni occupations, industries, entrepreneurial endeavors, and geographies, so as to better understand the impact that URC alumni have on the economies of Michigan, the United States, and the world.

firms are significant in the U.S., a dynamic economy, because it forces firms to constantly adjust to external events and changing consumer preferences. We provide context regarding firm failures in the U.S. in "Rate of Firm Survival" on page 12.

WHAT IT MEANS TO START A BUSINESS

Perhaps the most common perception of an entrepreneur is starting a new business, commonly referred to as a start-up. While there are similar processes through which entrepreneurs navigate to get their businesses off the ground, it is not a linear process, nor are there "steps" per se. Not every business has a product or cutting edge practice. How a business is built varies depending on the industry, idea, and entrepreneur. However, there are some common elements when creating a start-up, which we depict generally below in Figure 4.

FIGURE 4. An Illustration: the Process of Starting a Business for Entrepreneurs



Source: Anderson Economic Group, LLC

Starting a business generally begins with an idea. That idea can be anything from improving upon a current product or practice to meeting a need in the market. Wonderfully, but rarely, an idea can lead to a ground-breaking invention. Certain ideas have varying first steps: the type of idea and the entrepreneur tend to dictate whether the venture requires a prototype, intellectual property advice, market research, or other due diligence before a decision is made about actually starting a business. Pushing past pursuing the idea of starting a business and taking action is when a dreamer becomes an entrepreneur.

An entrepreneur must be passionate and driven in order to establish enough credibility and support to move a venture forward in the business process. Unfortunately, there are obstacles entrepreneurs must overcome to successfully start a business that are unrelated to an entrepreneur's level of motivation. In this report, we address some of these hurdles, which include legally creating a business entity, obtaining funding, and knowing how to run a business. See Figure 4 on page 9 for more detail of these obstacles. We provide a brief discussion of this part of the entrepreneurial process because very few people, particularly first-time entrepreneurs, know how to accomplish each of these feats without taking the initiative to connect with supportive resources.

Creating a New Business Entity

Deciding on the name of the business itself is a significant step toward beginning operations. In addition to reflecting brand identity, an entrepreneur needs to ensure it is properly registered and not already trademarked.

Creating a legal business entity early on can protect an entrepreneur's liability for debts incurred by the business. Without this legal protection, the risk of bankruptcy lies on the owner and not the business, putting not only the business, but also personal property at risk. Different types of businesses have inherent advantages and disadvantages. For instance, a sole proprietorship requires less paperwork than a limited liability corporation (LLC); a sole proprietor obtains a certificate to do business, whereas the owner of an LLC must file more documents and remit fees to the state. However, an LLC has more protections for the owner than a sole proprietorship.

Another legal consideration for entrepreneurs while marketing an invention is protecting their intellectual property and applying for patents. Additionally, there may be business licensing and permit requirements depending on the type of business. An entrepreneur must also register with state and federal tax authorities, consider purchasing business insurance, as well as establish an online presence and register a domain name. An entrepreneur also must decide if or when to establish a physical location, and then consider facility requirements, as well as local zoning laws.

Business "Know-How"

Business know-how is not inherent or necessarily common for all entrepreneurs. When starting any business, a learning curve inevitably plays a role in achieving success. Unfortunately, making a mistake in the process can cost an entrepreneur money, and, in some cases, the entire business.

Starting a business requires a significant amount of planning. Identifying start-up needs and costs, as well as achieving access to available resources and financing options is challenging. Creating a business plan can help the entrepreneur to look ahead, create a strategy, and prepare for both problems and opportunities. The business plan acts as a blueprint for the entrepreneur, although it often changes as a start-up evolves. Generally, it includes a description of the company, the product or service offered, an analysis of the competition, and a financial analysis. A business plan is also one of the first steps toward acquiring financing; investors, even family and friends, will want to know their investment is backed by a solid plan that will help to ensure profitability.

Beyond the ability to plan, most entrepreneurs need to possess a diverse skill set because very few can afford to hire staff in the beginning. An established business, however, usually has several employees who each play a different role in the firm's success. For a start-up, there are usually just as many roles to fill, but far fewer people to fill them. For example, most businesses need some type of marketing, someone to keep track of the books, some type of IT support, and, if a company gets big enough, human resources.

Hopefully, the entrepreneur possesses some of these skills, or has the aptitude to learn them. In many cases, however, an entrepreneur may be lacking in some areas, which presents a challenge to the success of the enterprise. The "know-how" may be one of the leading contributors to business success or failure. See "Rate of Firm Survival" on page 12 for the number of new firms that succeed and remain in operation.

Funding

Obtaining funding is one of the most difficult obstacles for most entrepreneurs. It may seem like a simple concept, but running out of money can cause a business to fail. Different types of funding are associated with various stages in the entrepreneurial process. However, regardless of when an entrepreneur needs funding, it is one of the key components to pursuing their endeavor. Below we outline some of the key components of entrepreneurial funding and their difficulties.

Personal Loans. Many small firms rely on personal loans to get off the ground. Early on, it is incredibly difficult to find investors, which is why some entrepreneurs turn to family and friends. Other first-time business owners use their per-

sonal savings, pursue private loans from the bank and/or put a second mortgage on their home.

Seed funding. Pre-seed and seed funding is essentially pre-production capital that allows the entrepreneur to complete the beginning stages of development for their product or service (business plan, market research, prototype creation, etc.) in order to make it commercially viable and attractive to potential investors. The level of competition is high at this particular phase due to the level of risk and uncertainty involved, as well as potential length of delay with regard to return on investment. Money can come from institutions as well as friends, family, and neighbors. Nowadays, the internet is a primary vehicle through which various contributors can donate funds to help ensure the successful creation or continuation of a business venture.[11]

Venture Capital, Private Equity, Angel Investment. Venture capital (VC) and private equity (PE) capture a different stage at which entrepreneurs require funding. Both VC and PE seek to take existing companies and make them more financially successful. Angel investment differs from VC funding in that they have different structures through which funding is approved, with VC decisions tending to follow a more defined set of rules. Angel investors typically invest their own funds, in contrast to VC funds, which are professionally-managed pools of investors' money. Additionally, VC funding may be orders of magnitude larger than funding from an Angel Investor.

RATE OF FIRM SURVIVAL

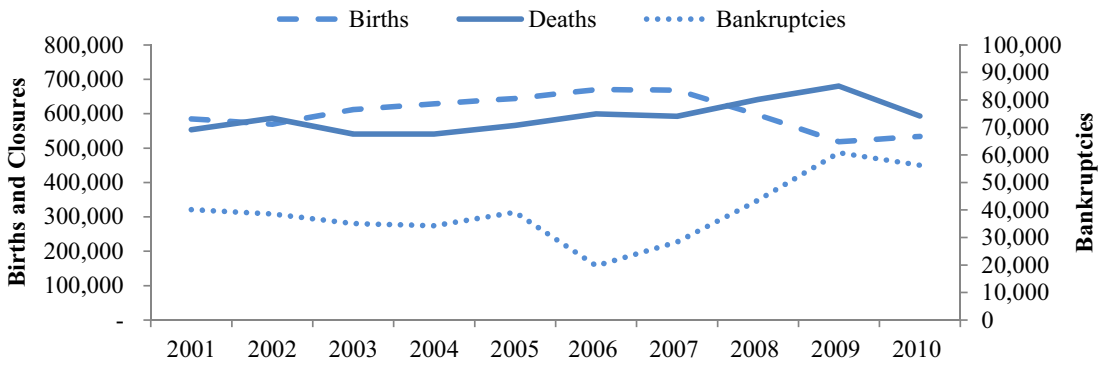
All of the challenges listed above contribute to the success or failure of a new enterprise. Being an entrepreneur requires more than simply creating a company; it involves the assumption of sometimes enormous risk. Given the time, effort, and money involved throughout this process, it is not surprising that there is a high failure rate for small businesses, particularly in the first crucial years of establishment.

The Small Business Administration (SBA) compiles annual data on the number of U.S. business "births," or firms that enter the market, as well as the "deaths," which are firms that exit the economy.[12] In Figure 5 on page 13, we show the number of births, deaths, and bankruptcies for employer firms, or firms with at least one employee, from 2000 to 2010.[13]

11. Websites such as Kickstarter encourage individuals from around the world to take part in the investment process, albeit for typically small amounts.

12. The SBA defines firm births as new, original establishments, which were not open in the previous year, and firm deaths as closed original establishments for that year. We note that not all deaths are a firm being forced out of the marketplace— an owner could wind down his or her business to retire, or sell to an individual or entity that elects to change its name.

FIGURE 5. Births, Deaths, and Bankruptcies



Data: U.S. Small Business Administration, United States Courts
Analysis: Anderson Economic Group, LLC

As shown above, during both good and bad economic times, over half a million U.S. firms left the marketplace annually. The only positive net change in firms (when there were more firm births than deaths) was in 2001, and then from 2003 through 2007. Unsurprisingly, the number of bankruptcies steadily increased from 2006 until the peak of the recession in 2009.

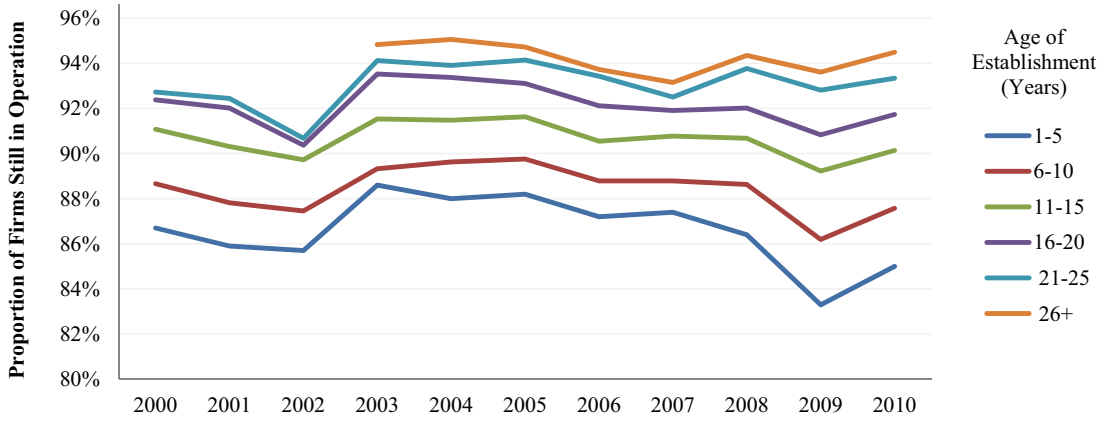
Survival by Age of Establishment. Start-ups are particularly vulnerable to the risk of "death" for many reasons, which may vary from competing with more established firms to difficulty attracting investors and funding. Being new has inherent disadvantages in an economy where there are so many businesses from which to choose. The data support the sense that the longer a firm is established, the higher the likelihood that it will remain in operation.

In Figure 6 on page 14, we show the "survival rate," or proportion of establishments still in operation in relation to how long they have been in operation.[14] While the trends for businesses of all ages follow similar patterns during periods of economic growth and decline, the rate of firms remaining in the marketplace increases with company age.

13. We note that this data is reliant on several key factors regarding when a business is technically "born" or "dies." When an entrepreneur formally registers with the proper government entity may vary from business to business, and the death of a firm also depends on when a business actually notifies the aforementioned entities.

14. The terms establishment and firm mean different things. The U.S. Census defines an establishment as a single physical location where business is conducted or where services or industrial operations are performed. A firm may consist of several establishments. Therefore, according to their definition, there are far more establishments in the economy than firms.

FIGURE 6. Establishment Survival Rate by Age, 2000-2010

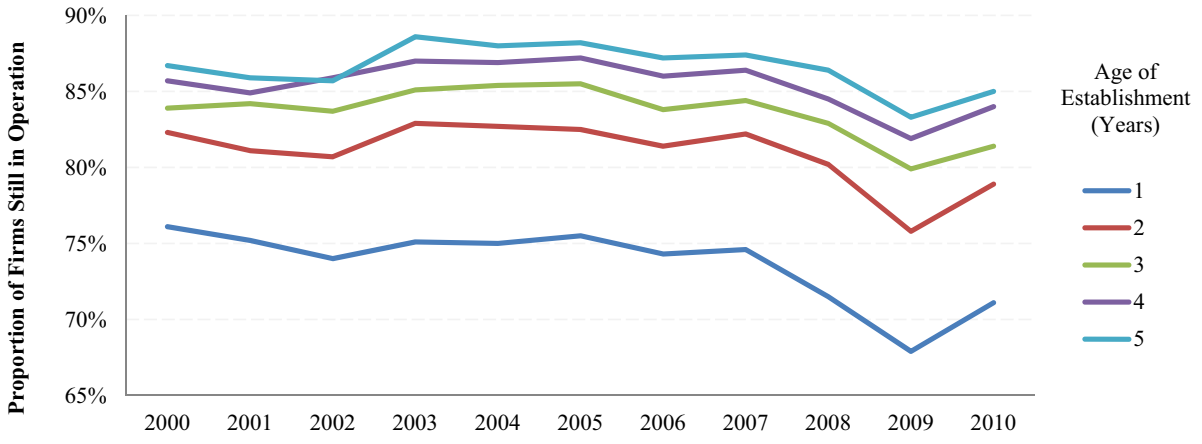


Note: Data collection began in 1977, therefore data on establishments associated with firms aged 26+ is only available from 2003 onwards.

Data: U.S. Census Bureau, Business Dynamic Statistics
Analysis: Anderson Economic Group, LLC

Early on, even one year can make a difference for a business. In Figure 7 below, we show the survival rate of establishments within their first five years in operation. By 2010, 83% of firms that were established in 2005 remained in operation; of the firms established in 2009, 71% remained. From 2000 through 2010, the difference in the proportion of businesses that remained in operation after their first year and their fifth is roughly 10%.

FIGURE 7. Early Establishment Survival Rate, 2000-2010



Data: U.S. Census Bureau, Business Dynamic Statistics
Analysis: Anderson Economic Group, LLC

ROLE OF THE URC UNIVERSITIES IN FOSTERING ENTREPRENEURSHIP

The URC universities primarily contribute to entrepreneurship in three ways:

1. Educating a large number of people who choose to start businesses;
2. Exposing students to cutting-edge research and providing them with the tools to enter the business world; and
3. Making resources available for aspiring entrepreneurs that provide support throughout the process of starting a business.

In the remainder of our report, we dedicate a chapter to each of these topics.

First we discuss the hundreds of thousands of URC alumni who have started a business in "Supplying Entrepreneurs: URC Alumni." This section discusses our analysis of the survey results from the URC's 2013 Alumni Impact Survey which was conducted by an independent survey firm.[15] The goal of this alumni survey was to better understand the occupations, industries, entrepreneurial endeavors, and geographies of URC alumni. Using the survey data, we examined the contribution that thousands of URC-alumni firms have made in terms of size, type, nature, location, and the economic footprint of those that continue to operate today.

Next, we discuss how the URC exposes students to research and provides them with either foundational or specialized skills for their future aspirations in the "real world" in "Providing Tools: The Academic Foundation at the URC Universities." In this section, we discuss the conventional role of research and commercialization activities on campus, as well as their provision of a talented, educated workforce to the economy.

Finally, we discuss how the URC universities are moving beyond this long-standing role and actively engaging entrepreneurs in "Supporting The Entrepreneurial Process: The Evolving Role of the URC Universities." In this section, we discuss the entrepreneurial ecosystem that the URC universities are creating on-campus and contributing to off-campus. We also list and describe some of the services and resources that the URC universities make available for entrepreneurs, which include current students, alumni, faculty, and, in some cases, the surrounding community.

15. As discussed in "Overview of Approach" on page 1, in order to acquire data on URC alumni, the URC hired an independent survey firm, Survey Sciences Group, LLC (SSG), to conduct an "Alumni Impact Survey." Prior to releasing the survey, AEG, the URC, and SSG worked together to frame the questions used in the survey of alumni. SSG administered this study, and provided AEG with the survey data. Throughout the remainder of this report, we refer to the survey as the 2013 URC Alumni Survey.

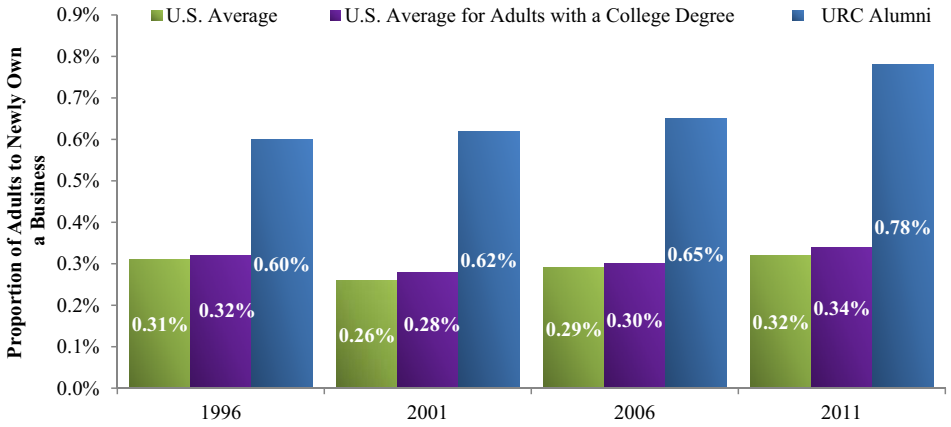
III. Supplying Entrepreneurs: URC Alumni

Attending a URC university not only increases the future earning power for many graduates, but the URC Alumni Survey indicates that URC graduates are also extremely entrepreneurial.[16] Graduates from URC universities have started and purchased businesses all across the United States and the world—they've started or purchased at least one company in every U.S. state, as well as in 100 different countries. In this section, we will highlight characteristics of the URC's alumni entrepreneurs, profile the types of companies started and purchased by URC alumni, and provide a lower-bound estimate for the economic footprint created by URC alumni-companies in 2012.

COMMON CHARACTERISTICS OF URC ALUMNI ENTREPRENEURS

Of the more than 45,000 respondents to the URC Alumni Survey, 19.1% or 8,673, indicated that they had founded or co-founded a business. Applying this rate to all URC alumni, we estimate that nearly 229,000 URC alumni have started at least one company. To put URC graduates' entrepreneurial activity into context, we compare URC alumni to other average rates of entrepreneurship, as defined by the Kauffman Foundation.[17] As shown below in Figure 8, the rate of entrepreneurial activity is nearly twice as high among URC alumni than U.S. adults, as well as those with a college education.

FIGURE 8. Rate of Entrepreneurial Activity, 1996 to 2011



Data: U.S. Total from the Kauffman Foundation of Entrepreneurship; 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

16. See AEG's discussion of human capital and earning power in the URC's sixth Annual Economic Impact Report, released in January of 2013.

17. The Kauffman Foundation of Entrepreneurship created a metric to define entrepreneurial activity. This metric measures the share of U.S. adults between the ages of 20 and 64 that did not own a business in the previous year, but *did* own a business in the year they were polled. This was analyzed both for all U.S. adults and those with at least a college degree. Source: Robert W. Fairlie, "Kauffman Index of Entrepreneurial Activity 1996-2011," *Kauffman Foundation of Entrepreneurship*, University of California, March 2012.

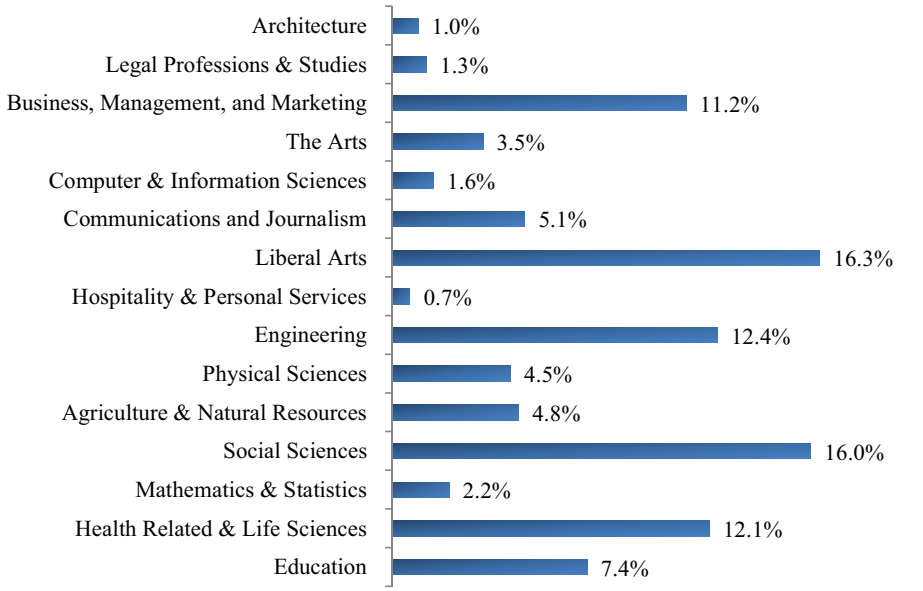
Among all adults aged 20 to 64, entrepreneurial activity ranged from 0.26% to 0.32% between 1996 and 2011. The rate among U.S. adults of the same age with a college degree, the index was slightly higher, ranging from 0.28% to 0.34%. The share among URC graduates of the same age ranged between 0.60% and 0.78%. This does not point to the URC universities as the "sole cause" for alumni entrepreneurial activity, but it suggests that obtaining a degree in general versus obtaining a degree from a world-class higher education institution might make a difference in entrepreneurial activity.[18]

Additionally, entrepreneurial activity (as defined by the Kauffman Foundation's metric) has steadily been increasing among URC graduates. Levels of entrepreneurial activity among the average adult and adults with a college degree has remained relatively flat over the same time periods.

Areas of Study

Data from the survey shows that the majority of URC graduates, 68%, received degrees in business, engineering, health and life sciences, liberal arts, and social sciences from their respective URC alma mater. Figure 9 below shows the distribution of the URC degrees awarded to surveyed alumni.

