



# **The University of Wisconsin-Milwaukee's \$ 1.5 Billion Economic Impact on the Wisconsin Economy**

July 21, 2014



## **ACKNOWLEDGEMENTS**

NorthStar Consulting would like to thank the University of Wisconsin-Milwaukee for undertaking this comprehensive economic impact study. The assistance and encouragement we received from university personnel were outstanding throughout the entire project. In addition, thanks to former Chancellor Michael R. Lovell, and Interim Chancellor Mark Mone, for their vision and leadership during this economic impact study.

A special thanks to Brad Stratton, UW-Milwaukee, Director of Executive Communications and Brian Thompson, President, UW-Milwaukee Research Foundation, for their insight, cooperation and “can do” attitudes during the entire research project.

NorthStar would also like to thank Professor Russ Kashian of the University of Wisconsin-Whitewater. Dr. Kashian runs the Fiscal and Economic Research Center at UW Whitewater and he provided consulting help on this project.

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## EXECUTIVE SUMMARY

The University of Wisconsin-Milwaukee (UWM) is one of the largest educational enterprises in the State of Wisconsin. It is one of two doctoral universities in the University of Wisconsin System. The published Redbook budget for UW-Milwaukee for the 2012-13 fiscal year was \$704,639,300, including student aid but excluding UWM-generated outreach tuition revenues. UWM's annual expenditures for 2012-13 were \$532 million.

There are several entities affiliated with UW-Milwaukee. The largest is the UWM Foundation, which has two affiliated organizations, the UWM Research Foundation and the UWM Real Estate Foundation. The Foundations are 501 (c) (3) organizations whose sole purpose is to benefit the University of Wisconsin-Milwaukee. The Foundation is involved in supporting research on the campus and the development of and Innovation Campus.

The University of Wisconsin-Milwaukee has a significant economic impact on the City of Milwaukee, the Milwaukee Seven (M7) region, and the State of Wisconsin. That economic impact is really two stories. First there is an economic story that involves the traditional measures of an economic impact study – jobs, taxes, and overall economic impact. In total, UW-Milwaukee contributes \$1.5 billion per year to the Wisconsin economy. This impact comes as a result of student spending, faculty and staff spending, visitor spending, and institutional spending on operations and capital. This economic activity supports over 14,000 Wisconsin jobs. In addition, the economic impact results in over \$85,000,000 in state and local taxes.

The second story of economic impact involves talent, supporting local and regional business clusters, growing regional personal income, and promoting research and innovation. Talent development includes students and faculty/staff and provides skills, leadership, and innovation that contribute to the public and private sectors. Supporting local clusters involves the University Engagement Model that builds on partnerships, internships, joint grant applications, and joint research facilities to help local clusters stay globally competitive. The university also contributes to the personal income growth in the region as 73% of its graduates stay in Wisconsin and their enhanced earning power results in over \$1.9 billion in personal income gain each year to the state and region. Finally, the university is engaged in research and innovation through research programs and the Innovation Campus and its Innovation Accelerator.

The University of Wisconsin-Milwaukee has a significant annual economic impact on the region and the state. The UWM dollar impact is in the billions of dollars. But more importantly, the university contributes to the human capital in the region that benefits both public and private sectors and supports the prosperity in the region.



**Annual Economic Impact**

***\$1.5 Billion***

**Jobs Created & Supported**

***14,489***

**State & Local Taxes Generated**

***\$ 85,000,000***

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## OVERVIEW OF THE UNIVERSITY OF WISCONSIN-MILWAUKEE ECONOMIC IMPACT STUDY

The primary purpose of this study is to determine the economic impact the University of Wisconsin-Milwaukee has on the state's economy. The economic impact is derived from the spending that takes place on the UW-Milwaukee campus and the surrounding region. Such as:

- Faculty spending
- Staff spending
- Student spending
- Visitor spending
- Capital expenditures
- Construction expenditures
- Operational spending on service/supplies
- Expenditures from all the university related entities
- Research and development expenditures

This spending in turn creates jobs and generates state and local tax revenues.

The UW-Milwaukee economic impact study was divided into two phases:

1. Phase one was completed in March 2014 and analyzed UW-Milwaukee's economic impact from all sources of spending in 2012-2013. This spending data was applied to an econometric model (IMPLAN) to calculate the economic impact of UW-Milwaukee's operational spending.