FIGURE 9. URC Degrees Awarded to Surveyed URC Alumni

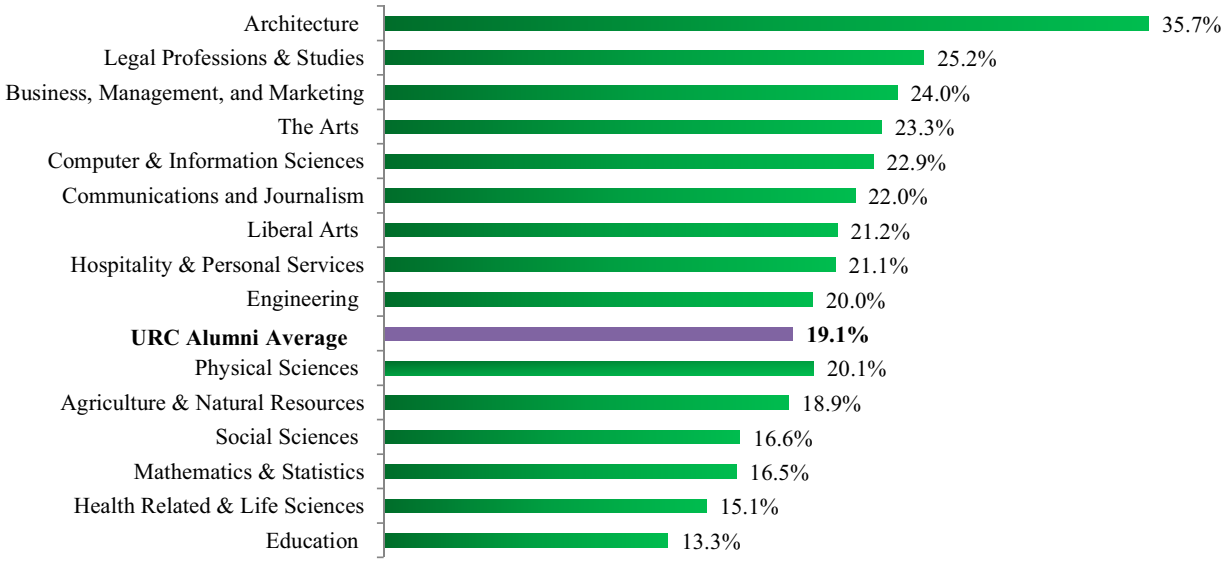


Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

18. All three universities made the top 300 universities by reputation in 2012-13. See "World University Rankings 2012-2013," *Times Higher Education* powered by Thomson Reuters, 2012, http://www.timeshighereducation.co.uk/world-university-rankings/2012-13/world-ranking/institution.

URC alumni entrepreneurs do not follow the same patterns as all URC graduates for their URC degree. As shown below in Figure 10, some degree categories tend to produce more entrepreneurs than the average across all majors, which was 19.1%.

FIGURE 10. Share of Surveyed Alumni in Each Degree Category That Are Entrepreneurs

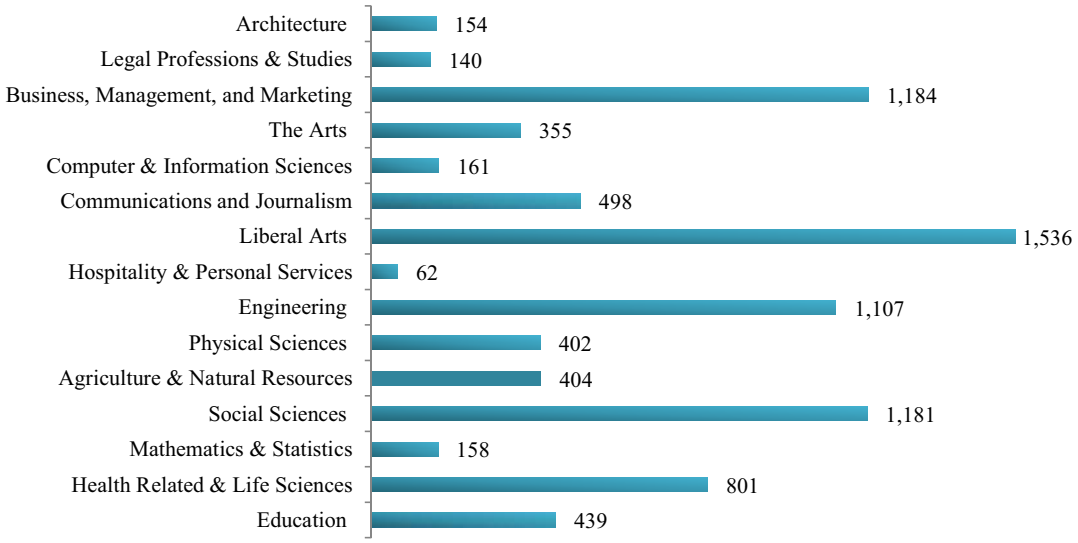


Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

Based on the survey responses, a URC alum's degree concentration can indicate a higher chance of being an entrepreneur. For example, Figure 10 above shows that 35.7% of alumni with an architecture degree have started or purchased at least one business.

This is notably higher than the URC alumni average of 19.1%. Other degrees, such as those in legal professions, business, the arts, computer sciences, and journalism, also produce a statistically significantly larger share of entrepreneurs than the URC alumni average. In Figure 11 on page 19, we show the number of respondents in each degree category who have started a business. By comparing Figure 10 and Figure 11, it is clear that while some majors have a higher likelihood of producing an entrepreneur than others, degree categories like business, liberal arts, engineering, and social sciences produce the largest *volume* of entrepreneurs.

FIGURE 11. Number of URC Alumni Survey Respondents Who Have Started a Business by Degree Category

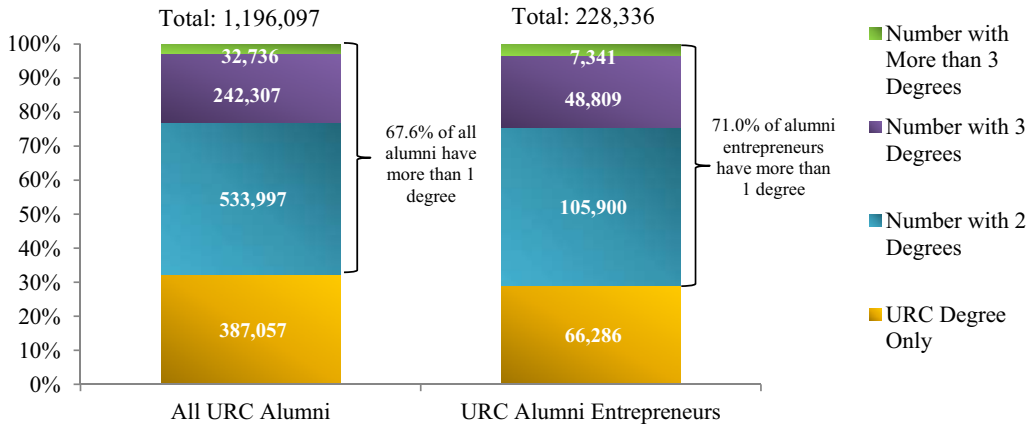


Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

Educational Attainment Outside of the URC

Survey data also revealed that URC graduates are highly likely to attain more than one degree over their lifetime— 67.6% of survey respondents have earned another degree other than at a URC university, and 20.3% have earned three degrees or more. We estimate that of the 1.2 million URC alumni, nearly 810,000 have earned at least two total degrees in their lifetime, and over 240,000 have earned three degrees. As shown below in Figure 12, higher educational attainment among alumni held among entrepreneurs as well.

FIGURE 12. Estimated Number of URC Alumni and Alumni Entrepreneurs, by Educational Attainment



Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

Photograph by Aspen Clark

Julie Aigner Clark
Michigan State University
B.S. in Secondary English Education, 1988

Company Founded: Baby Einstein, 1996
Industry: Infant Education & Entertainment
Status: Acquired by the Walt Disney Co. in 2001 for $22M
Currently With: Mommy Made
Offices: Littleton, Colorado
About: Julie Aigner Clark was a stay-at-home mom and former teacher when she created her first *Baby Einstein* video. She now produces videos teaching children safety from strangers and on the Internet.

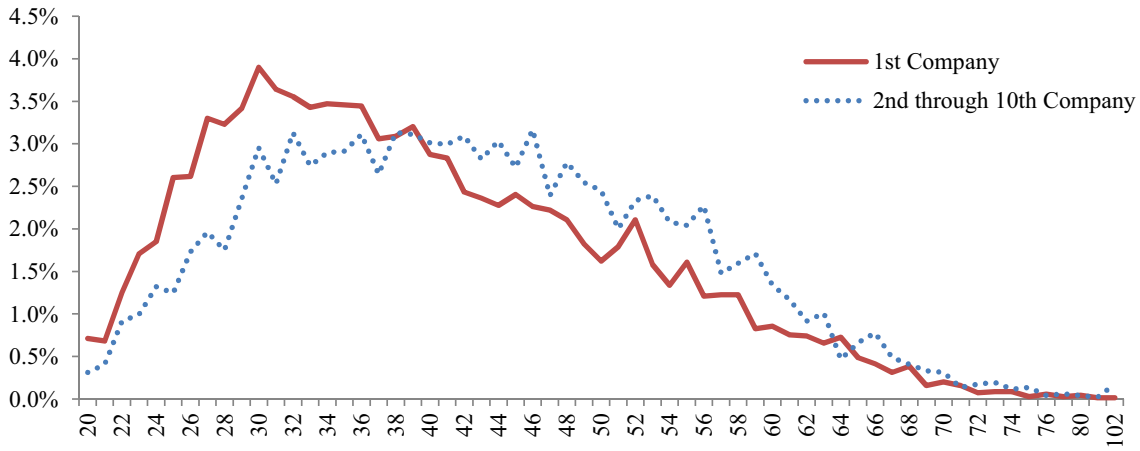
Figure 12 shows the share, number of alumni, and alumni entrepreneurs within each educational attainment category. Of respondents, 71.0% reported earning two degrees (one in addition to their degree from a URC university), and 21.4% indicated having three degrees.

We estimate that of the nearly 240,000 alumni entrepreneurs, over 160,000 have at least two degrees and nearly 49,000 have three total degrees. Approximately 3% of all alumni and alumni entrepreneurs have more than three degrees.

When URC Grads Start a Business

Our survey shows that 44.2% of the URC's alumni entrepreneurs start or purchase their first company between the ages of 27 and 39. For URC alumni respondents that start more than one business, 50% started or purchased their second to tenth business between the ages of 30 and 46. Figure 13 below shows the share of business starts by the age of the entrepreneur at the firm's birth.

FIGURE 13. Age of URC Alumni Entrepreneur At Company Start



Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

Nzimiro Oputa
Michigan State University
B.S. in Package Engineering, 2005

Company Founded: Jag Saint Joi, 2009

Industry: Fashion Design

Status: Start-up

Offices: New York City

About: Nzimiro Oputa worked for several large multinational companies designing packaging until appearances on the reality NBC TV show "Fashion Star" gave him a springboard to start his own designer clothing business.

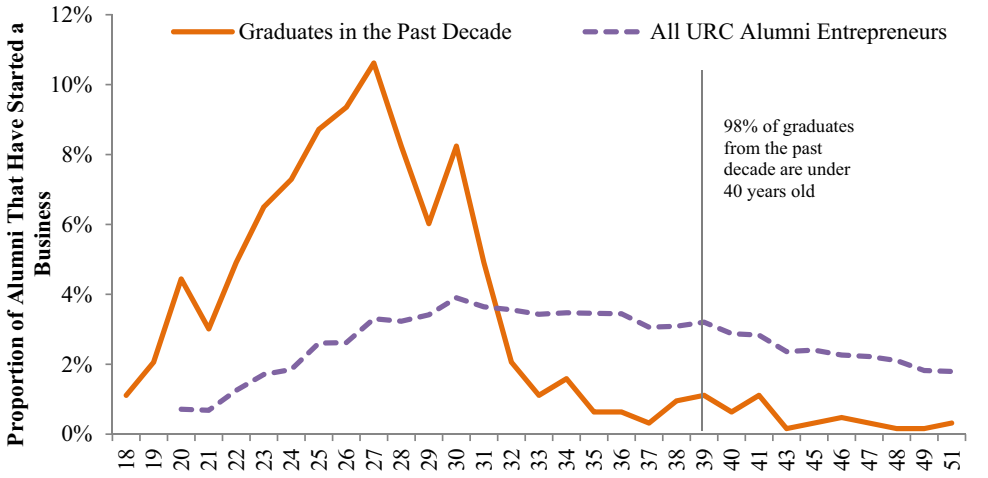
He's among the growing number of URC alumni entrepreneurs starting a business relatively soon after graduating from college.

The difference in age for the first company versus the next nine makes sense. As entrepreneurs become more experienced, the average age to start a second business, third, fourth, and so on, is later in life.

Interestingly, URC alumni that have graduated in the past ten years have started or purchased their companies at a younger age than the average URC alumni entrepreneur. In fact, 70% of URC alumni entrepreneurs surveyed who have graduated from a URC university in the past decade (2003 to 2012) started or purchased their first company between the ages of 23 and 31.

This means that URC alumni from the past decade are starting or acquiring their first business between four and eight years sooner than the average alumni from a URC university. Figure 14 below shows the share of firms started or purchased by alumni age at the firm's birth for URC alumni who have graduated in the past decade.

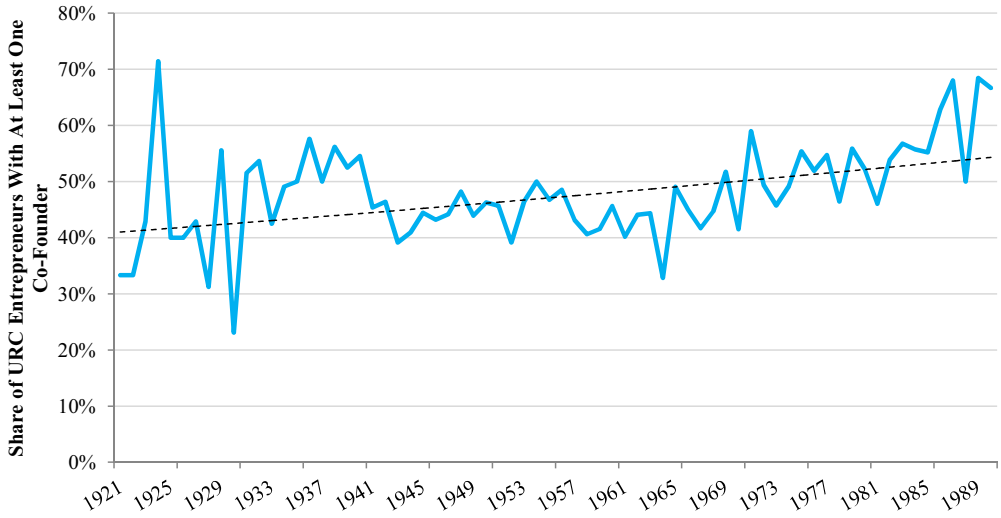
FIGURE 14. Age of URC Alumni When Starting First Company



Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

Approximately half of URC alumni entrepreneurs start their business with at least one other co-founder. The overall average instance of an alumni having a co-founder is 47% across all years, however, the occurrence of co-founding among respondents ranged from 23% to about 70% depending on the age of the entrepreneur. Among survey respondents, the younger a URC graduate starts a business, the more likely they are to have at least one co-founder. Figure 15 below shows the share of URC alumni who have started a business with a co-founder by age. The figure shows an upward trend in the use of a co-founder for younger entrepreneurs.

FIGURE 15. Share URC Alumni Entrepreneurs by Year of Birth That Have Had At Least One Co-Founder



Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

COMPANIES CREATED BY URC ALUMNI

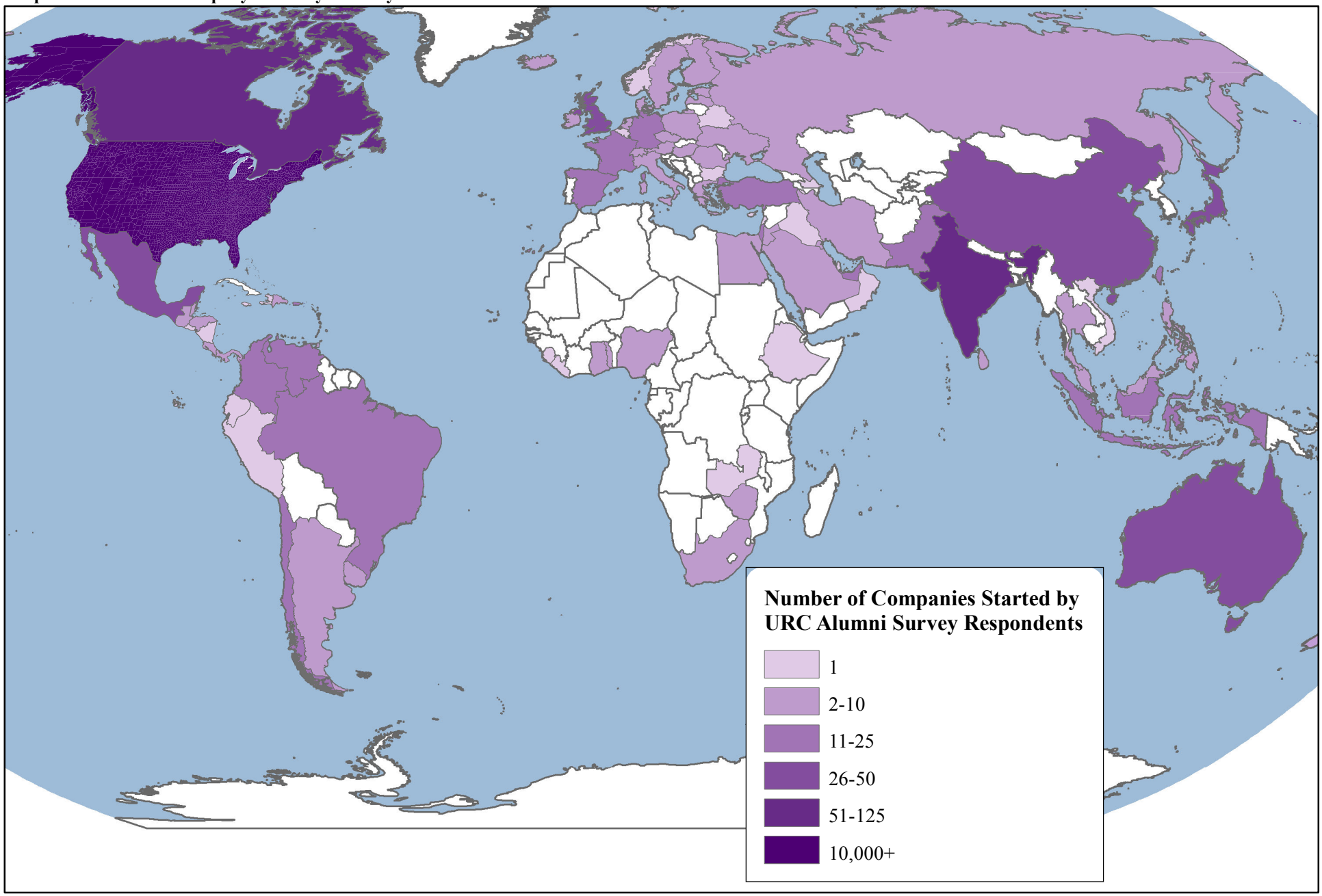
Survey respondents reported starting 14,435 business to-date.[19] We estimate the number of businesses started by the URC's nearly 229,000 alumni entrepreneurs total more than 380,000 businesses as of February 2013. These firms span across every major industry across the country, and range from firms with a few employees to large scale corporations with thousands of workers.

Company Locations

Respondents indicated cultivating start-ups in every U.S. state and in 102 unique countries. See Map 1, "URC Alumni Company Starts by Country," on page 23, Map 2, "URC Alumni Company Starts by U.S. State," on page 24, and Map 3, "URC Alumni Company Starts by U.S. City," on page 25. Nearly half of all companies started by URC alumni began in Michigan. We discuss this further in "URC Entrepreneurs in Michigan" on page 32. Not surprisingly, the majority of URC-alumni firms are located around major metropolitan areas.

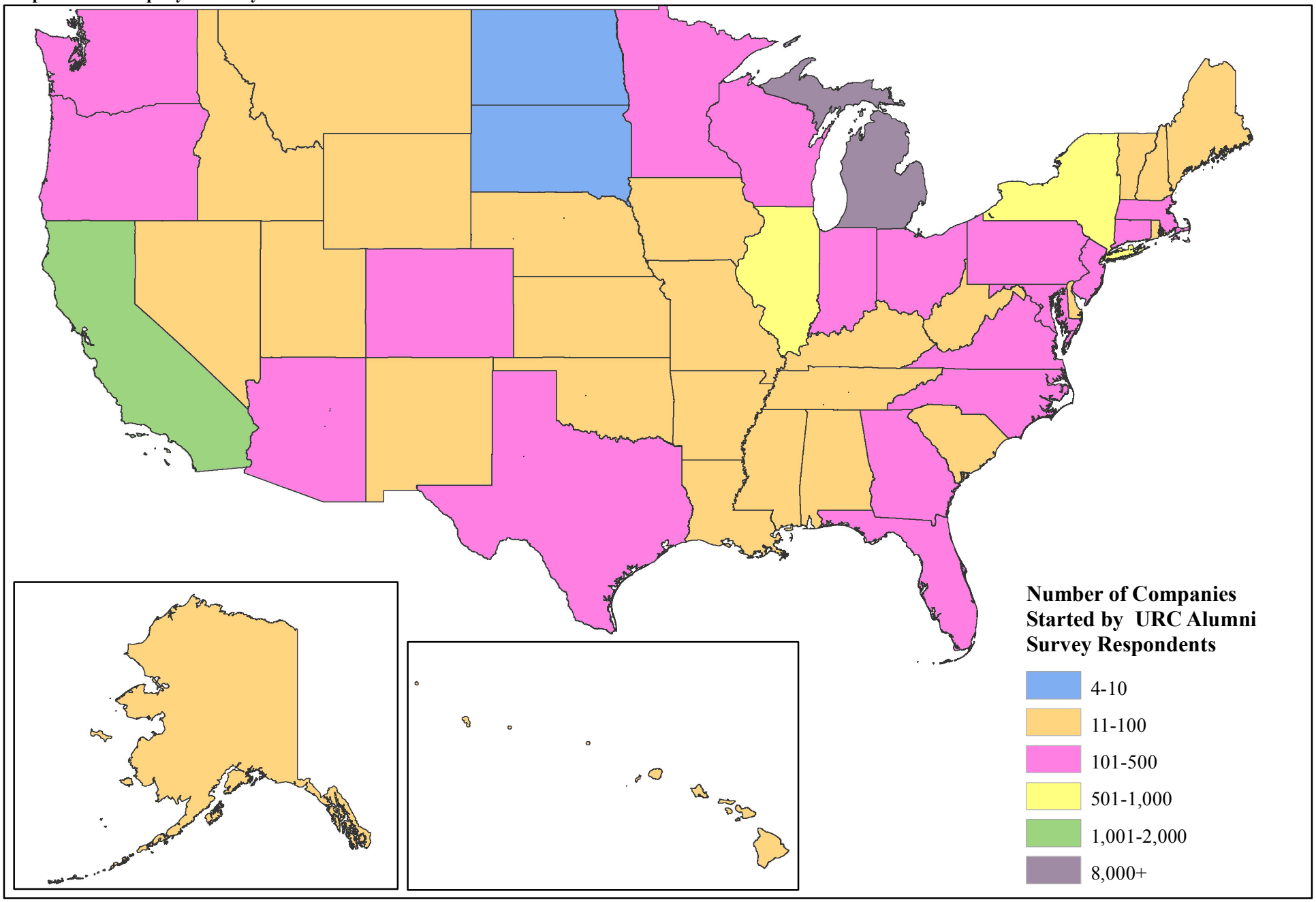
19. For more information on our methods for counting businesses reported by respondents, please see "Appendix A. Data and Methodology" on page A-1.

Map 1. URC Alumni Company Starts by Country



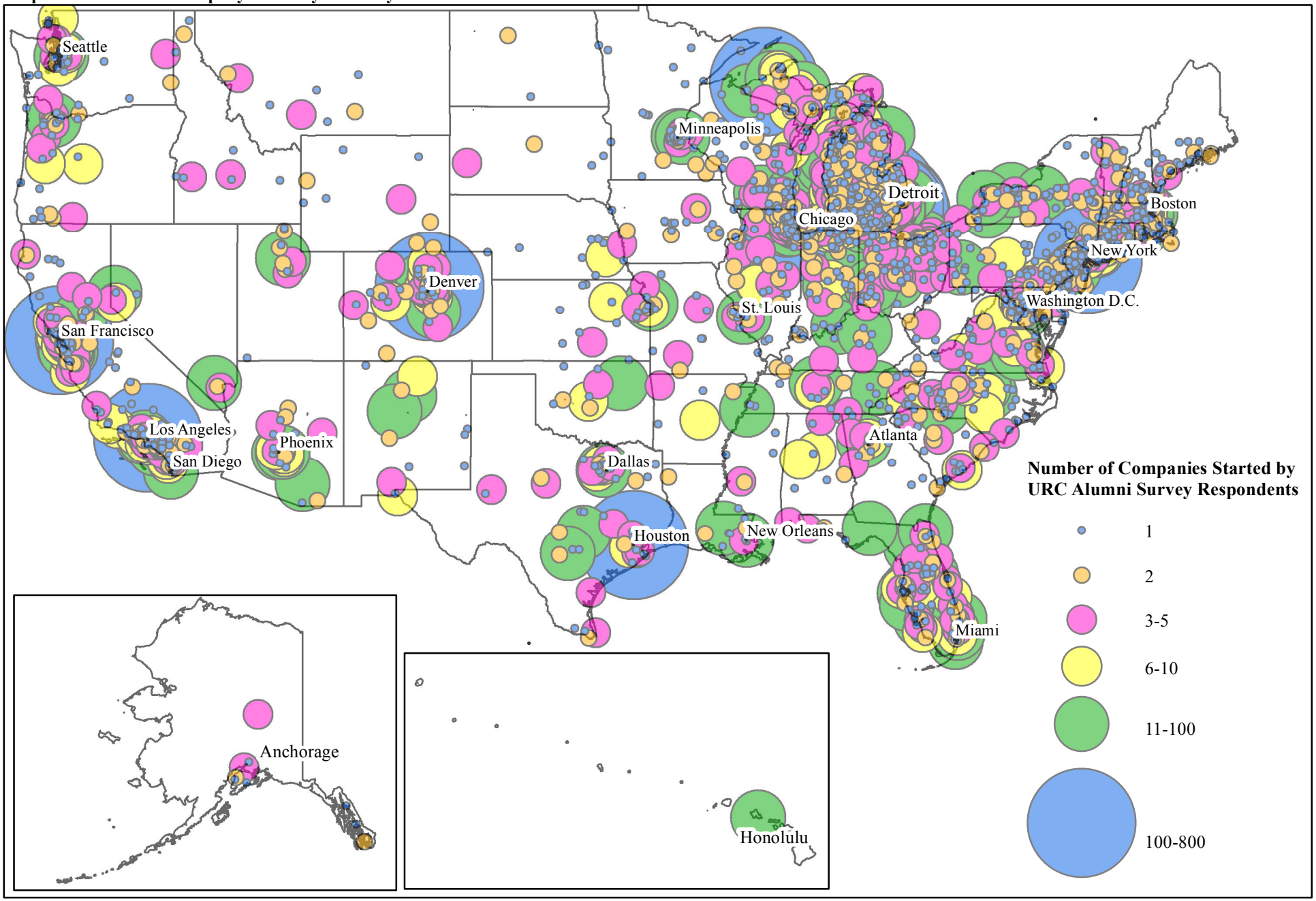
Data: ESRI, Inc.; 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

Map 2. URC Company Starts by U.S. State



Data: ESRI, Inc.; 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

Map 3. URC Alumni Company Starts by U.S. City

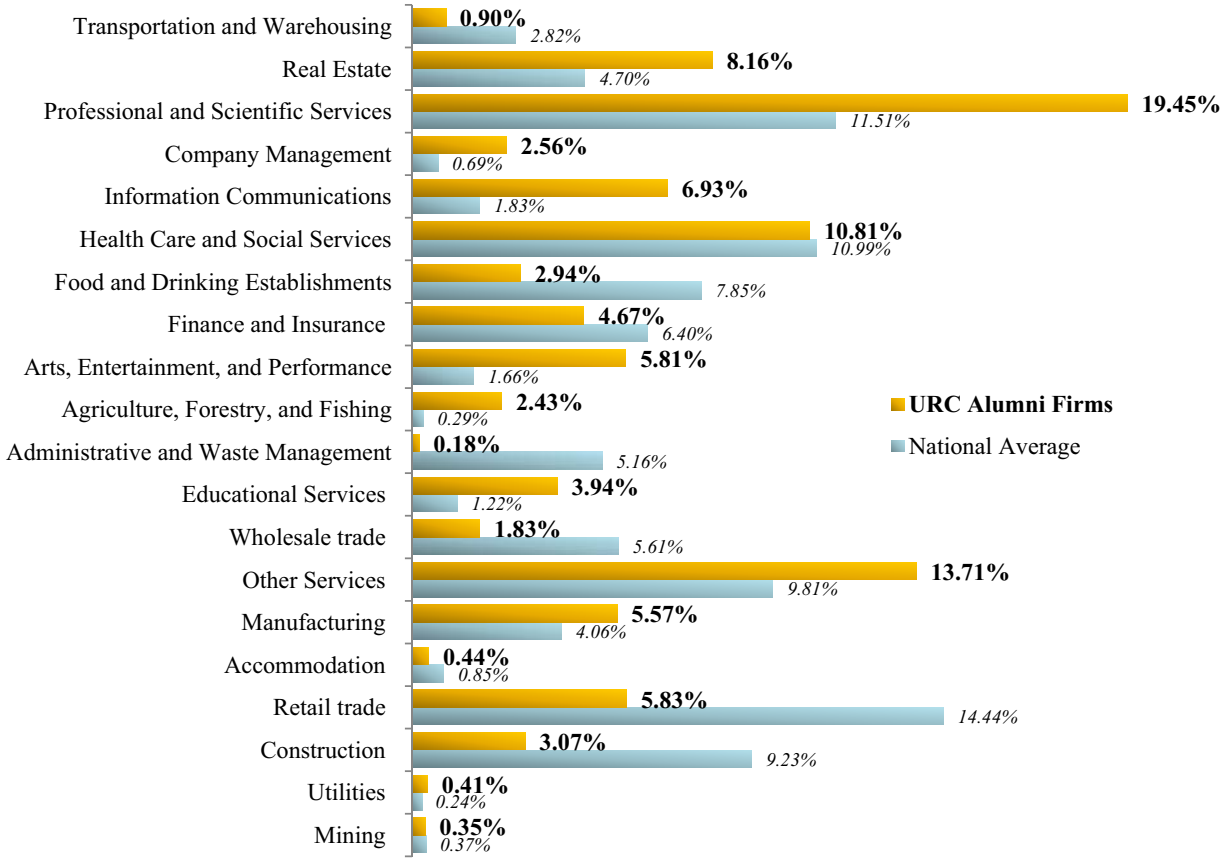


Data: ESRI, Inc.; 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

Prevalent Industries

While URC alumni have started companies in nearly every sector of the economy, the majority of firms are in service industries.[20] Nearly half (47.9%) of all companies started by URC alumni were/are in professional and scientific services, health care and social services, educational services, and other services such as advocacy, grant-making, personal care, and other related services. Figure 16 below shows the share of alumni businesses started in each major industry sector and compares this composition to the share of establishments across the U.S. as a whole in 2010.

FIGURE 16. Share of URC Alumni Started Businesses in Each Major Industry Sector



Note: The industry sectors provided above were listed in the URC alumni survey, and are from the North American Industry Classification System (NAICS). See the 2012 U.S. NAICS Manual for additional information, including industry definitions .

Data: County Business Patterns 2010; 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

20. The URC Alumni Survey provided respondents with a list of major industries, as defined by the U.S. Census Bureau's North American Industry Classification System (NAICS).

While the industry comparison of business starts by URC grads to establishments nation-wide is not an apples-to-apples comparison, looking at the data together provides some insights into which industries URC entrepreneurs gravitate towards. For example, Figure 16 on page 26 indicates that the U.S. overall has a significantly larger share of firms in retail and construction. URC alumni start a larger share of businesses than the national average in professional services, other services, real estate, educational services, the arts, agriculture, and information.

Industry Concentration by URC Degree. While it may seem reasonable to assume that an entrepreneur would start a company in a similar field to their major, this is not the case for the majority of URC alumni entrepreneurs. For many industries the most concentrated group of entrepreneurs have a related major, however they do not make up the majority. For example, 45.2% of URC alumni that started businesses in agriculture, forestry, and fishing have a degree in agriculture and natural resources but 54.8% do not.

Following this pattern are entrepreneurs who have started or purchased companies related to professional and scientific services or information communications technologies. The largest two majors represented in these two industries are, not surprisingly, engineering, but also liberal arts. However, nearly 65% of entrepreneurs in these industries majored in something other than engineering and liberal arts. Table 2 on page 28 shows the most concentrated URC majors for entrepreneurs organized by the industry of the first company started or purchased by alumni entrepreneurs. Note that for *most* industries the most concentrated major may be the most highly related but the majority of entrepreneurs in a given industry majored in something relatively unrelated.

The data in Table 2 on page 28 shows that an entrepreneur's college major does not necessarily dictate the industry in which they will start or purchase a business. While the industry could be related to another degree (71% of URC entrepreneurs have another degree outside of the URC), the URC degree itself does not clearly point to what type of business an entrepreneur will start or purchase.

TABLE 2. Prevalent Majors for Entrepreneurs by Company Industry

Industry for First Company Started	Most Concentrated Majors for Each Industry	Share of Industry Entrepreneurs with Prevalent Major(s)	Share of Industry Entrepreneurs with All Other Majors
Agriculture, Forestry, and Fishing	Agriculture and Natural Resources	45.2%	54.8%
Mining	Physical Sciences and Engineering	27.3% and 22.7%	50.0%
Utilities	Engineering	34.8%	65.2%
Construction	Engineering	24.4%	75.6%
Manufacturing	Engineering	36.5%	63.5%
Wholesale trade	Business, Management, and Marketing	34.5%	65.5%
Retail trade	Business, Management, and Marketing and Liberal Arts	20.5% and 14.8%	64.6%
Transportation and Warehousing	Engineering and Business, Management, and Marketing	22.9% and 20.8%	56.3%
Information Communications Technologies	Engineering and Liberal Arts	19.5% and 15.7%	64.8%
Finance and Insurance	Business, Management, and Marketing	37.1%	62.9%
Real Estate	Business, Management, and Marketing and Liberal Arts	22.4% and 18.5%	59.1%
Professional and Scientific Services	Liberal Arts and Engineering	18.4% and 17.4%	64.2%
Company Management	Business, Management, and Marketing and Social Sciences	23.6% and 21.3%	55.1%
Administrative and Waste Management	Business, Management, and Marketing and Liberal Arts	26.7% and 20.0%	53.3%
Educational Services	Education and Social Sciences	28.0% and 19.2%	52.7%
Health Care and Social Services	Health Related and Life Sciences	41.5%	58.5%
Arts, Entertainment, and Performance	The Arts and Liberal Arts	25.0% and 22.6%	52.4%
Accommodation	Business, Management, and Marketing and Social Sciences	21.4% and 17.9%	60.7%
Food and Drinking Establishments	Business, Management, and Marketing and Social Sciences	23.0% and 17.9%	59.2%
Other Services	Liberal Arts	23.4%	76.6%

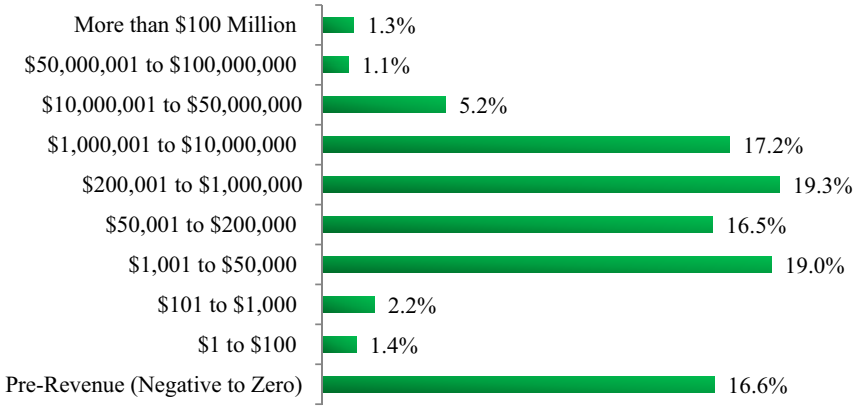
Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

Firm Size

The survey also asked alumni entrepreneurs to provide their firm revenues from the most recent year, 2012. Revenues reported by respondents ranged from negative or zero to over $100 million. Approximately half of URC-alumni firms in operation in the past 12 months generated between $50,000 and $10 million in

revenues. Figure 17 below shows the share of URC firms operating in 2012 in each revenue bracket.

FIGURE 17. Revenue Brackets for URC-Alumni Firms in 2012



Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

For companies that have negative or zero revenues, many are considered "pre-revenue." This means that while they have employees and are operating, they have not yet brought in revenues. Many companies fit into this category during their first few years of existence while they are fine-tuning their product for the market, seeking funding and investments, and/or marketing their brand.

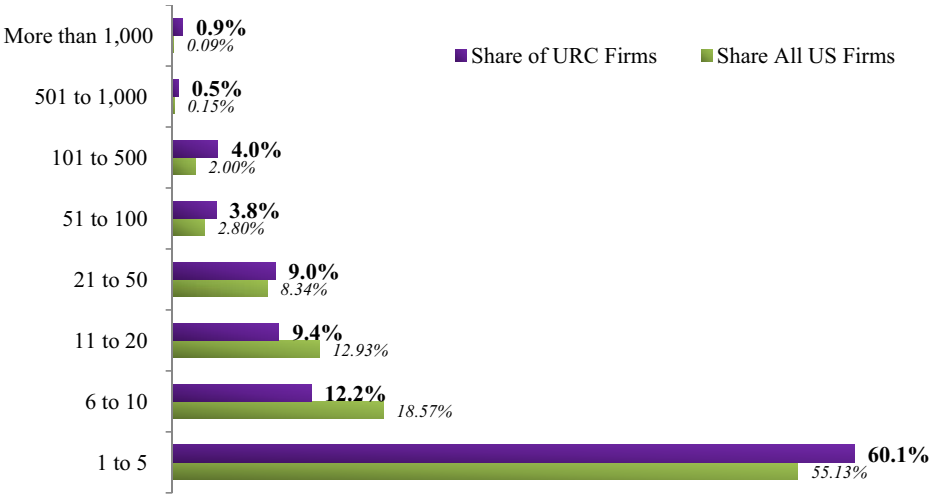
Of survey respondents that reported firms with negative to zero revenues, 60% of the firms were started in the past two years. These pre-revenue firms also employ a considerable number of people. Of respondents who reported zero or negative revenue in 2012, 27% indicated that they did not have another employee other than themselves, 63% had between one and five employees, and 8% had up to 20 employees.

Companies started or acquired by URC alumni with positive revenue also have a wide range in their number of employees. Employment levels vary from zero employees (other than the owner) to more than 10,000. About a tenth of respondents indicated they started firms without employees, other than the owner.[21] For the companies that do have employees, 60.1% of firms have or had between one and five employees.

21. We are reporting the company size for all companies shared in the survey. Of these, some are still in operation, while others are not. We present the data for all companies to highlight the company size for firms started and/or acquired by URC graduates rather than solely focusing on those still in operation.

Overall, the employment at URC-alumni firms is broadly representative of the national economy. See Figure 18 below, which shows the share of URC-alumni firms and U.S. firms by the number of employees. While URC-alumni firms have a slightly higher share of those with between one and five employees, this difference is not large enough to indicate anything unique about URC-alumni firm size.

FIGURE 18. URC Alumni-Founded Firms by Number of Employees



Data: County Business Patterns 2010; 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

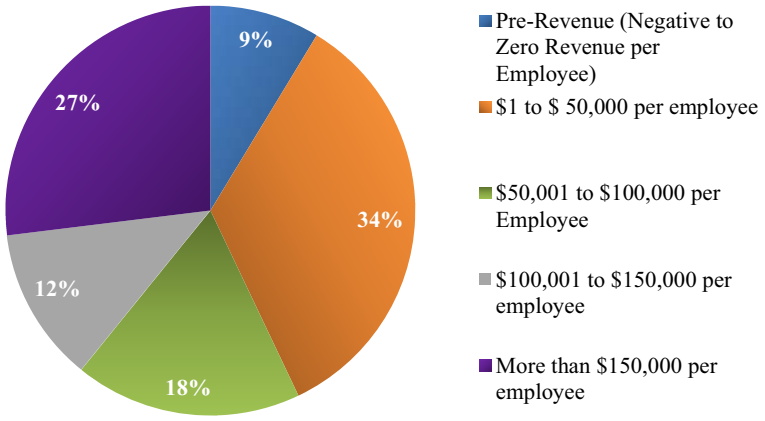
Revenue Per Employee. Revenue per employee is a very basic measure of productivity, in that it roughly indicates how much time was spent to generate a given amount of revenue.[22] To create a revenue per employee metric, we used 2012 revenue and employment data that was provided in the URC Alumni Survey. We created five brackets, or ranges of revenue per employee. In Figure 19 on page 31 we show the proportion of URC firms that fall into each of those brackets. Just over a quarter of firms had greater than $150,000 per employee.

Investors sometimes use the revenue per employee metric to compare companies within an industry in order to see who is using their personnel most productively. We did not make any industry comparisons. In addition to there being

22. While revenue per employee is a standard measure used by the federal government and most business media, it is simplistic and arguably out-of-date. An improved metric would be revenue per full-time employee (FTE) because it better encompasses the amount of time employees are at work. However, in our survey we simply asked for the number of employees, therefore respondents may have reported full-time and part-time employees. See Jac Fitz-enz, "The ROI of Human Capital: Measuring the Economic Value of Employee Performance," *AMACOM Division of American Management Association*, New York, 2000, pp 27-31 for discussion of human productivity measures.

very little literature available on this subject for small firms, the URC Alumni Survey did not ask respondents to specify their industry beyond the broad sectors of the economy.

FIGURE 19. Reported Revenue per Reported Employee at URC-Alumni Firms, 2012



Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

Firm Success Rates

According to the survey, 57.9% of firms owned by URC alumni to-date are still operating, and 10.9% have been acquired by other companies. This gives a combined "success rate" of 68.8% among URC-alumni firms. We consider acquisitions a success because it indicates that the idea or product is in demand by another entity. Using these shares, we estimate that of the more than 380,000 businesses started or acquired by URC graduates to-date, over 220,000 are still in operation and 42,000 have been acquired by another firm.

Business Dynamic Statistics collected by the U.S. Census Bureau publishes annual data on firm exits and entrances.[23] At the time of this report, the most recent Business Dynamic Statistics available from the U.S. Census Bureau was for 2010. Therefore, the most up-to-date five-year success rate that could be determined began in 2005.[24] Of the 555,699 U.S. firms that started in 2005, 42.6% reported as still operating in 2010. Of the URC-alumni firms that

23. While this is not a perfect comparison to the URC survey data, it can provide some context for the amount of time URC-alumni firms operate. As discussed in "Rate of Firm Survival" on page 12, a firm's first five years have the highest rate of failure.

24. To determine five year success rates, we looked at the firms URC alumni reported as being started in 2005, and are still in operation. (The URC Alumni Survey did not ask respondents when their business closed, but rather if it was still in operation or had been acquired.) We included URC-alumni firms started in 2005 that were acquired in 2010 or later as operational.

reported in the survey that they opened their business in 2005, 69.5% were still in operation at the time of the survey, and 5.32% have been acquired. See below in Table 3.

TABLE 3. Five Year Start-Up Success Rates for the U.S. and URC-Alumni Firms

	Share of 2005 Start-Ups Still Operating
U.S. Average Firm Success Rate	42.6%
URC-Alumni Firm Success Rate	69.5%

Data: Business Dynamic Statistics, U.S. Census; 2013 URC Alumni Survey

Analysis: Anderson Economic Group, LLC

URC ENTREPRENEURS IN MICHIGAN

Not surprisingly, nearly 50% of all companies started or purchased by URC graduates are or were in Michigan. Survey respondents who have started or purchased a business indicated that where they grew up or went to college ranked very high on why they located their businesses in a given region.