The results of the phase one study resulted in data in three categories:

- UW-Milwaukee's overall economic impact on Wisconsin and the regional economy
  - The number of jobs created in the state and region
  - The amount of state and local tax revenue generated
2. Phase two of the study was designed to calculate the University of Wisconsin-Milwaukee non-spending economic impact on the regional economy. In order to determine the non-spending impacts, the researchers reviewed a number of areas including:
    - Regional talent development
    - Supporting Key Clusters
    - Building Regional Income Levels
    - Research and Innovation

The results of the phase two research provided data in two key categories:

- The economic impact on UW-Milwaukee's regional business clusters.
- The long-term economic impact of UW-Milwaukee alumni working and living in the southeast Wisconsin region

## OVERVIEW OF THE UNIVERSITY OF WISCONSIN-MILWAUKEE

The history of UW-Milwaukee began over 129 years ago in 1885 when the Wisconsin State Normal School opened its doors at 18<sup>th</sup> and Wells in downtown Milwaukee. In 1927, the school changed its name to Wisconsin State Teacher’s College-Milwaukee and soon became one of the nation’s top teacher colleges.

In 1951, the legislature empowered all state colleges to expand their curriculum and offer liberal arts programs. In 1956, Wisconsin State College – Milwaukee merged with the University of Wisconsin-Extension Milwaukee division to form the University of Wisconsin-Milwaukee.

In 1971, UW-Milwaukee, UW-Madison, UW-Green Bay, and UW-Parkside and the affiliated freshmen-sophomore centers and state-wide extension were part of the original University of Wisconsin System. In 1971, the state legislatures merged this entity with the Wisconsin State Universities to form a united University of Wisconsin System under a single board of regents.

Since that time, the university has grown rapidly and currently enrolls approximately 27,800 students. It is recognized as a premier educational institution and has developed a number of unique and world class programs. The University of Wisconsin-Milwaukee is the second largest UW campus. The annual budget for the fiscal year 2012-13 was \$704,639,300. The university is financed by many sources including federal funds, student tuition and fees, state taxes, and auxiliary sales. The table below reports the sources of revenue for UW for the fiscal year 2012-13. Note that outreach tuition was not included in the below revenue sources and accounts for an additional \$40 million in revenue for 2012-13.

**Table 1. UW-Milwaukee Revenue Sources 2012-13**

Revenue Source	Amount	Percent of Total
Federal Grants & Student Aid	\$ 257,427,600	36.5
Tuition	189,115,300	26.8
State Taxes	123,701,600	17.6
Auxiliary Enterprise	92,906,700	13.2
Other Revenue	34,309,400	3.5
Private Gifts, Donations, & Grants	17,178,700	2.4
<b>Total UW-Milwaukee Revenue</b>	<b>\$704,639,300</b>	<b>100.0</b>

Source: UW-Milwaukee Budget 2012-13

Other highlights of the University of Wisconsin-Milwaukee include the following:

- UW-Milwaukee is the largest urban campus in the State of Wisconsin.
- UW Milwaukee is only one of two PHD granting institutions within the UW System.
- UW-Milwaukee is the home of the only graduate School of Freshwater Science in the state and in the entire country.
- UW-Milwaukee hosts the only School of Architecture and Urban Planning in the State of Wisconsin.
- UW-Milwaukee is home to the largest College of Nursing in the State of Wisconsin.
- UW-Milwaukee has the largest College of Health Sciences in the State of Wisconsin.
- UW-Milwaukee offers a vast number of degree programs including 94 Bachelor’s, 53 Master’s, and 33 Doctoral degrees.

- UW-Milwaukee is now recognized as a major research institution with over \$55 million in R&D in 2013.
- UW-Milwaukee has the largest number of non-traditional students enrolled in the UW System.
- UW-Milwaukee has the largest percentage of graduates within the UW System who reside within the State of Wisconsin.
- UW-Milwaukee was recently ranked as one of the top twenty in the world for film school excellence.
- Notable alumni of UW-Milwaukee include:
  - Satya Nadella, CEO of Microsoft Corporation
  - Golda Meir, 4<sup>th</sup> Prime Minister of Israel
  - Luis Arreaga, former U.S. Ambassador to Iceland
  - Raquel Rutledge, 2010 Pulitzer Prize recipient
  - Jim Rygiel, Oscar award winner of digital effects for several movies including “Lord of the Rings” and “Godzilla”

From its well-rounded graduates, the cutting edge research and development, the ever increasing partnerships with business and industry, UW-Milwaukee has become a major economic engine that is playing an important role in preparing the engaged, bright, and productive workforce of tomorrow.



## THE TOTAL ECONOMIC IMPACT OF UW-MILWAUKEE

The annual economic impact of the UW-Milwaukee comes from many spending sources. The largest economic impact comes from spending by students who attend the university. A second spending impact comes from the spending of faculty, staff, and classified workers. A third source of spending comes from visitors to the university. A final economic impact comes from the spending needed to run the University. This institutional spending includes payments for energy, supplies, services, and other operating expenditures.