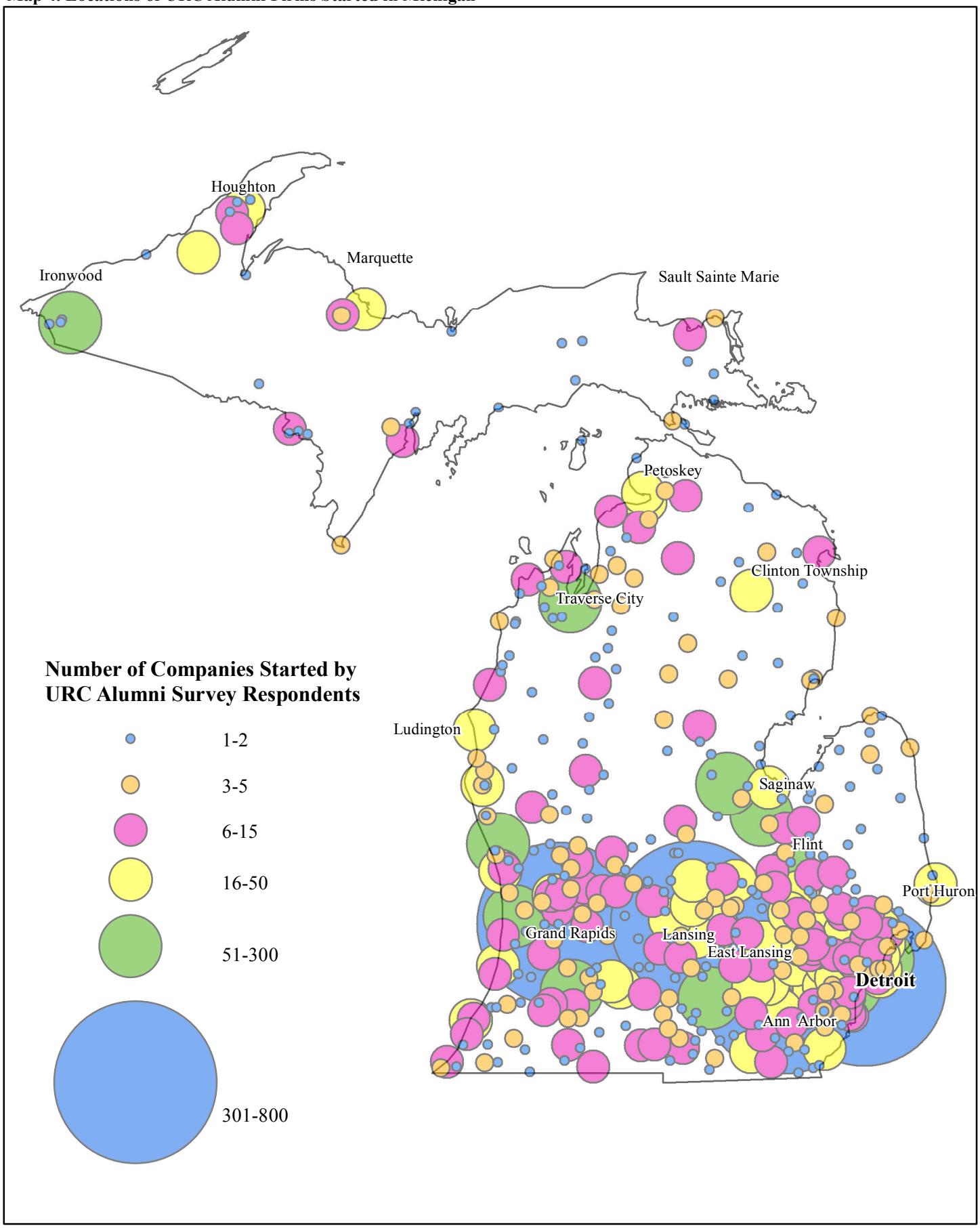
Paul Glantz
Wayne State University
B.S. in Accounting, 1980;
M.B.A., Taxation, 1985

Photograph by Douglas G. Ashley

Company Founded: Emagine Entertainment, Inc., 1997
Industry: Retail Entertainment
Offices: Southeast Michigan
Employees: 500
About: Paul Glantz kept his day job when he launched Emagine and now is an insurance company CEO by day who also runs his own $38M cinematic theater empire. Glanz has kept Emagine in Michigan — growing from a one-screen theater in Clarkston to 46 screens throughout six Southeast Michigan cities – offering innovations such as stadium and luxury seating, as well as plans to provide theatergoers with a wait staffed dinner during movies.

Map 4 on page 33 shows the number of firms reported in the survey and started or acquired by URC alumni in Michigan by city. The map provides further evidence for this as Ann Arbor, Detroit, and East Lansing have the largest number of business starts in the state.

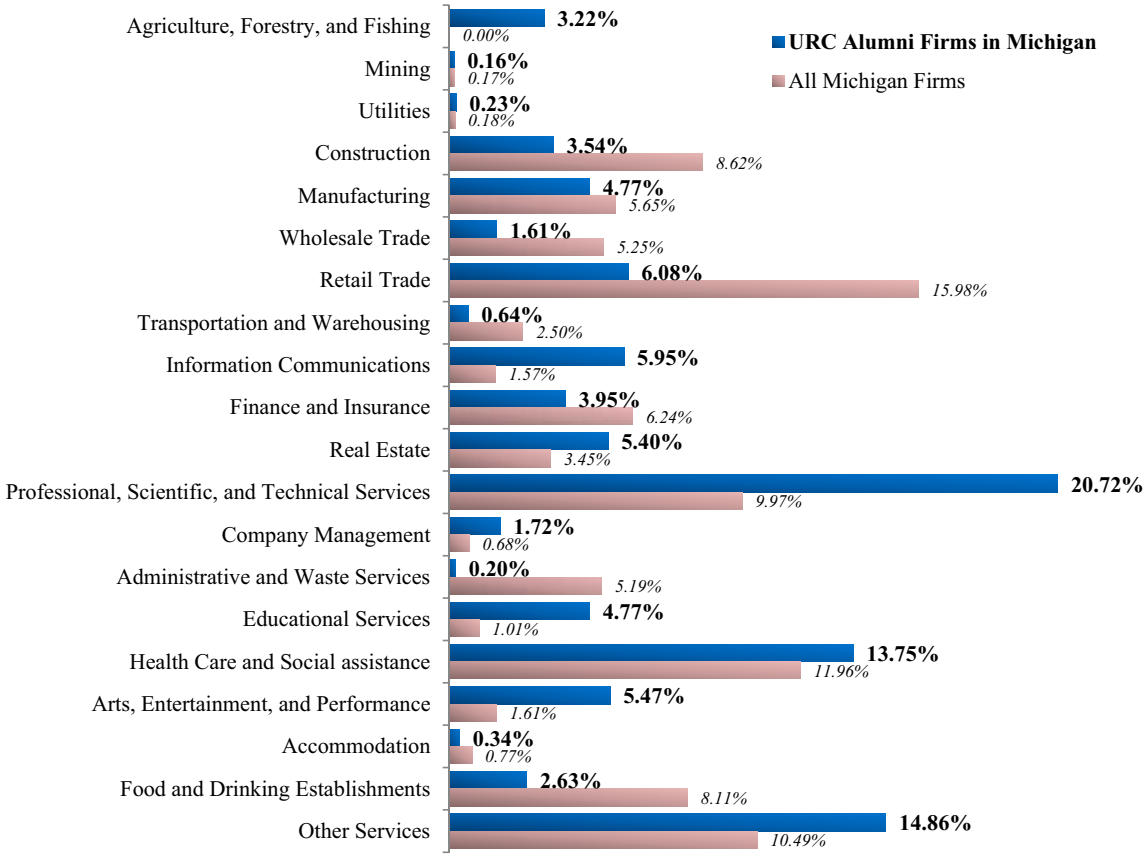
Map 4. Locations of URC Alumni Firms Started in Michigan



Data: ESRI, Inc.; 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

Industry and Firm Size. Firms started or purchased by URC graduates in Michigan have different concentrations by industry than all Michigan firms. For example, URC-alumni firms have nearly twice the concentration in professional services, almost five times the concentration of educational services companies and firms in the arts, and thirteen times the concentration of agriculture firms. URC alumni also have a higher concentration of firms in health care and social assistance, and firms in other services, than the Michigan average. Figure 20 below shows the share of firms started or purchased in each industry by URC alumni in Michigan and for all of Michigan.

FIGURE 20. Share of URC Alumni Started Businesses in Each Major Industry Sector in Michigan



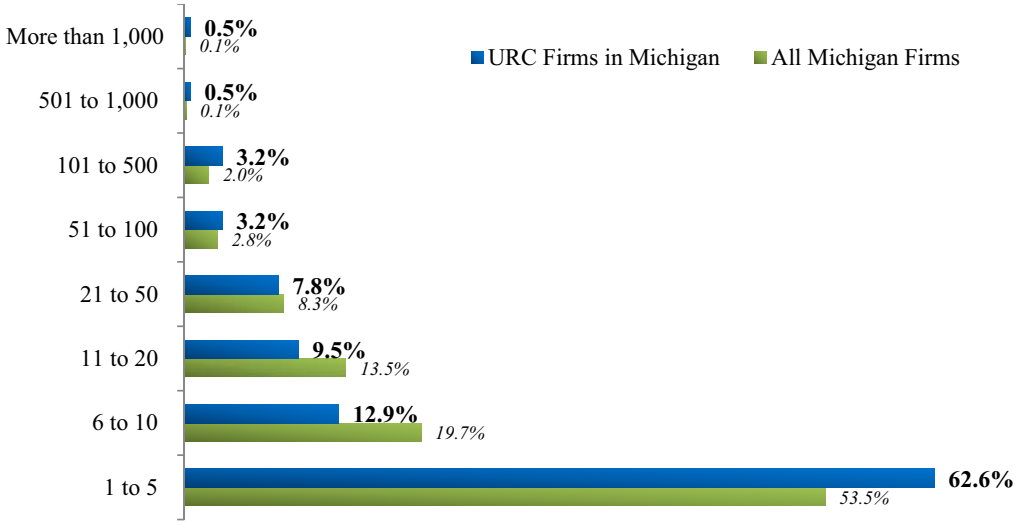
Note: The industry sectors shown above were listed in the URC alumni survey, and are from the North American Industry Classification System (NAICS). See the 2012 U.S. NAICS Manual for additional information, including industry definitions .

Data: County Business Paterns 2010; 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

The size of firms as defined by the number of employees is slightly different for URC firms in Michigan compared to all Michigan firms. Similar to all URC-

alumni firms, URC alumni who start or purchase companies in Michigan are most likely to have between one and five employees. Figure 21 below shows the concentration of firms in Michigan by number of employees in comparison to those started or acquired by URC grads.

FIGURE 21. URC Alumni-Founded Michigan Firms by Number of Employees



Data: County Business Patterns 2010; 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

Firm Success in Michigan. Firm success in Michigan largely follows the URC average success rate. Data from the survey indicates that 55.7% of all firms started in Michigan by URC graduates are still operating. This is similar to the average rate for all URC-alumni firms (57.9% are still operating). The survey also indicates that 9.0% (in comparison to the overall URC average of 10.9%) of firms have been acquired. Michigan's overall "success rate" is 64.7%.

The success rate in Michigan does not vary significantly from that in the U.S. as a whole, which we show in Table 4 on page 36. Business Dynamic Statistics data on Michigan indicates that of the 14,679 firms started in the Michigan in 2005, 43.0% are still in operation. For URC alumni-started firms in Michigan that started in the same year, respondents indicated 70.3% as still being in operation, and 3.8% having been acquired.

TABLE 4. 2005 Michigan Start-Up Success Rates for All Firms and URC Alumni

	Share of 2005 Start-Ups Still Operating
MI Average Firm Success Rate	43.0%
URC-Alumni Firm Success Rate in MI	70.3%

Data: Business Dynamic Statistics, U.S. Census; 2013 URC Alumni Survey

Analysis: Anderson Economic Group, LLC

Businesses Still in Operation. Of the more than 220,000 total URC-alumni firms still in operation, over 102,000 are operating in Michigan. An additional 16,513 Michigan URC-alumni firms have been acquired. The share of firms started in Michigan or still operating in Michigan has remained at about 50% of all URC alumni-started companies. This is further evidence that the success rate in Michigan does not veer from the URC alumni average across the nation.

ECONOMIC FOOTPRINT OF URC-ALUMNI FIRMS

Of the more than 8,000 URC alumni entrepreneurs responding to the survey, approximately 60% still had a business operating in 2012. Many of these alumni reported total sales, employment, and payroll for their business or businesses in 2012. While we do not have enough information to estimate the *total* economic footprint of all URC alumni businesses in the past year, we can provide the economic footprint in terms of revenues and employment for survey respondents as well as a range for total value-added (GDP) and employment. Our estimates were calculated using conservative methods. For more information on how we calculated these values please see “To see the survey questions pertaining to URC alumni entrepreneurs, see Exhibit 2 “2013 URC Alumni Survey Instrument, Section B: Entrepreneurship,” on page B-4. We discuss the survey instrument itself in Appendix B.” on page A-5.

Total Revenues and GDP Contribution

URC Alumni Survey respondents reported their businesses bringing in $82.7 billion in total revenues in 2012. This is an underestimate of the total revenues for all URC-alumni firms that were operating in 2012, as we only have data on 9,942, which is less than 5% of the more than 220,000 URC-alumni firms still in operation.

The average ratio of value-added (GDP) to business revenues in the U.S. between 2004 and 2011 was 55.2%.[25] Applying this ratio to URC-alumni firm revenues, we estimate that the $82.7 billion in revenues reported in the survey

25. Bureau of Economic Analysis Value-Added and Gross-Output data 2004 to 2011. See our discussion in “To see the survey questions pertaining to URC alumni entrepreneurs, see Exhibit 2 “2013 URC Alumni Survey Instrument, Section B: Entrepreneurship,” on page B-4. We discuss the survey instrument itself in Appendix B.” on page A-5.

would be equivalent to about $45 billion in GDP. This estimate of GDP is equivalent to the economy of Uruguay or Tunisia.[26]

By carefully considering that the revenues reported in the survey cannot be completely representative of all URC-alumni firms, we provide a range of estimates for total revenues and GDP for all URC-alumni firms in 2012. We estimate that the more than 220,000 URC-alumni firms that were in operation in 2012 contributed between $370 billion and $480 billion to the world's GDP. The lower bound ($370 billion) is roughly equivalent to the economy of Thailand or Colombia. The upper bound ($480 billion) is approximately the size of the economies of Argentina, Belgium, or Taiwan.

Total Revenues in Michigan. We estimate that of the more than 220,000 URC-alumni firms still operating in 2012, more than 102,000 are located in Michigan. Survey respondents reported on 4,462 currently operating business in Michigan. These firms brought in $24.7 billion, or approximately a third of all revenues generated by URC-alumni firms in 2012. This is an underestimate of the total revenues in for Michigan firms as we have revenue data on 4.4% of all URC-alumni firms in Michigan.[27]

Total Employment

Survey respondents indicated employing 1,121,331 people in 2012. This is an underestimate of the total employed for all URC alumni-started firms that were in operation last year because it only represents the firms in the survey. We conservatively assumed that the survey overrepresents the number of firms with over 1,000 employees and that the total URC alumni business population had a similar share of firms with over 1,000 to the U.S. average. We estimate that the URC-alumni firms operating in 2012 together employed approximately 5.5 million people. This is roughly equal to the population of Finland.[28]

Total Employment in Michigan. The URC alumni from the survey, which reported operating more than 4,100 firms in Michigan during 2012, also reported employing 221,513 people. This is an underestimate of the number of people employed by URC-alumni firms in Michigan, as the survey data represents just over 4% of the total alumni firms we estimate to be located in Michigan.[29]

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26. International Monetary Fund, "IMF World Economic Outlook (WEO): Hopes, Realities, and Risks," April 2013.
27. We limited our estimations to a level of detail that did not include the amount of revenue generated by firms within specific geographies.
28. Official estimate from the Population Register Centre, Helsinki, Finland, 2012.
29. We limited our estimations to a level of detail that did not include the number of employees by geographic area.

IV. Providing Tools: The Academic Foundation at the URC Universities

Historically, "entrepreneurism" is a term that has been associated, on an academic level, with business programs. More recently, this association has expanded beyond the degrees of Bachelor of Business Administration (BBA) and Master of Business Administration (MBA), reaching students in disciplines ranging from engineering and computer sciences to art and design, and the liberal arts.

We begin this section by discussing how the URC currently supports entrepreneurship in a big-picture sense; both historically and more recently. The remainder of the section focuses on the academic role that the URC universities have conventionally played in the entrepreneurial process: exposing students to cutting edge research and providing them with the tools to enter the business world. While many of the programs we discuss are described separately, they are often interrelated, and contribute to a larger sense of entrepreneurial community both at the URC universities, as well as throughout the state.

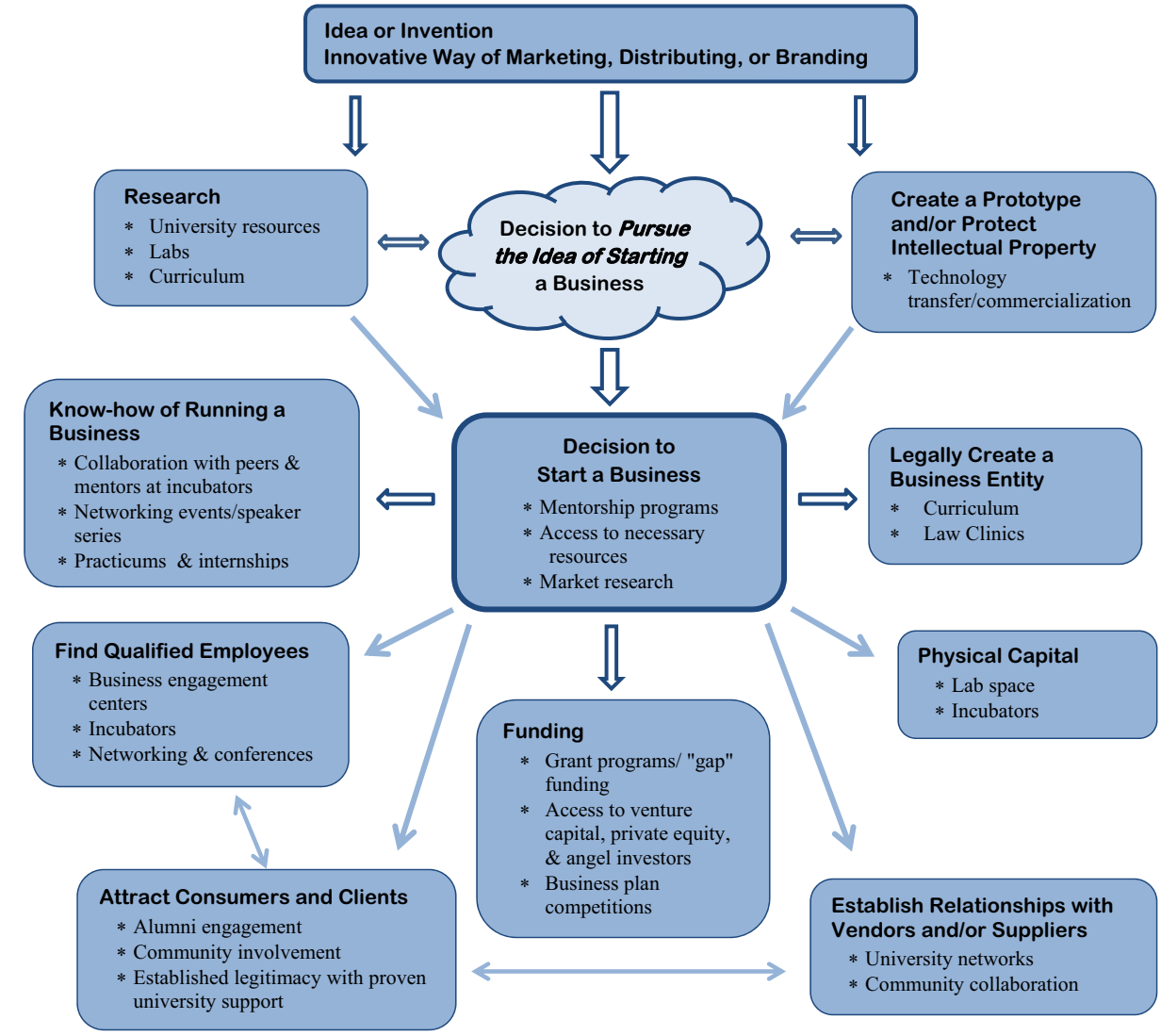
BIG PICTURE: HOW THE URC SUPPORTS ENTREPRENEURSHIP

As shown in "What It Means to Start a Business" on page 9, launching a business venture consists of many components, many of which are interrelated. Resources at the URC universities address several of these components and the potential challenges that arise as a result of them. Figure 22, "An Illustration of the URC's Support for the Entrepreneur in the Start-up Process," on page 39 displays some of the ways that universities can contribute to challenges associated with becoming a successful entrepreneur. Under each of the challenges associated with starting a business, we listed resources that the URC universities make available to entrepreneurs.

At each of the URC universities, they try to provide foundations for business success through traditional curriculum, experiential learning, and hands-on experiences. Teaching entrepreneurs of all types how to scale their businesses helps to fill a need in the market for those wanting to pursue building a bigger business. It also encourages existing ventures to further innovate; efforts to impart these skills are strategically incorporated into university curriculum.

Outside of the classroom, universities provide services such as incubators, funding, mentorship, and networking opportunities in order to facilitate entrepreneurial success. This section will detail the conventional role played by universities. Many of the other resources and programs available at the universities are discussed in the following section, "Supporting The Entrepreneurial Process: The Evolving Role of the URC Universities" on page 50.

FIGURE 22. An Illustration of the URC's Support for the Entrepreneur in the Start-up Process



Source: Anderson Economic Group, LLC

RESEARCH AND TECHNOLOGY TRANSFER

One distinguishing trait of the URC universities is their importance as research facilities, and their offices of technology transfer and commercialization are among the most conventional resources available to entrepreneurs in a university setting. The URC ranks among the top university clusters for R&D spending, as well as R&D growth.[30] In FY 2011, the URC universities spent over $2 billion on R&D. This number is up significantly even in the last decade; in FY 2001, R&D spending was $1.04 billion, representing a growth of 192% in nominal expenditures over ten years.

Many entrepreneurial enterprises involve the development of a new technology or product. Research is one of the primary steps along the way to developing a successful product. Once research has received funding, been conducted, and led to favorable results, a crucial step in a successful enterprise is taking a product to market. In a university setting, the technology transfer office traditionally assists faculty and researchers through the process of moving their technologies from labs to the private marketplace.

Kaylan Handique
University of Michigan
Ph.D. in Chemical Engineering, 2000

Company Founded: HandyLab Inc., 2000
Industry: Medical Devices
Currently With: DeNovo Sciences
Offices: Plymouth, Michigan
Employees: 13
About: Kaylan Handique, with the aid of his University of Michigan colleagues, developed a spin-off company producing a first-of-its-kind microchip that speeds DNA analysis.

The pharmaceutical, medical, computer technology, consumer electronic, telecommunication, agricultural, and manufacturing industries are among the many industries benefiting from research and development conducted at the URC universities. U-M's Office of Technology Transfer, MSU Technologies, and WSU's Technology Commercialization all function to facilitate the movement of technologies to market.

The success of R&D activities is often evaluated in terms of technology transfer to the private sector. In FY2011, the URC universities had a combined 504 disclosures, 142 patents issued, and had 141 license/options agreements.[31] Since 2005, the URC universities have cultivated 103 start-up companies, 18 of which were launched in 2011.

Historically, these are the numbers with which technology transfer/commercialization offices concerned themselves. Now, however, these offices are expanding their realms of responsibility. While they still offer all of the services that have helped faculty members and researchers develop and market ideas, they are now engaging in wraparound services that support entrepreneurs and entrepreneurship endeavors across campus.

30. See Erin A. Grover, Colby W. Spencer, and Alex L. Rosaen, "Empowering Michigan, Sixth Annual Economic Impact Report of Michigan's University Research Corridor," *Anderson Economic Group*, East Lansing, January 4, 2013 for the most recent data on R&D expenditures at URC universities as well as its peer clusters.

31. See Erin A. Grover, Colby W. Spencer, and Alex L. Rosaen, "Empowering Michigan, Sixth Annual Economic Impact Report of Michigan's University Research Corridor," *Anderson Economic Group*, East Lansing, January 4, 2013 for the most recent data on technology transfers at URC universities.

In the past decade, the technology transfer offices have began working with other entrepreneurial programs to encourage entity formation, connections to professional networks, mentors-in-residence, student internships, and even access to funding. In addition, technology transfer/commercialization offices are collaborating with community resources to expand the reach of their services. See "Collaboration with Community Entities" on page 63 for further details.

URC Connection with U.S. Patent and Trademark Office (USPTO)

USPTO Satellite Office. In 2012, the U.S. Patent and Trademark Office (USPTO) opened its first satellite office in Detroit as part of its Nationwide Workforce Program. The USPTO opened the first of four nationwide satellite offices in Detroit, recognizing the region for its high percentage of scientists and engineers in the workforce. The office offers services such as Public Searching, which enables individual researchers access to the agency's public electronic patent and trademark collections so as to facilitate self-directed searches. Opening this office expands the services available to local entrepreneurs and innovators, as well as to those across the Midwest. URC universities have also benefitted from the proximity of the satellite office in terms of their ability to cultivate partnerships and participate in pilots with the USPTO.

Law School Clinic Certification Pilot. The USPTO has expanded the Law School Clinic Certification Program over the past several years. After applying to the program, both Michigan State University and Wayne State University were accepted to participate. The program allows law students to practice IP law before the USPTO, and is administered by the Office of Enrollment and Discipline. As part of the program, the Director of the Office of Enrollment and Discipline awards recognition to these law students to practice limited law before the USPTO. MSU is participating in the pilot program for trademarks, and WSU is participating for patents.[32]

At WSU, the Patent Procurement Law Clinic is associated with the existing Business and Community Law Clinic and serves its clients free of charge. Primary services offered to the clients include advisement on the process and costs associated with obtaining and maintaining a patent, the provision of written patentability options, as well as additional patent prosecution tasks such as responding to office actions, conducting interviews, and filing appeals. The Patent Procurement Law Clinic is also reaching out to community resources to assist small business start-ups and individuals across Michigan. See "Law Clinics" on page 54 for additional discussion.

32. Currently, 28 universities are participating in the USPTO's pilot program. For a complete list of the universities and their IP practice areas, see the USPTO's official list at http://www.uspto.gov/ip/boards/oed/practitioner/agents/law_school_pilot.jsp.

CULTIVATING TALENT

One of the primary ways that the URC universities contribute to entrepreneurism is by supplying talent to industries across the globe. Some of these workers will be involved in start-up entities, while others will bring innovation and other skills to existing companies. As discussed in "Supplying Entrepreneurs: URC Alumni" on page 16, the URC has 1.2 million living alumni, and we estimate nearly 229,000 have started at least one company. The rate of entrepreneurial activity among URC alumni is nearly double that of adults on average, as well as those with a college education.[33]

Degree Categories With Highest Proportion of URC Alumni Entrepreneurs:

- Architecture
- Legal Professions & Studies
- Business, Management, & Marketing
- The Arts
- Computer and Information Sciences

Elizabeth Charnock
University of Michigan
B.S. in Theoretical Mathematics, 1987

Photograph by Steve Roberts

Company Founded: Cataphora, 2002
Industry: Computer Software
Offices: Menlo Park, CA; Ann Arbor, MI
Employees: 25
About: Elizabeth Charnock launched her computer software startup company, Cataphora, in Menlo Park, California. She has opened a second office in Ann Arbor, Michigan to attract more of the talented computer science and math graduates that she wants to hire.

These numbers, however, only measure alumni that have *started* a business. The URC universities also act as a strong resource for talent, supplying entrepreneurs and other employers with individuals educated and trained to contribute to the economy. The three fields of study with the highest demand among U.S. employers are Business, Computer Science, and Engineering, according to a survey conducted by the National Association of Colleges and Employers.[34]

While a business degree tends to be a staple degree that is attractive to employers, engineering and computer sciences backgrounds are both in particular demand in Michigan. As the birthplace of the modern auto industry, engineering grads are still heavily recruited throughout the state.[35] Computer science degrees are also sought after, as information and communications technology (ICT) products and workers become increasingly integrated into major sectors of the state's economy.[36]

As shown in Table 5 on page 43, the URC awarded 8,937 degrees in these "high demand" fields or 28% of all degrees awarded in 2011.

33. See "Common Characteristics of URC Alumni Entrepreneurs" on page 16 for our discussion of these comparison metrics.

TABLE 5. High Demand Share of Total URC Degrees, 2011

Program Type	Bachelor's	Advanced	Total Degrees
Business	2,670	1,987	4,657
Computer Science	358	284	642
Engineering	2,024	1,614	3,638
Total High Demand Degrees	***5,052***	***3,885***	***8,937***
Total URC Degrees	**19,268**	**12,415**	**31,683**
Business Share of URC Total	*13.9%*	*16.0%*	*14.7%*
Computer Science Share of URC Total	*1.9%*	*2.3%*	*2.0%*
Engineering Share of URC Total	*10.5%*	*13.0%*	*11.5%*
Total Share High Demand	**26.2%**	**31.3%**	**28.2%**

Data: Integrated Postsecondary Education Data System, 2011 Completions
Analysis: Anderson Economic Group, LLC

Furthermore, a large number of URC graduates chose to live and work in Michigan. Based on the URC Alumni Survey data, there are estimates of 121,000 URC alumni with high-demand degrees currently living in the state. The majority of these graduates hold engineering and business degrees, as ICT-related degrees are relatively newer. While living in Michigan, these alumni assist in meeting the demand of employers in the state, as well as contribute to local and regional economies in the state.

Faculty members who engage students in research also contribute to the cultivation of talent at URC universities. By including students in the research and development processes, faculty members expose aspiring entrepreneurs to new technology and knowledge while also providing a foundation for student researchers and assistants to utilize in their own future endeavors. Being exposed to hands-on experiences with reliable mentors is one way to encourage success in future entrepreneurial endeavors. This type of knowledge is passed down in many ways, and spillover effects that carry over between the classroom and the lab help entrepreneurs succeed.

34. The National Association of Colleges and Employers' *Job Outlook 2011 Report* surveyed approximately 200 employers from a variety of sectors. For degree category descriptions see Appendix A of Erin A. Grover, Colby W. Spencer, and Alex L. Rosaen, "Empowering Michigan, Sixth Annual Economic Impact Report of Michigan's University Research Corridor," *Anderson Economic Group*, East Lansing, January 4, 2013.

35. See Caroline Sallee and Erin Agemy, "The University Research Corridor's Support for Information and Communication Technology in Michigan," *Anderson Economic Group*, East Lansing, May 31, 2011.

36. See Erin Grover, Caroline Sallee, and Alex Rosaen, "The URC's Contributions to the Automotive Industry," *Anderson Economic Group*, East Lansing, May 30, 2012.

CURRICULUM

The conventional role filled by universities has been to educate students by providing courses that supply either foundational or specialized skills for success in future aspirations in the "real world." Over the past several years, the role of the URC universities in supporting entrepreneurship has extended beyond the technology transfer office and MBA curriculum. Entrepreneurship programs at the URC universities have been evolving, presenting greater opportunities for students, faculty, and alumni, as well as offering support to the surrounding communities in their entrepreneurial goals.

An argument exists, however, that "entrepreneurs cannot be manufactured; only recognized."[37] While entrepreneurship may require certain personality aspects, the same is true for many career choices. Research by the Kauffman Foundation indicates that 70% of company founders said that university education was important to the success of current businesses.[38]

Courses in entrepreneurship at the URC universities can take challenges that will be met in the real world of entrepreneurism, and give students tools with which to address these challenges. Courses in entrepreneurism have typically been associated with programs at colleges of business. Programs offered in business school programs range from entrepreneurial management and microfinance to independent study projects and law for entrepreneurs. Current curriculum however, is being influenced by student demand, expanding beyond the conventional "business only" coursework, and being offered to students not enrolled in business academic programs.

Types of Curricular Options for Entrepreneurs:

- Degrees, specializations, and certificates
- Foundational courses that teach critical business skills
- Hands-on practicum courses
- Specialized electives, such as tech-centric entrepreneurship
- Fellowships, internships

The URC universities are recognizing that the landscape of entrepreneurism is evolving; in addition to expanding the student eligibility for entrepreneurial curriculum, the curriculum itself is also adapting to current entrepreneurship needs to reflect what would be helpful for students. For example, courses are now being offered that address entrepreneurship in technology, venture capital and private equity, clean technology venture challenges, and social venture funding. Courses are becoming available to students across university departments, as universities look to infuse aspects of entrepreneurism into a greater proportion of the student body.

37. K. Chaharbaghi and R. Willis, as cited in Adcroft, et. al., "Missing the point? Management education and entrepreneurship," Management Discussion, 2004, Vol. 42, issue 3/4, pp 521-530.
38. Vivek Wadhwa, Raj Aggarwal, Krisztina "Z" Holly, and Alex Salkever, "The Anatomy of an Entrepreneur: Making of a Successful Entrepreneur," *Kauffman Foundation of Entrepreneurship*, November 2009.

Opportunities have also arisen outside the classroom. Some of these efforts have happened in accordance with the establishment of centers for entrepreneurship, which help to create a "hub" for entrepreneurial resources at the URC universities. Centers for entrepreneurship help to cultivate and facilitate coursework, connections with local businesses, internships (paid and for-credit), and other hands-on experiences for aspiring entrepreneurs. See "Supporting The Entrepreneurial Process: The Evolving Role of the URC Universities" on page 50 for examples of some of these opportunities at the URC universities. Below we discuss the current curriculum for entrepreneurship at each of the URC universities.

Michigan State University (MSU)

At MSU, the Eli Broad College of Business houses much of the curriculum centered on entrepreneurship. The Broad College and the Institute for Entrepreneurship provide guidance to undergraduate and graduate students on which courses to take. Undergraduates can benefit from specific courses at the Broad College, and the Institute for Entrepreneurship has a list of recommended courses for students at the MBA level who are interested in entrepreneurship.

Some of these classes include specialized electives, such as Retail Entrepreneurship, Corporate Entrepreneurship, and Technology Entrepreneurship, which allows for the leveraging of technology to further business ventures. Coursework also includes Entrepreneurship Capstone, which focuses on business development projects, as well as foundational courses such as Law Practice Innovation and Strategic Market Planning and Launch.

Students also have the opportunity to collaborate with faculty and provide consulting services to local businesses at the Demmer Center for Business Transformation. Law students can gain experience and training at MSU's Small Business & Nonprofit Law Clinic, which provides legal services to entrepreneurs and businesses across Michigan. See "Law Clinics" on page 54 for further discussion. Additionally, MSU Extension offers programs that are specifically geared toward areas such as youth entrepreneurship, agriculture entrepreneurship, and business development.

MSU offers several degree programs associated with entrepreneurship, as well as many courses available to the entire student body. Two of the specific specializations in entrepreneurship are:

- **Certificate in Entrepreneurship.** Offered by msuENet, this certificate is available to MSU students and community members. This program is an online, two-course series certificate program. These courses develop a foundation of principles and practices for launching a business venture.
- **Undergraduate Specialization in Entrepreneurship**. This specialization is available to most undergraduate students enrolled in Eli Broad College of Business, and incorporates experiential assignments, aimed to expose students to

solving real business problems. Entrepreneurship capstone courses, for example, allow students to work with entrepreneurs to solve problems through all stages of the entrepreneurial process. Additional courses involve skills such as how to leverage technological advances to develop business ideas, and exposure to entrepreneurship law.

University of Michigan (U-M)

The University of Michigan offers entrepreneurial curriculum through several departments and ventures, infusing entrepreneurism into many aspects of the university. The Zell Lurie Institute for Entrepreneurial Studies currently offers a range of specific entrepreneurial focus, including entrepreneurial management, independent study projects, and entrepreneurial accounting and finance. The Institute was founded in 1999 at the U-M Business School, but also works with the Medical Center, the College of Literature Science & the Arts, as well as the College of Engineering, facilitating mini-courses that are available for credit to all students.

The College of Engineering, via the Center for Entrepreneurship, also offers entrepreneurship courses on clean tech venture opportunities, patent law, and other special topics, which focus on practical, hands-on experience for aspiring engineers and entrepreneurs. The Zell Entrepreneurship and Law (ZEAL) program is available to U-M law students, which allows for hands-on training regarding business entity formation, patent law, and other concerns faced by entrepreneurs starting a business. See "Law Clinics" on page 54 for further discussion. In addition to the entrepreneurship courses that are offered, U-M has several structured academic programs:

- **Program in Entrepreneurship.** Administered by the Center for Entrepreneurship (CFE), this nine-credit certificate program is offered to undergraduate and graduate students from all U-M schools and departments in good academic standing. It is recognized by most colleges at U-M, and intends to provide students with resources to start a company, innovate, and learn about entrepreneurship. Courses include core courses, practicums, and electives.
- **Certificate of Advanced Studies in Engineering (CASE) in Entrepreneurship.** This 15-credit program for graduate students and working professionals, provides unique entrepreneurship training. Courses that go toward the credits, in some cases, may come from a broad range of subject matters. This program is administered and awarded by the Interdisciplinary Professional Programs, on behalf of the CFE.
- **Master of Entrepreneurship.** This degree is offered jointly by the College of Engineering and the Ross School of Business, and is administered by the CFE. The technology-focused one-year intensive program features a business boot camp, a two-semester practicum sequence and a venture launch opportunity, as well as coursework in entrepreneurship. Courses include entrepreneurial ownership, IP strategy, ethics, and many other options. Students also interact with the Office of Technology Transfer, industry mentors, and some also have the oppor-

tunity to access support from seed funding and mentorship to launch technology-based ventures.

- **U-M Medical Innovation Center (MIC) Fellowship.** The MIC, which is located in U-M's Medical School, offers a fellowship program in biomedical innovation.

Wayne State University (WSU)

WSU offers more than 40 courses in entrepreneurship for students. As part of an ongoing effort to infuse entrepreneurship throughout the university and the community, these courses are offered across six programs and colleges. Examples of these courses include Business Law for Entrepreneurs and Entrepreneurial Management. WSU also offers a beneficial program with its Business and Community Law Clinic, available to law students and to community businesses. This is discussed further in "Law Clinics" on page 54. Two of the specific specializations in entrepreneurship are:

James Anderson
Wayne State University
B.S. Civil Engineering ,1966
M.S. Civil Engineering, 1970

Company Founded: Urban Science, 1977
Industry: Automotive Retail Consulting
Offices: United States, Mexico, United Kingdom, Germany, Spain, France, Italy, Japan, China, Russia, Thailand, Australia
Employees: 750
About: With two degrees from Wayne State University, James Anderson has given back by making significant contributions to WSU's College of Engineering, helping create programs to develop and foster future engineering entrepreneurs.

- **EDGE Engineering Entrepreneur Certificate.** In addition to the courses offered by WSU, the College of Engineering now offers a certificate program for students called the EDGE Engineering Entrepreneur Certificate.

  Its intention is to train engineering students in entrepreneurial skills (finance, law, management) to combine with engineering skills in order to help bring new technologies, ideas, and products to market.

  Specifically, the 15-16 credit program includes core business courses such as Business Finance, Legal Aspects of Engineering Entrepreneurship, and Entrepreneurial Management; a hands-on capstone project; and have access to business launch support. It is available to students pursuing a BS in engineering who are in good academic standing.

- **Medical Design Apprenticeship Certificate.** WSU's medical school works with Translational Medicine, a student group, to show students how to market products and improve community health care. This certificate is recognized at the university, the Innovation Institute at Henry Ford Health Systems, as well as the College for Creative Studies. Coursework includes design process seminars, hands-on workshops and personal product development meetings. They also

will have the opportunity to present their final products to investors at the Innovation Institute. Translational Medicine is also discussed in "Student Groups" on page 57.

Furthermore, WSU encourages student involvement at TechTown, a growing business incubator in Detroit. TechTown, as well as WSU's The Front Door, WSU's business engagement center, are discussed in "Supporting The Entrepreneurial Process: The Evolving Role of the URC Universities" on page 50.

Cross-University and Community Programs

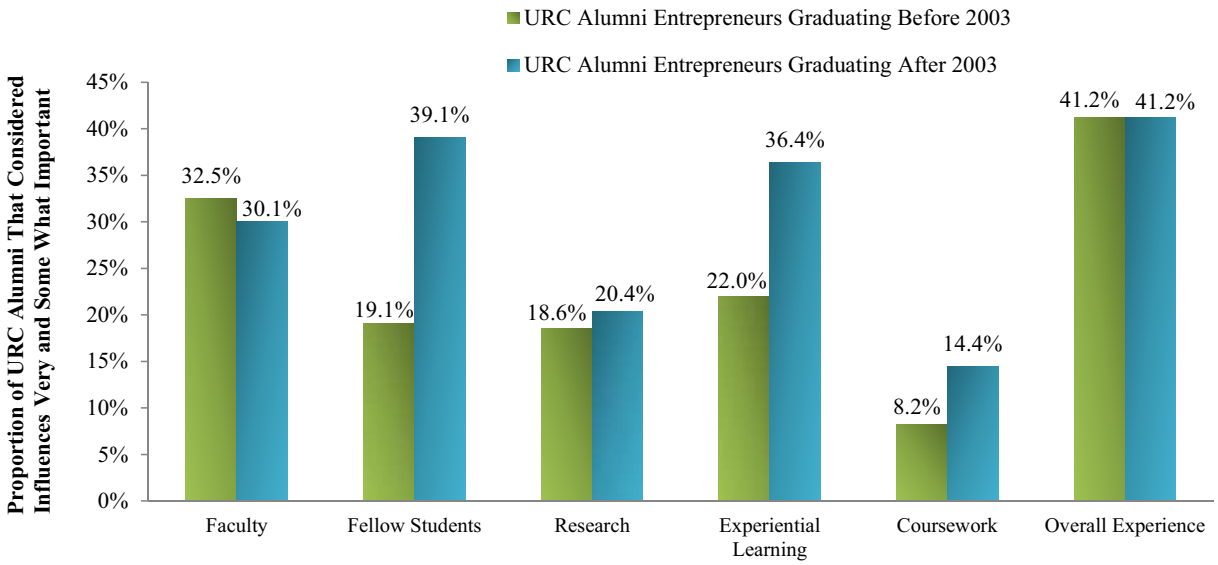
Michigan I-Corps is a statewide program which, through partnerships with the National Science Foundation, Michigan Smart Zones, universities, and entrepreneurial and venture capital communities, provides curriculum to grow entrepreneurism and innovation across the state. I-Corps is for teams of two or three individuals. These individuals are exposed to structured curriculum over the course of seven weeks to gain a deeper understanding of how to succeed as an entrepreneur in technology, attacking the issue from many angles, such as research and presentation skills, networking, and foundational skills for entrepreneurism. The teachers consist of entrepreneurs, mentors, venture capitalists, and consultants.

EXPANDING BEYOND THE CONVENTIONAL ROLE

This section has focused on more of the academic contributions by the URC universities in fostering entrepreneurship. The next section will discuss how the URC universities have evolved in recent years to enhance their contributions to student, alumni, and community entrepreneurship. There are still many components of starting a business venture, however, that are better addressed by practical, hands-on programs and resources, as shown in Figure 22, "An Illustration of the URC's Support for the Entrepreneur in the Start-up Process," on page 39.

This surge of entrepreneurial resources is due in large part to increasing demand from students, who are now more likely to seek innovative ways to pursue entrepreneurship as a real option and career choice. In the last decade, there has been considerably more demand at the URC universities for entrepreneurship in academia. In Figure 23 on page 49, we show the responses of URC alumni entrepreneurs when they were asked how influential their URC experience was in starting their business. The respondents that graduated after 2003 reported several academic influences (fellow students, research, experiential learning, and coursework) as important or very important influences. One reason for this is that the URC universities have only more recently implemented entrepreneurship into courses, created related degree and certificate programs, and expanded options for hands-on experiential learning related to starting a business.

FIGURE 23. Proportion of URC Alumni Entrepreneurs Considering Academic Influences Important or Very Important in Starting Their Business



Source: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

It appears that the efforts of the URC in academia are providing students with the tools, skills, and experience that they find valuable as entrepreneurs. In addition to academia, the universities, each in their own hands-on approaches, are creating "ecosystems" of entrepreneurism with higher levels of collaboration between departments and stronger outreach to students. We discuss these ongoing efforts to infuse entrepreneurism in the URC universities in the following section.

V. Supporting The Entrepreneurial Process: The Evolving Role of the URC Universities

The decision and fortitude to become a successful entrepreneur ultimately lies in the hands of the individual; universities, however, can help by providing tools and resources, which may accelerate the process of starting a business, as well as increase chances of success. Any entrepreneur embarking on the journey of launching and maintaining an enterprise could benefit from support. Access to specialized resources can assist entrepreneurs when facing the numerous challenges that accompany starting a business venture. This section lists and describes some of the resources that the URC universities make available for aspiring entrepreneurs, which include current students, alumni, faculty, and in some cases the surrounding community; many of these programs are evolving and developing as part of entrepreneurial "ecosystems" at URC universities.

AN OVERVIEW OF URC PROGRAMS AND RESOURCES AVAILABLE TO ENTREPRENEURS

We provide an overview of some of these programs currently at the URC universities, along with the services offered and who benefits from them in Exhibit 1, "Catalogue of Entrepreneur Programs and Resources at the URC Universities," on page 51. This catalogue is not intended to be an entirely comprehensive list of all entrepreneurial programs, resources, or ventures at the URC universities. Not all conferences, speaker series, student groups, or types of funds that are promoted or otherwise supported by the universities are included. However, the 42 programs we listed attempt to provide an overall picture of the major programs offered at each of the universities.

We describe many of these programs individually throughout this section, but there is a significant amount of interconnectivity in the services and missions of each entity. For example, at MSU, Business-CONNECT, Spartan Innovations, and MSU Technologies are all part of the MSU Innovation Center; in turn, The Hatch is a partnership between Spartan Innovations, LEAP, the City of East Lansing, and MSU. Similarly, eCities at U-M Dearborn occurs at iLabs, and the Venture Center is part of U-M Ann Arbor's Office of Technology Transfer, as well as supported by the Venture Accelerator. Similarly, The Front Door and TechTown share space, and coordinate monthly meetings with WSU's Tech Transfer office.