The overall economic impact of that spending can be calculated from an econometric model. That model will process the input of direct spending and will calculate the circulation of that spending in the economy that produces indirect and induced economic activity. A brief description of the inputs and outputs of the model is shown below.

1. The direct spending of UW-Milwaukee students, employees, and visitors and the money used to pay for operations at the University are spent primarily in the local/regional economy. Direct spending cycles through the economy and supports local and state businesses and those businesses, in turn, employ workers who spend money in the region and state.
  
2. Indirect and induced spending results from direct spending cycling through the local/regional and state economy. Spending by businesses that benefit from the direct spending of UW-Milwaukee students, employees, and visitors and the spending on operations at the University creates additional indirect or induced economic activity that supports Wisconsin jobs and generates state and local tax revenue.

The annual spending of students, employees, and visitors and the spending on operations at the university will have an economic impact on the local and regional economy. Each spending element is further explained on the next page. The table below shows the overall economic impact caused by the additional spending.

**Table 2. Sources of Direct Spending**

Source	Amount
Student Spending	\$ 292,828,612
Faculty/Staff Spending	260,643,000
Institutional Spending	182,070,100
Visitor Spending	153,000,000
Affiliated Organizations/Other	20,808,468
<b>Total Direct Spending Related to UW-Milwaukee</b>	<b>\$956,274,180</b>

The total direct spending is adjusted for “leakages” which accounts for spending that takes place outside of the state. For example, if a student takes a holiday in Florida, that spending will benefit the state of Florida not the state of Wisconsin.

The spending of students is based upon budget data from the university and comparable spending levels derived from direct research at other UW campuses. Faculty and staff spending is based upon the payroll at UW-Milwaukee.

Visitor spending is based upon updated data from a UW-Milwaukee economic impact study done by Professor Bill Strang of UW-Madison. It should be noted that as part of this study, the researchers compiled a partial list of visitors to the campus that amounted to over 200,000 visits annually.

Finally, the spending of affiliated organizations was also noted. The test for whether to include an affiliated organization is based upon the “but for” test. In other words, but for the presence of UW-Milwaukee would this organization exist. Organizations such as the UWM Alumni Association and the UWM Foundation which are a direct result of the presence of the university provide a growing base of spending which benefits the region and the state.

It should be noted that this study does not include the small but growing number of start up businesses that are founded by UW-Milwaukee faculty, staff, and students or are started from technology developed by UW-Milwaukee researchers.

**Table 3. The Annual Total Economic Impact on the Local and Regional Economy from UWM Related Spending Based Upon the 2012-13 Fiscal Year**

<b>Source</b>	<b>Amount</b>
Direct Spending Effect	\$868,647,474
Indirect Spending Effect	\$300,922,111
Induced Spending Effect	\$336,841,525
<b>Total Economic Impact</b>	<b>\$1,506,411,110</b>

The total annual spending related to UW-Milwaukee from all sources will have an annual economic impact on the local and regional economy of \$1,506,411,110.

The economic impact number for an institution as large as UW-Milwaukee is sometimes hard to interpret. The following points put the \$1.5 billion into some context:

- Over 90% of the economic benefit or \$1.35 billion goes to private sector companies and individuals.
- The top five sectors that benefit from the UW-Milwaukee economic impact are real estate, financial services, retail stores, food and beverage establishments, and auto dealers
- The economic impact for the 2012-13 fiscal year is an annual impact number. In succeeding years, the university will continue to have an impact of this magnitude on the state and region.

### THE ANNUAL IMPACT ON WISCONSIN JOBS RELATED TO UW-MILWAUKEE ECONOMIC ACTIVITY

Spending related to the University of Wisconsin-Milwaukee has a significant impact on local and regional jobs. Jobs attributable to that direct spending will occur as spending by residents at local businesses causes those businesses to grow and expand and increase employment. Direct spending will in turn cycle through the regional economy and affect other businesses that in turn can hire additional workers.

**Table 4. UW-Milwaukee Related Economic Activity and Its Impact on Wisconsin Jobs (Full-Time Equivalent) in 2012-13 Fiscal Year**

Source	Job Impact
Direct Effect	8,355
Indirect Effect	2,894
Induced Effect	3,240
<b>Total Job Impact</b>	<b>14,489</b>

The total job impact resulting from UW-Milwaukee related economic activity is 14,489 jobs. These jobs result from direct spending (8,355), and indirect spending (2,894), and induced spending (3,240).

## THE ANNUAL TAX REVENUE IMPACT RELATED TO UW-MILWAUKEE ECONOMIC ACTIVITY

The annual economic activity related to UW-Milwaukee will generate property tax revenue based upon the assessed value and property taxes paid by individuals and businesses that receive the benefit of the UWM annual economic impact. This economic activity will also result in state income taxes and state and local sales taxes. State income taxes will result from salary and wages earned by University employees and employees of businesses that benefit from UW-Milwaukee's economic impact.

The estimated annual total of state and local taxes generated by the economic activity related to UW-Milwaukee is \$85,013,625.

Annual tax revenues generated by economic activity related to UW-Milwaukee in the fiscal year 2012-13 are shown in Table 5 below.

**Table 5. Annual State and Local Tax Revenue Impact Related to UW-Milwaukee Economic Activity in 2012-13 Fiscal Year**

Type of Tax	Amount
Property Tax	\$33,665,396
Sales Tax	\$25,844,142
Income Tax	\$12,497,002
Other Taxes	\$13,007,085
<b>Total Tax Impact</b>	<b>\$85,013,625</b>

## METHODOLOGY FOR THIS PHASE OF THE STUDY

In order to identify and estimate the total economic contribution a project, business entity or activity makes to the local, regional and state economies, it is necessary to look beyond the direct expenditures made by the business or activity itself. There is a “ripple effect” of the expenditures made for goods and services related to the business or activity. Spending cycles through the economy as direct expenses such as those at the grocery store are in turn paid out as wages to store workers who in turn spend money. Wages paid to workers are spent on housing, food, clothing, entertainment, etc. This multiplier effect is accounted for both in terms of indirect effects of the direct spending, as well as induced effects (essentially, the further effects of the indirect spending) to calculate total economic impact.

The “multiplier effect” refers to the recurrent economic activity generated by an initial expenditure. For example, money spent directly on construction will cycle through the local economy again as wages to workers, purchases of construction materials such as lumber, tools and nails, gasoline for machinery and worker transportation. The initial wave of spending generates a second and third wave of spending as wages paid and profits made on the direct construction spending spins through the economy in several cycles. Thus, the original direct expenditure yields a greater economic impact than just the money initially spent. Some money “leaks out” of the regional economy at each level as some spending is done outside the region (some goods purchased may originate in another state, for example) or federal taxes are collected and sent out of the state. As a result, the subsequent spending cycles decrease in impact.

This study quantifies the total annual economic contribution of spending related to the University of Wisconsin-Milwaukee. The spending of UW-Milwaukee students, employees, and visitors and the spending on operations at the university was compiled from various sources. Data was supplied by the University of Wisconsin-Milwaukee budget office. Student spending data was derived from student expenditures surveys at several UW campuses. This data in turn is processed in an econometric model to produce estimates of economic impact, jobs, and tax revenues.

Economic multiplier models are the framework for analyzing economic impact. Derived mathematically, these models estimate the magnitude and distribution of economic impacts, and measure three types of effects: direct, indirect, and induced changes within the economy. Direct effects are determined by the amount of the initial spending. Indirect effects are determined by the amount of the direct effect spending within the study region on supplies, services, labor and taxes. Finally, the induced effect measures the money that is re-spent in the study area as a result of spending from the indirect effect. Each of these steps recognizes an important leakage from the economic study region spent on purchases outside of the defined area. Eventually these leakages will stop the cycle.

For this project, the econometric model used is produced by the IMPLAN Group, Inc. (IMPLAN). IMPLAN is the developer of the IMPLAN® economic impact modeling system, which is used to create complete, extremely detailed Social Accounting Matrices and Multiplier Models of local economies. IMPLAN tools are in use by more than 2,000 public and private institutions.



Economic impact is calculated using the IMPLAN economic impact modeling system from the Minnesota IMPLAN Group (MIG). IMPLAN is used to create detailed social accounting matrices and multiplier models of local economies. MIG provides region-specific data to enable users to make in-depth examinations of state, multi-county, county, sub-county, and metropolitan regional economies. MIG has been developing complex localized databases, and distributing IMPLAN® software to public and private organizations since 1993.

The University of Wisconsin-Whitewater Fiscal and Economic Research Center (FERC) was engaged to run the economic impact numbers. FERC uses the IMPLAN model and regularly updates the multipliers used in the model.