Exhibit 1 displays the programs and community partnerships the URC universities have cultivated in order to facilitate collaboration and dispersion of resources, knowledge, and services to those looking to start a business or build upon existing ones. These relations further indicate that entrepreneurship is spreading across disciplines, as well as becoming increasingly ingrained in university practices. Note the founding years for the programs in Exhibit 1; the vast majority have been created in the last five to seven years. It is likely that the URC universities will continue to evolve their role, as well as these programs in order to better suit the needs of student, faculty, and alumni entrepreneurs.

Exhibit 1: Catalogue of URC University Entrepreneurial Resources and Programs*

			Categories of Services/Resources Provided							Eligible Users			
School	Program	Year Founded	*(a)* Curriculum	*(b)* Support Services	*(c)* Incubator	*(d)* Tech Transfer	*(e)* Start-ups	*(f)* Funding	*(g)* Research	Faculty	Current Students	Alumni	Community
MSU	Small Business & Nonprofit Law Clinic	2004		X			X			X	X	X	X
MSU	Center for Venture Capital, Private Equity, & Entrepreneurial Finance	2006		X					X		X	X	X
MSU	Institute for Entrepeneurship	2006	X	X				X	X	X	X	X	X
MSU	Lansing Economic Area Partnership	2007		X			X						X
MSU	MSU Technologies	2007				X	X			X			
MSU	MSU Entrepreneurship Association	2008		X							X		
MSU	East Lansing Technology Innovation Center	2009		X	X			X		X			X
MSU	Innovation Club for Entrepreneurs	2009		X									X
MSU	MSU Business Connect	2009		X						X	X	X	X
MSU	msuENet	2009	X	X				X			X	X	X
MSU	The Hatch	2011		X	X			X			X		
MSU	Demmer Center for Business Transformation	2011		X						X	X		X
MSU	Spartan Innovations	2011	X	X	X		X	X	X	X	X		
MSU	Innovation Center	2012	X	X	X	X	X	X	X	X	X	X	X
MSU	Extension-Entrepreneurship	2012		X									X
U-M	U-M Tech Transfer	1990				X				X	X		
U-M	Tech Transfer Venture Center	2009	X	X		X	X	X		X	X		
U-M AA	Center for Venture Capital & Private Equity Finance	1994		X					X		X		
U-M AA	Zell Lurie Institute for Entrepreneurial Studies	1999	X	X	X		X	X	X	X	X	X	X
U-M AA	Ann Arbor/Ypsilanti SmartZone	2001			X								X
U-M AA	Ann Arbor Spark	2005		X	X		X	X					X

Data: URC Universities
Analysis: Anderson Economic Group, LLC

**This list provides an overview of some of the major programs at URC universities, and is not necessarily a comprehensive list of every entrepreneurial venture at the universities. Some programs may act as umbrella programs for other initiatives, such as funding resources, student groups, business plan competitions and conferences, or certification programs. Specifically, we did not include student groups, conferences, or workshops in this catalogue, as there are many opportunities in these areas.*

Notes:
(a) Curriculum: Provides or facilitates courses or certification/degree program; offers internships
(b) Support services: Facilitates networking, speakers, training and mentorship, resources, and advocates connections; connects with other enterprises or entrepeneurs to promote entrepreneurial growth; provides access to outside funding sources or VC/PE
(c) Incubator: Provides workspace for businesses, facilitates growth, serves as bussiness accelerator
(d) Tech Transfer: Assists with patents; markets and licenses technology
(e) Startups: Assists with entity formation
(f) Funding: Distributes or promotes access to grants or funding to aspiring/existing entrepreneurs
(g) Research: Conducts/disseminates research on entrepreneurial enterprises and methods for success

Exhibit 1: Catalogue of URC University Entrepreneurial Resources and Programs (continued)*

			Categories of Services/Resources Provided							Eligible Users			
School	Program	Year Founded	*(a)* Curriculum	*(b)* Support Services	*(c)* Incubator	*(d)* Tech Transfer	*(e)* Start-ups	*(f)* Funding	*(g)* Research	Faculty	Current Students	Alumni	Community
U-M AA	Business Engagement Center	2007		X					X	X	X	X	X
U-M AA	Center for Entrepreneurship	2008	X	X			X	X	X	X	X	X	
U-M AA	Medical Innovation Center	2008	X	X						X	X		
U-M AA	TechArb	2009		X	X			X	X		X		
U-M AA	Venture Accelerator	2011	X	X	X	X	X	X		X	X		X
U-M AA	Zell Entrepreneurship and Law Program	2011	X	X						X	X		
U-M D	iLabs	2006		X					X	X	X		
U-M D	Center for Economic and Entrepreneurial Education	2008		X							X	X	X
U-M D	EAcademy	2008		X				X					X
U-M D	Business Engagement Center	2011		X									X
U-M D	eCities	2007							X				X
U-M F	Innovation Incubator	2008			X						X		
U-M F	Michigan Center for Entrepreneurial Leadership	2008	X	X							X		
U-M F	Michigan Family Business Center	2008		X						X	X		X
U-M F WSU	Collegiate Entrepreneurs' Organization	1997		X				X			X		
WSU	Technology Commercialization	1996		X		X				X			
WSU	Tech Town	2000			X			X		X	X	X	X
WSU	Business & Community Law Clinic	2007		X			X			X	X	X	X
WSU	The Front Door	2009		X				X	X	X	X	X	X
WSU	Blackstone Launchpad	2010		X			X	X			X		
WSU	Patent Procurement Law Clinic	2012		X			X			X	X		X

Data: URC Universities
Analysis: Anderson Economic Group, LLC

**This list provides an overview of some of the major programs at URC universities, and is not necessarily a comprehensive list of every entrepreneurial venture at the universities. Some programs may act as umbrella programs for other initiatives, such as funding resources, student groups, business plan competitions and conferences, or certification programs. Specifically, we did not include student groups, conferences, or workshops in this catalogue, as there are many opportunities in these areas.*

Notes:
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(c) Incubator: Provides workspace for businesses, facilitates growth, serves as bussiness accelerator
(d) Tech Transfer: Assists with patents; markets and licenses technology
(e) Startups: Assists with entity formation
(f) Funding: Distributes or promotes access to grants or funding to aspiring/existing entrepreneurs
(g) Research: Conducts/disseminates research on entrepreneurial enterprises and methods for success

INCUBATORS AND COLLABORATIVE WORKSPACE

Incubators and collaborative workspaces provide a variety of valuable assets for aspiring entrepreneurs. The purpose of incubators is to provide a physical collaborative workspace for entrepreneurs, and create an environment in which aspiring or existing entrepreneurs are granted access to services, as well as to individuals, that will assist in navigating and accelerating the entrepreneurial process. Benefits can include networking and connecting with experts in related fields, access to resources to assist with the foundational aspects as well as the technicalities of the entrepreneurial process, and proximity to like-minded individuals.

Benefits of URC Incubator to Entrepreneurs:

- Assistance in Developing a Business Plan
- Inexpensive or Free Workspace, Wi-fi, and Labs
- Connecting With Experienced Entrepreneurs
- Builds External Legitimacy

In particular, university incubators are gaining traction and popularity in the U.S.: in 2012, about one-third of the nation's 1,250 business incubators resided at universities, up from only one-fifth in 2006.[39] Specifically, having access to wi-fi, labs, and workspace is essential to venture development. Peer support, particularly for college students, can also prove to be extremely beneficial when facing challenges associated with entrepreneurship. Incubator spaces also allow students to venture with their ideas *beyond* the classroom to engage in practical experience and entrepreneurial development.

An additional consideration beyond the actual provision of space and resources is the signal that being in a university incubator sends to others. Research suggests that a position in a university incubator helps a start-up to gain external legitimacy by showing that the project has already been evaluated and has university support.[40] This kind of signalling assists start-up ventures in attracting the attention of investors or other types of support that are beneficial to moving forward in the entrepreneurism process.

MSU's The Hatch, U-M's TechArb, and, via Wayne State, Detroit's TechTown, all provide incubator services and collaborative spaces that contribute to success for aspiring entrepreneurs.We show other incubators at the URC universities, as well as which users are eligible to utilize university resources in Exhibit 1, "Catalogue of Entrepreneur Programs and Resources at the URC Universities," on page 51. These entities also provide student entrepreneurs with access to community resources, which is further discussed in "Collaboration with Community

39. Laura Pappano, "Got the Next Great Idea?", *The New York Times*, July 19, 2012.
40. Einar Rasmussen and Odd Jarl Borch, "University Capabilities in Facilitating Entrepreneurship: A Longitudinal Study of Spin-off Ventures at Mid-Range Universities," *Research Policy,* 2010, Vol. 39, p. 602.

Entities" on page 63. Incubators such as Ann Arbor SPARK, the Lansing Technology Innovation Center (TIC), and TechTown collectively fill a need that is critical for students, alumni, as well the surrounding communities and additional stakeholders.

The Hatch

Michigan State University, Spartan Innovations

Start-up Incubator for Student Entrepreneurs

Photograph by Doug Coombe

Launch: 2011

Regional Partners: City of East Lansing and LEAP (Lansing Economic Area Partnership)

Staffing: Supports more than 60 students and spinout ventures

Objectives: To provide support to the undergraduate student entrepreneurial community through affordable and flexible office space, services, training, funding sources, mentoring and a network of professional advisors.

About: At the Hatch, student entrepreneurs share a common space with like-minded peers in a creative office environment with full access to the nearby Technology Innovation Center. Students can actively work on their business ventures, collaborate with others, and connect to other entrepreneurs, as well as entrepreneurial support systems beyond the university.

START-UPS AND ENTITY FORMATION

Even after a business idea has gained enough traction to actually be put to market, there are still many obstacles to becoming a legitimate business entity. As discussed in "Creating a New Business Entity" on page 10, the intricacies and legal knowledge necessary often require the expertise of external resources. URC universities are engaging in training and providing these types of legal services that benefit current students as well as surrounding communities.

Law Clinics

Creating a genuine business entity can be challenging. Navigating the necessary processes behind establishing a business involves expertise and experience. Furthermore, businesses that are just beginning may not have the resources to hire an expert to assist in these legal matters. URC universities are not only offering training to current students, but also providing legal

Entrepreneurial Need:
Legally Create a Business Entity

- Licensing Requirements
- State and Federal Tax Registrations

URC Provided Support:

- Intellectual Property Start-Up Project (MSU)
- Zell Entrepreneurship and Law Program (U-M)
- Business and Community Law Clinic (WSU)

services to students and community businesses. This arrangement can be mutually beneficial to both university law students, as well as entrepreneurs, which we discuss below.

MSU. The MSU College of Law, via their Legal Clinic, is leading a new initiative, the Intellectual Property Start-Up Project. The program will help west- and mid-Michigan entrepreneurs and small businesses with IP matters, such as patents, copyrights, and trade secrets. The program is a collaboration with other university departments and community entrepreneurship ventures; it will facilitate the matching of Michigan companies and entrepreneurs with volunteer attorneys. These attorneys will also serve as mentors for current MSU law students, who will gain exposure to research and practical law experience.

In addition, the MSU College of Law offers the Small Business & Nonprofit Law Clinic. This clinic is also associated with the pilot program underway by the U.S. Patent and Trademark Office, which is described on "URC Connection with U.S. Patent and Trademark Office (USPTO)" on page 41. The purpose of the clinic is to train students to become competent legal professionals, who are able to provide resources to small Michigan businesses and non-profit organizations who may be underserved. The clinic allows students supervised by licensed faculty to assist businesses during start-up phases as well as on an ongoing basis. The clinic offers counseling, advice and representation, as well as community education. For small businesses and entrepreneurs, these services focus on development assistance, business formation, assessment of risk and liability, as well as code compliance and financial accounting and reporting standards.

Law School Entrepreneurship Clinic (ZEAL)

University of Michigan, Zell Lurie Institute & Law School

Law Clinic for Student Entrepreneurs

Launch: 2011

Staffing: Receives 70-100 law school students' applications each semester for 16 openings; has served notable successful startups and spinoffs.

Objective: To provide legal assistance for startup companies and experience for law students.

Photograph by Doug Coombe

About: Each law student works with a licensed attorney to serve one to two startups. The students receive classroom training in areas where many startups need legal advice, such as forming a business entity, equity compensation, intellectual property protection, employment law and financing. Startups receive help during office hours, held several times each week at the Center for Entrepreneurship in the College of Engineering, the Zell Lurie Institute for Entrepreneurial Studies in the Ross School of Business and the TechArb student business incubator.

U-M. U-M's Zell Entrepreneurship and Law Program also offers training for law students on entrepreneurially-oriented activities, such as venture capital and private equity, intellectual property, and employment law, among others. These students can then provide supervised services to the campus and sister schools to assist entrepreneurs in their pursuits for successful business endeavors.

WSU. At WSU, the Business and Community Law Clinic both trains current law students (under the supervision of licensed attorneys), as well as provides services to clients who cannot afford those services provided by private attorneys. Law students gain expertise in entity formation, contract preparation and review, trademark and copyright application, as well as filing applications for tax exempt status. The Business and Community Law Clinic is also associated with the Patent Procurement Law Clinic, which is a pilot program administered by the U.S. Patent and Trademark Office. See "URC Connection with U.S. Patent and Trademark Office (USPTO)" on page 41 for additional discussion.

NETWORKING, CONFERENCES, AND ADDITIONAL SUPPORT SERVICES

One of the primary roles served by university programs is the facilitation of establishing connections between student entrepreneurs and those who can help them move forward with their entrepreneurial endeavors. This includes access to speakers who can provide tools for increasing the success of forming a business, networking events, and, importantly, the opportunity to access funding sources.

Some of these conferences are presented by the universities, and in other cases, universities can connect entrepreneurs to external conferences and events. MSU, for example, held the 2013 Green Light Competition, and had seven winners who were awarded funding. The Ross School of Business at U-M hosts the Michigan Growth Capital Symposium, which brings in speakers, holds panels of speakers, and company presentations.

Blackstone LaunchPad

Wayne State University

Entrepreneurial Support for Students

Launch: 2010

Staffing: Has 600 entrepreneurial-minded student members, more than 3,500 workshop participants and more than 300 business consultations.

Photograph by Doug Coombe

Objective: To promote entrepreneurship as a viable career option to college students.

About: Funded by the Blackstone Charitable Foundation and modeled after a successful program developed at the University of Miami (Fla.), the Blackstone LaunchPad of Wayne State University provides entrepreneurial training and education to students. It works closely with other entrepreneurial groups in Detroit and Southeast Michigan, including the New Economy Initiative, the Michigan Initiative for Innovation and Entrepreneurship and others. The LaunchPad at WSU helps student members grow their business ideas through individual and collaborative consulting, educational workshops, networking events and competitions.

The URC universities also provide, sometimes by sponsoring, innovative ways to connect students to entrepreneurs outside of the university walls. U-M's Center for Entrepreneurship, for example, brings students on "start-up treks" several times a year, visiting successful start-up ventures in various parts of the country, allowing student entrepreneurs to meet successful business people, expand their networks, and even be awarded funding.

WSU's Blackstone Launchpad brings in business professionals, investors, entrepreneurs, and students to engage in consulting sessions, workshops, and net-

working events, all of which contribute to entrepreneurial, and thus economic, success in the region.

Student Groups

The spread of entrepreneurism at URC universities has been driven in a large way by student interest, with the universities stepping up to fill a need in support services for student entrepreneurs. There are many student initiatives that have taken form at the URC universities. Student entrepreneurs have the ability not only to learn and benefit from university resources, but also to lead and teach other students in the process. These initiatives have taken the form of student groups, student-led venture funds, and the involvement of student government in facilitating further development on entrepreneurial programs. Since there are so many opportunities, it is difficult to provide a comprehensive list of student initiatives. This section, however, will provide an example of some of the student initiatives at the URC universities.

MSU. Student organizations such as the China Entrepreneur Network and Engineers Without Borders promote innovation and entrepreneurship among MSU students, faculty, and the surrounding community. MSU-EWB, for example, focuses on using technology to benefit the less fortunate through the provision of products that improve community health as well as provide education to their recipients.

U-M. Established entrepreneurial centers, such as U-M's Zell Lurie Institute and the Center for Entrepreneurship, sponsor and advocate for student groups on campus, such as MPowered, TEDxUofM, and M-Entrepreneurship, among others. Furthermore, the central student government has the Entrepreneurship Commission, which supports and fosters collaboration between entrepreneurship organizations at the university. The Entrepreneurs Society at U-M Flint is another example of an academic student organization that helps to foster innovation and entrepreneurship among faculty, staff, students, and the community. Additionally, student organizations at U-M Dearborn host a week-long boot camp for high school juniors to learn about entrepreneurship and win scholarship money. This initiative, E-Academy, is a partnership between U-M Dearborn, Ford Motor Company Fund and Community Services, and Students in Free Enterprise. For more examples of community partnerships, see "Collaboration with Community Entities" on page 63.

WSU. Organizations such as the School of Medicine's Translational Medicine are dedicated to the development of medically-related entrepreneurial endeavors by WSU students. Furthermore, it partners with community entities such as Henry Ford Innovation Institute and the College of Creative Studies to improve health care and patient experiences. Participants in this group have the opportunity to present ideas to investors at the Innovation Institute. As discussed in "Curriculum" on page 44, WSU recognizes students who complete a Transla-

tional Medicine project with a Medicine Design Apprenticeship Certificate, but the activities extend far beyond a certificate of recognition. The group holds workshops, discuss proposals to innovate the medical and non-medical fields, and expose future doctors to entrepreneurship early on in their education.

Among URC alumni entrepreneurs graduating in the last 10 years, nearly 40% said fellow students were an important influence in starting their business

Most recently, students at the College of Engineering formed a WSU chapter of the national organization Collegiate Entrepreneur Organization, or CEO for short. The goal of the organization is to inform students about entrepreneurship and offer support to those who want to create their own business enterprise.

Conferences and Networking

The Kauffman Foundation cited access to professional networks as being important to 73% of company founders surveyed.[41] The URC universities provide additional resources during and after school, such as access to professional networks. Each URC university has an extensive set of resources dedicated to facilitating networking opportunities between students, alumni, community members, venture capitalists, etc. Many of these opportunities are discussed throughout the section. Some other ventures that are worthy of note are listed here:

- Innovation Club for Entrepreneurs (ICE): ICE provides the Greater Lansing area with a forum to meet with peers and share and explore ideas together. It meets several times a month, and is a collaborative effort between the MSU Land Policy Institute and the MSU Entrepreneurship Network.
- Entrepalooza: Each year, U-M's Zell Laurie Institute and the Michigan Entrepreneur and Venture Club host the symposium for nationally recognized speakers and panelists to speak on various topics.
- The Michigan Growth Capital Symposium: The Zell Lurie Institute and the Center for Venture Capital and Private Equity Finance (CVCPEF) host this conference that draws entrepreneurs from across the Midwest. The symposium attracts over 450 attendees, including investors, executives, stakeholders, and aspiring entrepreneurs, for networking, company presentations, panels, and access to investment opportunities.
- Blackstone Launchpad hosts networking events and conferences, bringing in speakers who address everything from tips for developing a business plan to how to give a three-minute pitch on a business venture.

41. Vivek Wadhwa, Raj Aggarwal, Krisztina "Z" Holly, and Alex Salkever, "The Anatomy of an Entrepreneur: Making of a Successful Entrepreneur," *Kauffman Foundation of Entrepreneurship*, November 2009.

Finding Funding

Photograph by Robert Benson

Howard Birndorf
Wayne State University
B.S. in Biochemistry, 1974

Company Co-Founded: Hybritech Inc., 1978
Industry: Biotechnology
Status: Sold to Eli Lilly in 1986 for $450M
Offices: San Diego, Calif.
About: Howard Birndorf was in the right place at the right time to get funding for his start-up company, but he worries that new biotech companies are finding it more difficult to find investors, especially in the early stages.

Funding presents one of the most difficult obstacles in successful entrepreneurism. As discussed in "Funding" on page 11, it can be extremely difficult to gain traction for even the most brilliant of ideas without proper funding. Each business varies in its need for funding, as it can be needed in various stages of firm development from research and prototyping, to commercialization, marketing, and establishing a client base.

Even after a company is established (or has self-sustaining revenues) an entrepreneur may seek out funding for expanding their business. Early on, when firms require seed funding, the URC universities provide students with assistance in several ways. Without directly providing dollars, the URC universities make resources and space available for entrepreneurs to develop their ideas, as well as create business teams. Labs, incubators, curricular, and extra-curricular activities all provide avenues for entrepreneurs to develop the beginning stages of business ideas.

Peter Farner
University of Michigan
M.B.A. , 1980

Company Founded: TGap Ventures
Industry: Automotive Retail Consulting
Offices: Kalamazoo, Mich.
Employees: 3
About: Pete Farner helps other entrepreneurs get off the ground through early and growth-stage investments in companies primarily in the software, life sciences, specialty manufacturing, plastics, and communication technology sectors. He has helped the University of Michigan by serving as a judge for intercollegiate investment competitions and was appointed in 2011 by Gov. Rick Snyder to the Michigan Early Stage Venture Investment Corporation Board of Directors.

At each of the universities, there are programs that provide gap funding to assist students, faculty, and even alumni to fund ventures. URC universities provide access to business plan competitions, in some cases hosting them, as well as other community resources that may provide direct dollars for entrepreneurial and product growth.

Gap Funding. The universities also provide types of "gap" funding for business or product ideas. For example, MSU provides several types of funding intended to support early-stage technology development, including the Targeted Support Grants for Technology Development (TSGTD), which is made available from MSU Technologies to further develop infant technologies. MSU also has validation funding, which is administered in order to commercialize technology and assist with technology development. These funds are administered to several different projects, generally in $50,000 allotments.

Grants for students. Each of the URC universities has grant programs that may benefit student entrepreneurs. Grant programs range in their idea design, with some requiring participation in business boot camp programs, some applying to students from select disciplines, and others are granted as the result of business competitions. A few of the grant programs are listed below in Table 6.

TABLE 6. Select Grant Programs Offered to URC Students

Grant Program Name	Distributors	Grant Amount	Eligibility
The Warrior Fund	Blackstone Launchpad, WSU	Up to $5,000	WSU students with a scalable business idea
Dare to Dream Grant	Zell Lurie Institute for Entrepreneurship, U-M	$500-$5,000	Individuals or student teams who participate in business development programs
Forest Akers Entrepreneurial Grant	MSU	Up to $5,000	Focus on non-STEM disciplines
Gerstacker Entrepreneurial Grant	MSU	$500-$5,000	Undergraduate STEM students
Jump Start Grants	Center for Entrepreneurship, U-M (Provost-funded)	$500-$1,500 in micro-grants; up to $1,000 for legal fees, etc.	Students enrolled in U-M degree-granting programs
Greenlight Business Model Competition	Spartan Innovations, MSUFCU	$1,000-$25,000	Michigan residents and students

Data: URC Universities
Analysis: Anderson Economic Group, LLC

With the increase of entrepreneurs seeking out venture capital (VC) and private equity (PE), the URC universities have strengthened their connections with those types of firms in their surrounding communities. Some centers, such as U-M's Center for Venture Capital and Private Equity Finance, provide research on VC/PE, whereas other centers connect URC entrepreneurs with direct access

to competitions or companies which award funding to promising business ventures.

For example, MSU captive funds provide, at the discretion of a voting board, VC funding for entrepreneurial endeavors. Furthermore, MSU's Center for Venture Capital, Private Equity, and Entrepreneurial Finance promotes academic and applied research on VC/PE investments, as well as builds mutually beneficial relationships VC/PE professionals and MSU or Michigan-based entrepreneurs.

Each university's ties with the surrounding community are also useful to assist aspiring entrepreneurs to connect with local angels. Angel investors such as Capital Community Angel Investors in East Lansing and Ann Arbor Angels tend to focus on Michigan-based companies, and the URC universities offer connections to these investing groups.

ENGAGEMENT WITH COMMUNITY ENTREPRENEURS AND RESOURCES

Each of the URC universities is located in a unique community; Ann Arbor, East Lansing, and Detroit have different characteristics demographically and economically, but each contain businesses and resources that are valuable to the local, regional, and state economies. By engaging in community involvement, universities can encourage a relationship in which they can benefit from external businesses or community ventures, and vice versa. The universities have resources that are critical to economic development in the regions.

Business Engagement Centers

Part of the role taken on by entrepreneurial centers at the URC universities is engaging with businesses outside of the universities. Each of the universities has a business engagement center, and offers services to encourage collaboration with local and regional businesses, as well as businesses statewide. While each center provides similar types of services, they each operate in slightly different ways. MSU's Business Connect, for example, seeks to encourage collaboration with local businesses, offering students and businesses a chance to benefit from each others' skills. U-M's Business Engagement Center also seeks to connect businesses to student talent at the university. It extends beyond the reach of entrepreneurial talent, offering services for entrepreneurs and students in terms of matching talent with businesses and it also markets licenses for university technologies. Furthermore, an initiative at U-M Dearborn's College of Business, Business of Franchising, seeks to connect franchising opportunities in Metro Detroit with college students as well as recent graduates.

One of the goals of The Front Door at WSU is to fill a gap in research partnerships between the university and local business. The business engagement office, like the Front Door, is co-located in TechTown, Detroit's center for entrepreneurial development. Businesses in need of space can rent lab space in the building, thus sharing a space with researchers and aspiring entrepreneurs. The

proximity of companies with university and student resources can help to facilitate collaboration, as well as act as a natural networking opportunity, matching students with businesses.

Community and Alumni Engagement

Attending and graduating from a URC university allows alumni to be a part of a larger network of Wolverines, Spartans, and Warriors. While many of the entrepreneurial resources at the universities are focused on students, alumni have access to some crucial resources for entrepreneurial success.

Alumni entrepreneurs have the unique opportunity to be on both sides of entrepreneurship at URC universities, acting as users or providers of key resources. URC alumni can access university resources in terms of connections to networks, assistance from tech transfer offices, and keep up on research performed regarding entrepreneurism. On the other side, alumni can be brought in as mentors, speakers, can participate in networking, and provide key insights to student entrepreneurs. In many cases, this involvement can lead to connections for students and alumni, benefiting entrepreneurial goals for both. MSU alumni are a key part of the target audience for the Center for Venture Capital, Private Equity, and Entrepreneurial Finance (CVCPEEF), which strives to build mutually beneficial relationships between alumni entrepreneurs and community resources.

Benefits of University-Community Engagement to Entrepreneurs:

- Mutually beneficial relationships for students and employers
- Training/mentorship for aspiring entrepreneurs
- Promotes development of local economy by providing access to talent and expanding pool of resources

At U-M, several student-led funds can invest in alumni; specifically, the Frankel and Wolverine Venture Funds have the capability to do so. In addition, Blackstone Launchpad at WSU offers most of its resources to alumni, with the exception of one-on-one consulting services.

Mentorship

As discussed in "Rate of Firm Survival" on page 12, there is a high failure rate for new businesses, particularly during the first five years. One way to assist new entrepreneurs to be successful is to provide mentors throughout the process. Mentors have the experience and skills to guide aspiring entrepreneurs through the challenges that are associated with starting a business, as well as maintaining it once it is established. URC universities recognize the value of having mentors at the early stages of forming a business, and have incorporated mentorship into many of their entrepreneurship programs.

Mentorship can happen formally or informally. Informal mentorships occur organically through networking events, collaborative workspaces, or other social connections, such as friends of friends, or in the classroom. Students who

actively engage their professors or take on research projects find a mentor in staff or faculty. Alumni can offer a student a unique opportunity to learn by observing or through casual conversations.

Formal mentorship can be facilitated by a third party in order to benefit one or more people involved in the mentoring process. The URC universities offer several structured, formal mentorship opportunities through entrepreneurship programs:

- MSU's Spartan Innovations has a CEO-in-Residence program, which provides leadership and executive management for MSU start-up enterprises throughout the entire venture launch period.
- U-M's Venture Accelerator provides a mentors-in-residence program, in which seasoned entrepreneurs connect start-ups to useful resources and business partners.
- U-M's TechArb co-managed by the Center for Entrepreneurship and the Zell Lurie Institute for Entrepreneurial Studies, provides mentors for student teams who meet every 1-2 weeks to assist with the entrepreneurial process.
- WSU's Blackstone Launchpad provides workshops for students in which mentors come in to speak and teach students essential skills for entrepreneurship.

This list of programs is not comprehensive for the mentorship offerings at URC universities, and students have access to many more sources of expertise along the way, including staff, faculty, local businesses, and other types of available resources.

Collaboration with Community Entities

Universities, while an integral part of local economies, still are part of a larger goal of economic development within regions and the state. Each of the communities in which the URC universities are located have external efforts to encourage local and regional economic growth.

There has been an intentional movement to build partnerships and coordinate efforts to encourage this type of growth. Some of the entities in the surrounding communities include TechTown in Detroit, the Lansing Economic Area Partnership (LEAP) in East Lansing, and Ann Arbor Spark. Furthermore, these partnerships are not limited to the areas in the immediate surroundings of the universities.[42] We provide some examples of university and community partnerships below:

42. One example is the MSU Bioeconomy Institute, which conducts research and production, as well as provides incubation, lab space, educational programming, and training in Holland, MI; a significant distance away from MSU's campus in East Lansing.

MSU. Services at MSU benefit from community resources, and vice versa. The Hatch, for example, is a student business incubator, provided as a joint venture by MSU, LEAP, the City of East Lansing, and Spartan Innovations. The Hatch represents a truly collaborative community and university effort, and benefits many undergraduate students at the university. The Hatch, furthermore, is located inside East Lansing's Technology Innovation Center (TIC). The proximity of the two incubators allows for easier access to human capital for aspiring or existing entrepreneurs, again facilitating a natural networking environment. In addition, since the Hatch is for students, and the TIC is for community members, the transition from the Hatch to the TIC may be fluid and beneficial for entrepreneurs.

Michael Vichich
Michigan State University
B.S. in Finance, 2006

Photograph by Doug Coombe

Company Founded: Glyph, 2012
Industry: Mobile Personal Finance
Offices: Ann Arbor, Mich., New York City
Employees: 10
About: Mike Vichich is helping consumers make better financial decisions by alerting them which credit card to use when making purchases to maximize rewards and coupons and decrease fees and interest charges. To give back to the community, he founded "Develop Detroit," a 10-week app development boot camp for aspiring techies, and has awarded free tuition to two Cass Tech High School students to learn mobile programming.

U-M. The Office of Technology Transfer (OTT) communicates regularly with Ann Arbor Spark, and has some staff members serving on Spark's advisory board. Furthermore, Spark offers services that benefit community members, including students, such as networking events or incubator space. The two entities are complementary to each other, both encouraging entrepreneurial growth in the region.

WSU. The Front Door, located in Detroit's TechTown, was created to be a gateway to WSU for businesses. Being located in TechTown strategically allows the Front Door to work with the city's efforts to spur economic growth in the region.

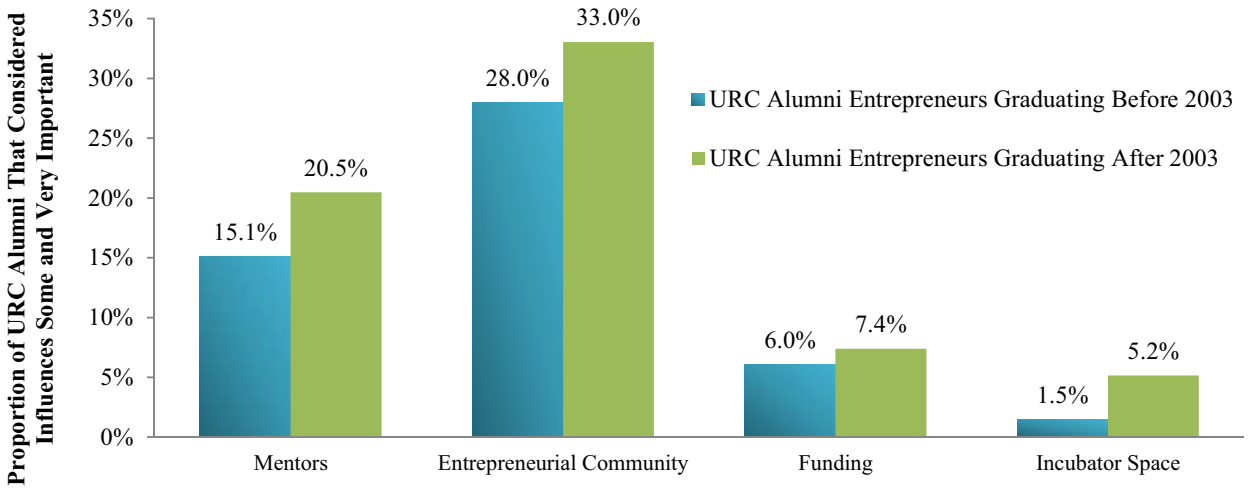
The Front Door engages in executive education, business training, and consulting to community businesses, and also connects businesses to university resources for purposes such as licensing technologies and accessing talented students. By becoming involved with The Front Door, students also can become closer to TechTown and learn more about the opportunities offered there, such as Launch Detroit, a summer boot camp which has entrepreneurial training and entrepreneurial stipends.

ALUMNI PERSPECTIVE ON URC'S EVOLVING ROLE

As shown in Exhibit 1, "Catalogue of Entrepreneur Programs and Resources at the URC Universities," on page 51, there are over 37 different entities at URC universities that assist students, alumni, faculty, as well as the surrounding community. In Figure 24 on page 65, we show the responses of URC alumni entrepreneurs when they were asked how influential their URC experience was in starting their business. In each category of support (mentors, entrepreneurial

community, funding, and incubator space), the URC alumni that graduated after 2003 found these support services more influential. As we discussed in "Expanding Beyond the Conventional Role" on page 48, the main reason for this is that the URC universities have only more recently began providing these services.

FIGURE 24. Proportion of URC Alumni Entrepreneurs Considering URC Provided Support Important or Very Important in Starting Their Business



Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

Appendix A. Data and Methodology

In this appendix, we provide additional discussion and detail regarding the methodology followed to complete the analysis described in this report. We begin by discussing the survey methodology of the URC's "Alumni Impact Survey," as well as potential sources of biases for key survey questions. We then describe how we used the survey data to make inferences about the URC alumni population as a whole.

SURVEY METHODOLOGY

The University Research Corridor, contracted with an independent survey firm, Survey Sciences Group, LLC (SSG), to administer data collection for an "Alumni Impact Survey." Prior to releasing the survey, AEG, the URC, and SSG worked together to frame the questions used in the survey of alumni. SSG administered this study and provided AEG with the data, which were used in our analysis. Below in "SSG Data Collection Methodology," we provide a summary of SSG's methodology. We then provide a discussion of potential survey biases in Table A-3, "Likely Effects of Sampling, Question, and Issue Biases on Responses to the Survey Question 'Have you ever founded or co-founded a business?'" on page A-3.

SSG Data Collection Methodology

Each of the three universities provided SSG with alumni lists, which needed to be "cleaned" to remove duplicate email addresses both within schools, and across schools, to prevent multiple invitations going to the same person. For example, if an email address was present in both the Michigan State and Wayne State file, that case was kept in for the university the individual first attended and suppressed from the other.

Pilot Study. A small pilot of the survey was conducted to test response rates, the length of the survey, as well as identify any problem areas of the instrument and the quality of the lists provided to SSG. For this pilot, 400 cases were selected from each list provided. Half of these cases were sent a survey via email and the other half was mailed a paper survey. These cases were selected at random from records without email addresses and at random from cases that had an email address. Cases that did not have an email address were sent an invitation letter via postal mail as the single contact for the pilot.

Data Collection. Data collection began with the distribution of a notification email to all selected alumni. This email was from the three university Presidents in collaboration and detailed the purpose of the study and who was supporting it. There was no link to access the survey in this initial communication.

The notification email was followed two days later by the invitation email. This communication was to the school specific populations and was sent from their respective university President. This communication provided another overview of the study purpose along with a link to access and participate in the survey.

Two reminders were sent to those people who had not yet completed the survey. Each communication contained a URL and a unique survey ID number to gain access to the survey. Population and sample information are shown below in Table A-1.

TABLE A-1. Case Selection Summary

	University of Michigan	Michigan State University	Wayne State University	URC Total
Invited to Survey	205,044	166,805	80,759	452,608
No Email Address Provided	290,819	278,743	164,398	733,960
Bad Email Address Provided	1,077	890	699	2,666
Duplicate Within School (not invited)	3,750	1,558	355	5,663
Duplicate Across Schools (not invited)	3,579	747	1	4,327
Case Used in Pilot	400	400	400	1,200
Total	**504,669**	**449,143**	**246,612**	**1,200,424**

Data: 2013 URC Alumni Survey
Data Analysis: Anderson Economic Group, LLC

Responses. The overall response rate for the three universities combined in this study was 10.86%, with the total number of completed surveys reaching 40,752. The responses for the overall study and among individual schools are shown below in Table A-2. .

TABLE A-2. Number of Responses and Response Rate

School	Refusals	Partials	Completes	Response Rate%	Completion Rate%
University of Michigan	212	3,968	18,784	11.10%	83%
Michigan State University	181	3,380	17,545	12.54%	84%
Wayne State University	50	1,065	4,423	6.79%	81%
Total	**443**	**8,413**	**40,752**	**10.86%**	**83%**

Data: 2013 URC Alumni Survey
Data Analysis: Anderson Economic Group, LLC

There are various formulas for calculating the required sample size of a population. Each of these involve population size, confidence interval, and the level of precision.[1] Due to our very high sample, and high response rate, our sample size

1. The level of precision is defined as the closeness with which the sample predicts the true value of the population. This difference between the sample mean and the population mean is called the sampling error. At +/- 3%, the population mean is within 3 percentage points in either direction of the sample mean.

is sufficient to put us well within a 95% confidence interval for our estimates, with less than a 3% sampling error. For population sizes larger than 100,000, 1,111 responses place a study at a precision level of +/- 3% of population means at a 95% confidence interval.[1] Therefore, given our high population size of over one million living alumni, a sample size of 40,000 provides estimates of the population means that are within the true range.

Survey Methods and Potential Sources of Bias

Every survey involves some amount of sampling, question, or issue biases. Sometimes the net result of these is very small. On the other hand, they can be so large as to call into question (if not cause an outright rejection) of the results.

Our entrepreneurship survey certainly is affected by some of these biases. We took care right from the start to reduce them, but we could not completely eliminate them. Below we provide a discussion of the possible causes of bias, as well as the steps taken to minimize the effects. Table A-3 below highlights these potential sources of bias. There is no objective way to calculate anything other than statistical sampling error. We provide our judgement for the possible effect on the estimate for URC entrepreneurial alumni.

"To see the survey questions pertaining to URC alumni entrepreneurs, see Exhibit 2 "2013 URC Alumni Survey Instrument, Section II: Entrepreneurship," on page II-4. We discuss the survey instrument itself in Appendix B.

TABLE A-3. Likely Effects of Sampling, Question, and Issue Biases on Responses to the Survey Question '*Have you ever founded or co-founded a business?*'

Factor	Likely Effect on Positive Responses	Notes	Possible Effect on Implied Share of Graduates that are Entrepreneurs
Possible Sampling Biases			
Statistical sampling bias	Extremely small	With a sample size of more than 40,000 responses, the statistical sampling bias is extremely small. The variance of the sample proportion is $p(1-p)/n$, where p is the sample proportion and n is the sample size. For $n>10000$, this becomes vanishingly small. The large sample size also limits the possible negative effects of every other aspect of sampling bias.	<1%
Response Rate Bias based on respondent age	Extremely small	While only those with a working email were surveyed, the survey had fairly equal responses from graduates in the 1930s through the 1990s. There was a slightly larger response rate overall from graduates in the past decade, however they did not report overly high levels of entrepreneurial activity in comparison to older respondents. This reduced our concerns about response bias in certain age groups.	<1%

(Table continued on following page)

Data: SSG; 2013 URC Alumni Survey
Data Analysis: Anderson Economic Group, LLC

1. For a further discussion of calculating sample sizes, see the University of Florida IFAS Extension, http://edis.ifas.ufl.edu/pd006. 2012. For additional information on determining sample size, see Penn State's Program Evaluation Tipsheet #60, http://extension.psu.edu/evaluation/pdf/TS60.pdf.

TABLE A-3. Likely Effects of Sampling, Question, and Issue Biases on Responses to the Survey Question '*Have you ever founded or co-founded a business?*'

Factor	Likely Effect on Positive Responses	Notes	Possible Effect on Implied Share of Graduates that are Entrepreneurs
Alumni database as a fraction of total alumni	Slightly higher	While we know of 1.2 million living alumni from the databases provided by each URC school, there may be more alumni in the world that they do not have information for, or alumni in the database that have passed away but the database has not been updated. This would result in less than 1% bias in either direction.	<1%
Alumni with known email addresses as a fraction of the alumni database	Slightly higher	Possession of a current email address by the alumni office is partially an indication of the desires of the alumni to be contacted via email, as well as other preferences. However, it may indicate a likelihood to have been interested in a rapidly growing sector of the economy.	+1-2%
Respondents to survey as a share of emailed alumni database	Higher	Respondents who are entrepreneurs, or are interested in entrepreneurship, are more likely to respond to the survey. However, the survey was titled an "Alumni Impact Survey" and equally included all alumni and did not single out entrepreneurs.	+1%
	Lower	However, entrepreneurs are likely to have more pressure on their time (especially those currently involved in a new business and those who are self-employed), and therefore less likely to complete a survey in general.	-2%
Possible Question Biases			
Respondents' impressions of the question wording and framing of issue, compared with objective of question	Very small	The survey instrument did not discourage "no" answers to the business-starting question. Both "yes" and "no" responses resulted in a continuation of the survey. As there was not a question on "are you an entrepreneur" we immediately discounted any possibility a respondent would "self-identify" as an entrepreneur and skew the data.	+/- 1%
Respondents not knowing if they should respond positively or not	Very small	Some respondents may not think they have started or acquired a business when in fact they have. The issue here lies in whether or not a person considers the entity they have started as a legal business or not. Certain tax forms define self-employed persons as owning a business, but some self-employed persons may not consider it so.	-1%
Respondents' abilities to complete surveys; accuracy of survey tabulation	Very small	A very high percentage of respondents completed the entire survey. Tabulation of results was completed with very few problems.	+/-1%

(Table continued on following page)

Data: SSG; 2013 URC Alumni Survey
Data Analysis: Anderson Economic Group, LLC

TABLE A-3. Likely Effects of Sampling, Question, and Issue Biases on Responses to the Survey Question '*Have you ever founded or co-founded a business?*'

Factor	Likely Effect on Positive Responses	Notes	Possible Effect on Implied Share of Graduates that are Entrepreneurs
Possible Issue Biases			
Respondents reporting that they had "started a business," compared to actual efforts to start a business	Lower	Many of the efforts required to start a business (initial experiments with products and services, initial capital raising, organizing) occur before legally forming a business organization, or registering with tax authorities. Furthermore, most businesses start as a single person (sole proprietorship), blurring the distinction between "business" and employment and hobby.[a] URC survey data show a higher rate of survivorship than national data [NBDS], suggesting that some business organization efforts are not reported if the business does not survive.	-5-10%
Respondents' willingness to say they are an "entrepreneur" or "started a business"	Very small	Survey instrument did not ask for respondents to characterize themselves as "entrepreneurs," which might have encouraged some unwarranted positive responses. Survey instead asked whether a person had started or acquired a business. As discussed in the text of the report, entrepreneurship has only recently become a fashionable topic and it is unlikely that alumni graduating before the 2000s were encouraged to self-identify as entrepreneurs.	+/-1%

Data: SSG; 2013 URC Alumni Survey
Data Analysis: Anderson Economic Group, LLC

a. Patrick L. Anderson, *The Economics of Business Valuation*, Stanford, Stanford University Press, 2013.

SURVEY DATA ANALYSIS

In order to make generalizations about the entire URC alumni population based on the survey, we took the following steps:

- **Number of entrepreneurs**: The number, rate, and distribution of responses allowed us to assume that the share of survey respondents with a positive response to the questions, "have you ever started a business," and "have you ever acquired a business," to be equivalent to the share of the entire population.

  See Table 4, "Survey Responses For Questions About Starting or Acquiring a Business," on page 6.

TABLE A-4. Survey Responses For Questions About Starting or Acquiring a Business

Survey Question	Number of Respondents That Answered: "Yes"	"No"
Have you ever founded or co-founded a company?	8,673	36,759
Have you ever purchased or owned a significant share of a company (10% or more)?	3,025	42,407

Notes: A number of alumni indicated both starting and acquiring a business. Respondents who did not answer the question are included in "no." The total number of respondents per question may differ from the number 40,752 survey completions due to SSG's definition of completion. Therefore, these totals may exceed that reported number.

Data: 2013 URC Alumni Survey
Analysis: Anderson Economic Group, LLC

- **Number of businesses**: In order to provide a conservative estimate of the total number of businesses started to-date by URC alumni, we took a truncated average of the number of firms that respondents reported having started or acquired. While some respondents reported owning a greater number than 15 businesses, we kept 15 as the highest number to include for our average number of businesses per entrepreneur. By doing this, we also tried to avoid double counting—for example, one business that is co-founded by two URC alumni.

  We then tabulated the number of businesses reported by the size of the firm revenues and employee levels. This way we could see the distribution of businesses in comparison to the U.S. average. URC alumni had a larger concentration of firms with revenues over $100 million and more than 1,000 employees than the U.S. average.

  There was also a share of entrepreneurs in the survey that reported starting more than 15 businesses. Many of these respondents could be venture capitalists that invest large sums in multiple businesses but do not represent the URC population at large. Because of these differences, instead of scaling up the total number of businesses reported in the survey, we took the average number of businesses started by each entrepreneur survey respondent (1.67) and multiplied it by our estimate of the total number of entrepreneurs. This gave us a conservative estimate of the total number of businesses started by URC alumni and eliminated some sources of bias in the estimate.

- **Number of businesses still in operation**: We assumed that the responses regarding the operating status of each firm were accurately reported by respondents.[1] We applied the share of alumni that indicated they still had a business in operation to our estimate of total businesses started.

- **Kauffman Index Comparison to URC Alumni**: The Kauffman Index of Entrepreneurial Activity has clear methodology that was simple to replicate using the SSG survey data. The Kauffman definition of entrepreneurial activity is “the share of U.S. adults between the ages of 20 and 64 that did not own a

business in the previous year, but did own a business in the year they were being polled."[1] The SSG survey gathered data on each respondent's birth year along with data on the year each of their companies was founded. Using this, we were able to recreate the Kauffman Index for URC alumni.

- **Geography of firms and mapping**: Survey respondents provided the location of each business started. Using the response rates and share of the entire alumni population we were able to scale up the number of firms opened in general and in Michigan. We organized the information and used a geographic information system (GIS) platform to map the country, state, and city of each business identified by survey respondents.

- **Revenues and GDP**: Survey respondents were given the opportunity to report revenue for up to 10 firms in the survey. We summed the total of those who reported revenues for the 2012 year, and scaled the value to represent the survey population according to the share of survey respondents that answered the question. This was necessary as some respondents who started businesses and reported those businesses did not report revenues. We calculated GDP estimates using the 2004-2011 average ratio of value added (GDP) to business revenues.[2] In order to scale the GDP values, we took the following conservative approach:

  1. Remove all firms that had over $100 million in revenues (for the lower bound) and all firms with over $500 million in revenues (for the upper bound).
  2. Scale the new totals up based on the share of firms not reported in the survey (approximately 4.5% responded).
  3. Add the removed revenues to each respective total.
  4. Multiply each by the GDP/Output ratio for the U.S.

- **Total Employment**: Survey respondents were given the opportunity to report employment for up to 10 firms in the survey. We summed the total of those who reported the number of workers their firm employed for the 2012 year, and increased the value to represent the survey population according to the share of survey respondents that answered the question. This was necessary as some respondents who started businesses and reported those businesses did not report employment levels. We then took the following steps to estimate total URC-alumni firm employment for 2012:

1. We were unable to confirm survey results and check business existence, employment, or revenue levels, as some other studies have. Doing so would have been a massive undertaking and was outside the scope of this project. Rather, we used conservative methodology, so as not to overinflate our estimates.

1. Robert W. Fairlie, "Robert W. Kauffman Index of Entrepreneurial Activity 1996-2011," *Kauffman Foundation of Entrepreneurship*, Santa Cruz, March 2012.

2. Bureau of Economic Analysis Value-Added and Gross-Output data 2004 to 2011. See our discussion in "'To see the survey questions pertaining to URC alumni entrepreneurs, see Exhibit 2 "2013 URC Alumni Survey Instrument, Section B: Entrepreneurship," on page B-4. We discuss the survey instrument itself in Appendix B." on page A-3.

1. Scale down the number of firms with over 1,000 employees (0.095% of businesses reported in survey) to match that of the U.S. average (0.09% of all U.S. businesses).
2. Scale up the new total by the share of firms not represented in the survey (approximately 4.5% represented).
3. Add the employment in for firms removed in step 1.
4. Add the number of firms with zero employees other than the owner to capture self-employment.

Appendix B. Alumni Survey Instrument

In this appendix, additional detail is provided regarding the survey instrument used to inform this study. As mentioned previously in Appendix A, Anderson Economic Group, LLC collaborated with both The University Research Corridor (URC) and an independent survey firm, Survey Sciences Group, LLC (SSG) to formulate a set of questions that would comprise the 2013 URC Alumni Survey. Data from this survey allowed AEG to more accurately assess the URC's economic contribution via their entrepreneurially-inclined alumni.

OVERVIEW OF SURVEY INSTRUMENT

As described in "Survey Methodology" on page A-1, each survey was accompanied by a letter to from a URC university president. See below.

Survey Invitation from University President

Below is a representative letter that each of the URC university presidents sent as an introduction to the survey. Each of the letters was slightly tailored to that university, but each respondent was provided a similar explanation of the survey's overall purpose:

> I am writing to encourage you to participate in an important survey being carried out by the University of Michigan, Michigan State University and Wayne State University. Together, our three institutions work as the University Research Corridor (URC), an alliance to help strengthen and diversify the Michigan economy.
>
> As professionals, innovators, entrepreneurs and leaders, [MSU, U-M, WSU] alumni make an enormous impact on the economies of Michigan, the United States, and the world. To measure this impact, the URC Alumni Impact Survey is reaching out to nearly 450,000 graduates of U-M, MSU, and WSU to better understand their occupations, industries, entrepreneurial endeavors, and geographies.
>
> This survey also aims to learn from alumni like you how your preparation and experiences at [MSU, U-M, WSU] have influenced your professional life.
>
> The survey is available online and will take approximately 15 minutes to complete. Please visit: https://ssgresearch.com/survey/....
>
> Your login information is as follows:
>
> Username:
>
> Password:
>
> Survey results will be used to provide industry leaders, academic leaders, legislators, media, the general public and alumni with a clearer picture of the role universities play in our economy, within the state and beyond. Findings also will help to strengthen our programs and better

prepare [MSU, U-M, WSU] students for the challenges they will face in their careers.

Sections of the Survey

The 2013 URC Alumni Survey included four sections:

A. ***Educational Background***

This section asked respondents basic questions about their education, such as graduation date, how many degrees they have earned, and from where. Each respondent was provided a drop down menu to chose from for their major, as well as an "other" category, should their major not fit into the provided category.

B. ***Entrepreneurship***

This section asked questions about firms that a respondent has owned and/or acquired such as founding dates, industry, number of employees, and business revenues. The data primarily used by AEG was from this section. We provide the questions included in Exhibit 2 "2013 URC Alumni Survey Instrument, Section B: Entrepreneurship," on page B-4.[1]

C. ***Career Information***

This section asked respondents basic questions about their current careers, such as their work status (currently employed, retired, etc), and the size and industry of the company at which they are employed. Each respondent was also asked questions about whether their job related to their major, and if skills from their degree translated into significant skills they use at their job.

D. ***Personal Information***

This section asked respondents basic questions about themselves such as the year they were born, ethnicity, race, where they currently reside, and their household income.

Every survey respondent was provided the opportunity to answer questions in each of these sections. However, how respondents answered the following questions, determined whether they were presented with the questions from Section B or C:

1. Have you ever founded or co-founded a company?
   (Please note that this question refers to founding status of your company, and includes any level of ownership.)
2. Have you ever purchased or owned a significant share (10% or more) in an existing business?
   **Please do not include companies listed in the previous question (founded companies). This question refers only to those mature companies you purchased or own, but did not found.*

1. Note that Exhibit 2 only contains the questions from Section B. This exhibit also has some commands that were used in to create the survey. We left these programming commands in the survey text so that interested readers could see how questions progressed and how the survey determined whether questions pertained to each respondent.

If the respondent answered “yes” to either question they were directed to the remaining questions in Section 2. If they answered “no” to both, they were directed to the questions in Section 3. Note that each survey question was not mandatory, which we discuss below.

Mandatoriness

SSG did not require all questions to be mandotory. Rather all questions were made optional with a soft prompt to the respondent if no answer was provided. Below is text for the Mandatoriness prompt used:

We noticed that you did not answer a question on the previous page. It is important to us that we get a complete set of responses from you. To return to the last question please click "Previous" and select an answer, otherwise click "Next" and you will advance to the next page.

Exhibit 2. 2013 URC Alumni Survey Instrument, Section B: Entrepreneurship

B1. Have you ever founded or co-founded a company? (Please note that this question refers to founding status of your company, and includes any level of ownership.)

1 Yes
0 No

{PRG: SHOW B1_B IF B1 = 1 OTHERWISE GOTO B2}

B1_B. Please enter the number of companies you have founded or co-founded.
[NUMERICAL RESPONSE 1-99]

B2. {PRG: IF B1_B > 0, DISPLAY "Other than those companies you founded/co-founded, have" OTHERWISE DISPLAY "Have"} you ever purchased or owned a significant share (10% or more) in an existing business?
**Please do not include companies listed in the previous question (founded companies). This question refers only to those mature companies you purchased or own, but did not found.*

1 Yes
0 No

{PRG: SHOW B2_B IF B2 = 1 OTHERWISE GOTO B5}

B2_B. Please enter the number of companies you have purchased or owned a significant share of.
[NUMERICAL RESPONSE 1-99]

{PRG: IF B1 AND B2 = 0, GOTO C1}
{PRG: DO NOT SHOW CALC_COMPNUM}

CALC_COMPNUM. Number of companies
[SET NUMERICAL RESPONSE = SUM(B1_B + B2_B)]

INTRO.TEXT. Please list the {PRG: IF CALC_COMPNUM > 1 SHOW "first"} company or business you founded / co-founded or purchased / owned {PRG: IF CALC_COMPNUM > 1 SHOW "here, starting with the most recent:" OTHERWISE SHOW "here:"}

{DESIGN: SHOW B5_COMP1 – B5_INV1 ON SAME PAGE}

{PRG: B5_COMP1 IS MANDATORY}
B5_COMP1. Company Name [TEXT RESPONSE]
B5_CITY1. City Name [TEXT RESPONSE]
{DESIGN: SHOW B5_STATE1 AS DROP-DOWN MENU}
B5_STATE1. State
Options: Outside the USA
[All U.S. States Listed]
B5_CNTRY1. Country *(if outside US)* [TEXT RESPONSE]
B5_INV1. How did you come to be involved in this company?

1 Founder / Co-Founder
2 Investor / Purchaser

B5_ENG. Have you been engaged in company activities within the last three months for [NAME OF COMPANY]

1 Yes
0 No

B5_YRFND. Please specify the year founded.

Exhibit 2. 2013 URC Alumni Survey Instrument, Section B: Entrepreneurship (continued)

B5_IND1. Please specify the industry for **[RESTORE B5_COMP1 VALUE]**. **Please note that the nonprofit, for-profit, and government/public sectors are included within each of the broad industry categories below. Select the category that best represents the industry in which you work (e.g., Government sector working in providing public service – service industry).*

1	Agriculture, forestry, fishing, and hunting	11	Real estate and rental and leasing
2	Mining	12	Professional, scientific, & technical services
3	Utilities	13	Management of companies and enterprises
4	Construction	14	Administrative & waste management services
5	Manufacturing	15	Educational services
6	Wholesale trade	16	Health care and social assistance
7	Retail trade	17	Arts, entertainment, and recreation
8	Transportation and warehousing	18	Accommodation
9	Information Communications Technology	19	Food services and drinking places
10	Finance and insurance	20	Other services

B5_OPSTAT. Please indicate the operating status of the following {PRG: IF CALC_COMPNUM=1 DISPLAY "company"; OTHERWISE DISPLAY "companies"}.

1	In Operation
2	Acquired By Another Firm
0	Out of Operation
99	Don't Know

B5_HOLD. Please indicate if the following {PRG: IF CALC_COMPNUM=1 DISPLAY "company is"; OTHERWISE DISPLAY "companies are"} privately or publicly held.

1	Privately Held
2	Publicly Held
99	Don't Know

INTRO.TEXT. Please enter your best estimate of the revenue *(If still in operation, last year – if no longer operational, peak year)*

B5_REV1. **[RESTORE B5_COMP1 VALUE]:** $[NUMERICAL RESPONSE, ALLOW 15 CHARACTERS]
B5_REVY1.

1	Revenue for last 12 months
2	Revenue for other year *(please specify):* [NUMERCIAL RESPONSE 1800-2011]

INTRO.TEXT. Please specify your best estimate of employment *(If still in operation, last year – if no longer operational, peak year)*

B5_EMP1. **[RESTORE B5_COMP1 VALUE]:** [NUMERICAL RESPONSE, ALLOW 7 CHARACTERS] employees

Exhibit 2. 2013 URC Alumni Survey Instrument, Section B: Entrepreneurship (continued)

B5_EMPY1.

1 Employment for last 12 months
2 Employment for other year *(please specify):* [NUMERCIAL RESPONSE 1800-2011]

INTRO.TEXT. Please enter your best estimate of payroll *(If still in operation, last year – if no longer operational, peak year)*

B5_PAY1. **[RESTORE B5_COMP1 VALUE]:** $ [NUMERICAL RESPONSE, ALLOW 15 CHARACTERS] / year
B5_PAYY1.

1 Last 12 months
2 Other year *(please specify):* [NUMERCIAL RESPONSE 1800-2011]

INTRO.TEXT. Please list the second company or business you founded / co-founded or purchased / owned here:

[Repeat B5 questions for up to 10 companies.]

If respondents founded/owned more than one company, they were asked B6 questions.

B6_A. Since you have founded / owned more than one company, please select one company to be the focus for the remaining questions. **This company / business will be the focus for the remaining questions.**

B6_B. Please indicate the reason why you selected to focus on {R:CALC_COMPSELECT}.
{Select only the one of most importance to your company selection}

1 First
2 Most Recent
3 Largest
4 Most Successful
5 Most Important Technology
6 Personal Interest
7 Other *(Please specify):* [TEXT RESPONSE]

INTRO.TEXT. **For the following questions, we want you to focus on [RESTORE: CALC_COMPSELECT]**

B7. Just to clarify, how did you come to be involved with **[RESTORE: CALC_COMPSELECT]**?

1 Founder / Co-Founder
2 Purchased Existing Business
3 Inherited Business from Family
4 Ownership stake in company where you were a previous employee
5 Other *(Please specify):* [TEXT RESPONSE]

{PRG: SHOW B8 IF B7 = 1 OTHERWISE GOTO B9}

B8. Did you have any co-founders?

1 Yes
0 No

{PRG: SHOW B8_A AND B8_B IF B8=1 OTHERWISE GOTO B9}

Exhibit 2. 2013 URC Alumni Survey Instrument, Section B: Entrepreneurship (continued)

B8_A. Please specify the number of co-founders. [NUMERICAL RESPONSE 0-99]

B8_B. What was / is your relationship to the other co-founder(s)? *(Select all that apply)*

1 University classmates
2 University faculty
3 University alumni (not classmates)
4 Friends
5 Work colleagues
6 Family
7 Other *(Please specify)*: [TEXT RESPONSE]

B9. What was the primary source of funding used to support the start of **[RESTORE: CALC_COMPSELECT]?**

1 Venture Capital
2 Angel Investor
3 Bank Loan
4 Small business loan – government
5 Personal loan from family or friend
6 Personal investment
7 Crowd-funding
8 Other *(Please specify):* [TEXT RESPONSE]

B10. What other sources of funding did you use to support the start of **[RESTORE: CALC_COMPSELECT]**? *(Select all that apply)*

{PRG: SHOW RESPONSE OPTIONS ONLY IF NOT SELECTED IN B9}

1 Venture Capital
2 Angel Investor
3 Bank Loan
4 Small business loan – government
5 Personal loan from family or friend
6 Personal investment
7 Crowd-funding
8 Other *(Please specify):* [TEXT RESPONSE]
0 None

B11. Thinking back to your experience at [DISPLAY PRE_3 LABEL], how influential were the following to your founding or owning of **[RESTORE: CALC_COMPSELECT]**?

1 A lot of influence
2 Some influence
3 A little influence
0 None
99 Not Applicable

B11_A. Faculty
B11_B. University Mentors
B11_C. Entrepreneurial community outside the university
B11_D. Fellow Students
B11_E. Research work
B11_F. Experiential Learning (e.g. internships)
B11_G. Funding
B11_H. Incubator space
B11_I. Entrepreneurial course
B11_J. Culture / General Expectations

Exhibit 2. 2013 URC Alumni Survey Instrument, Section B: Entrepreneurship (continued)

B12. **Outside** of [DISPLAY PRE_3 LABEL], how much influence did each of the following aspects of your experience have on your founding or owning of **[RESTORE: CALC_COMPSELECT]**?

1 A lot of influence
2 Some influence
3 A little influence
0 None
99 Not Applicable

B12_A. Funding
B12_B. Mentors
B12_C. Work Experience
B12_D. Peer Networks
B12_E. Alumni Network
B12_F. Entrepreneurial Support Infrastructure

B13. Where was **[RESTORE: CALC_COMPSELECT]** initially founded?

Options: Outside the USA
[All U.S. States Listed]

{PRG: SHOW B14 IF B13 IF NULL OR NOT EQUAL TO 23}

B14. Since **[RESTORE: CALC_COMPSELECT]** was founded, has it located an expansion office in Michigan?

1 Yes
0 No

{PRG: SHOW B14_A IF B14=1 OR IF B13=23 OTHERWISE GOTO B14_B}

B14_A. Number of employees located in Michigan. [NUMERICAL RESPONSE 1-999999]

{PRG: SHOW B14_B IF B14=0 OR IS NULL; OTHERWISE GOTO B15}

B14_B. Have you ever considered locating part or all of **[RESTORE: CALC_COMPSELECT]** in Michigan?

1 Yes
0 No

B15. What factors influenced your decision to locate **[RESTORE: CALC_COMPSELECT]** where you did?

1 A lot of influence
2 Some influence
3 A little influence
0 None
99 Not Applicable

B15A. Location affiliation (e.g., you grew up there; you attended school or university there; you were employed there)
B15B. Access to talent
B15C. Strength of entrepreneurial ecosystem (e.g., entrepreneurial expertise / mentorship, access to venture capital and other funding, access to technology / research / licensing opportunities, proximity to intellectual property protection)
B15D. Business Climate (e.g., state and local government assistance; favorable tax climate; favorable regulatory climate; low-cost land / rental space)
B15E. Operations (e.g., proximity to market; proximity to suppliers; network of contacts; transportation infrastructure)
B15F. Quality of life (e.g., cost of housing; quality of schools; recreation opportunities; arts & culture)

INTRO.TEXT. Information regarding entrepreneurs' socio-economic background has rarely been considered in studies of entrepreneurs. The following questions are an effort to address this area.

Exhibit 2. 2013 URC Alumni Survey Instrument, Section B: Entrepreneurship (continued)

B16.INTRO. To the best of your recollection, please estimate your…

B16A. High School [NUMERICAL RESPONSE 0.0-4.0]
B16B. College [NUMERICAL RESPONSE 0.0-4.0]

INTRO.TEXT. Please estimate your SAT or ACT scores.

B17A. ACT [NUMERICAL RESPONSE 0-36]
B17B. SAT [NUMERICAL RESPONSE 200-2400]

INTRO.TEXT. Please indicate the highest level of education for your parents.

1	Less than high school diploma	5	Masters / Professional Degree
2	HS Diploma	6	Doctorate
3	Some college, no degree	99	Don't Know / Not Applicable
4	BA		

B18A. Mother
B18B. Father

B19. Please select the category that best describes the level of household income (in today's dollars) for your family of origin (parents).

1	Less than $20,000	6	$100,000 - $149,999
2	$20,000 - $34,999	7	$200,000 - $499,999
3	$35,000 - $49,999	8	$500,000 or greater
4	$50,000 - $74,999	99	Don't Know
5	$75,000 - $99,999		

B20. Did you receive any form of financial aid (e.g., merit scholarships, need-based scholarships, grants, loans) to attend undergraduate school?

1 Yes
0 No

{PRG: SHOW B21 IF B20 = 1 OTHERWISE GOTO C1}

B21. Please select which forms of aid you received. *(Please select all that apply)*

1 National merit-based scholarship
2 Institutional merit-based scholarship
3 Federal and/or state need-based scholarship
4 Institutional need-based scholarship
5 Pell Grant
6 Stafford Loans

Appendix C. About the Authors

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.

Since 2007, AEG has completed two annual studies for the University Research Corridor. The first report is an assessment of the URC's economic impact on the state of Michigan, which is released every fall or winter. The second report is an assessment of how the URC universities contribute to an important economic sector in the state, which is released every spring. For past reports and more information on AEG, visit www.AndersonEconomicGroup.com.

STUDY'S AUTHORS

Erin Agemy Grover. Ms. Grover is a Senior Analyst at Anderson Economic Group, working in the Public Policy and Economic Analysis practice area. Ms. Grover's recent work consists of several economic and fiscal impact analyses of counties and business ventures throughout the U.S.; evaluating policy changes and potential public funding mechanisms; as well as an analysis of the economic contribution research universities make in Michigan. She also contributed to the book, *The Economics of Business Valuation*, a 2013 publication of Stanford Press.

Ms. Grover holds a Masters degree in Economics from George Mason University and a Bachelors of Science degree in Political Economy from Hillsdale College.

Colby Spencer Cesaro. Ms. Cesaro is a Senior Analyst at Anderson Economic Group, working in the Public Policy and Economic Analysis; and Market and Industry practice areas. Ms. Cesaro's background is in econometrics, public policy, local government, urban and social policy, and education.

Ms. Cesaro's recent work includes several economic impact analyses, including infrastructure projects and business ventures; analysis of state provided business tax incentives; analysis of the economic contribution research universities make in Michigan; benchmarking Michigan's economy and higher education institutions compared to those in other U.S. States; and analysis of how competitive Michigan's metropolitan areas are for businesses. Ms. Cesaro also works with Geographic Information System (GIS), applying the software to conduct geospatial market and policy analyses.

Ms. Cesaro holds a Bachelor of Science in Education from New York University and a Master of Public Administration from the School of International and Public Affairs at Columbia University.

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.

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.

Patrick L. Anderson. Mr. Anderson founded Anderson Economic Group in 1996, and serves as a Principal and Chief Executive Officer in the company.

Mr. Anderson has taken a leading role in several major public policy initiatives in his home state. He was the author of the 1992 Term Limit Amendment to the Michigan Constitution, and also the author of the 2006 initiated law that repealed the state's 4-decade-old Single Business Tax. His firm's work resulted in a wage increase for Home Help workers in 2006, the creation of a Michigan EITC in 2008, and the repeal of the item pricing law in 2011. Before founding Anderson Economic Group, Mr. Anderson was the deputy budget director for the State of Michigan under Governor John Engler, and Chief of Staff for the Michigan Department of State.

Anderson is a graduate of the University of Michigan, where he earned a Master of Public Policy degree and a Bachelor of Arts degree in political science. He is a member of the National Association for Business Economics and the National Association of Forensic Economists. The Michigan Chamber of Commerce awarded Mr. Anderson its 2006 Leadership Michigan Distinguished Alumni award for his civic and professional accomplishments.