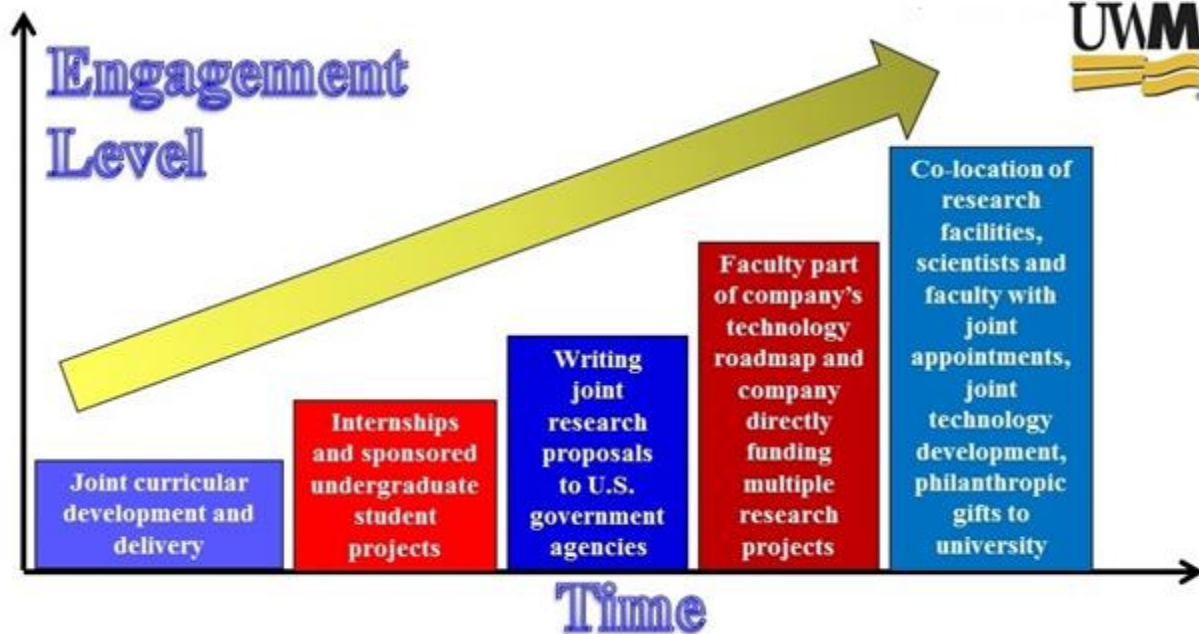
## THE ECONOMIC IMPACT OF THE UNIVERSITY OF WISCONSIN-MILWAUKEE: BEYOND THE TRADITIONAL NUMBERS

In addition to the traditional economic impact that UW-Milwaukee has on the regional and state economy, there are other economic impacts that UW-Milwaukee makes to the state and regional economy. Those impacts include:

- Talent attraction and development
- Support for regional industrial and service clusters
- Building the overall level of regional personal income
- Fostering research and innovation

These economic contributions are summarized in the University's New Engagement Model shown below.

### New Engagement Model



The benefits of such a focused business model to the State of Wisconsin, the Milwaukee region, the business community, and the university include:

- Creating a talent pipeline of future employees for the private and public sector in the region.
- Sponsoring research activities that attract new talent and companies to the region
- Providing opportunities for faculty and students to conduct research in world class facilities
- Providing students with unique leading-edge courses, internships, and industry mentors
- Partnering faculty and industry to become more competitive in seeking national funding for research projects
- Increasing opportunity to receive federal funding for state-of-the-art research and development projects



## ATTRACTING AND DEVELOPING TALENT TO BENEFIT THE REGION

The University of Wisconsin-Milwaukee is the second largest campus in the UW System. Total graduate and undergraduate enrollment for the fall of 2012-13 was approximately 29,114 students. That included 4,403 graduate and 24,270 undergraduate and special students.

UW-Milwaukee is the largest single destination for transfer students in the UW System. Transfer students are attracted to UW-Milwaukee by the wide academic program array offered by the campus.

UW-Milwaukee graduates stay in Wisconsin at a higher rate than any other UW campus. Over 73% of UW-Milwaukee graduates stay and work in Wisconsin. An analysis of a sample of 38,000 alumni shows that a large percentage of the UW-Milwaukee grads stay in southeastern Wisconsin. This supply of talent helps to fill the employment needs of the major industrial and service clusters in the region. It also benefits the public sector as scores of students work for schools, hospitals, and government entities. An example of how UW-Milwaukee helps to educate talent for local and regional firms is as follows:

**Table 6. Milwaukee Area Private Sector Firms With at Least 100 UW-Milwaukee Graduates**

- Columbia St. Mary's
- Deloitte
- NML
- Harley Davidson
- Johnson Controls
- Rockwell
- Aurora
- WE Energies
- GE Healthcare
- R.W. Baird
- Medical College of Wisconsin
- Foley & Lardner

Source: Sample of 38,000 UW-Milwaukee Alumni

## SUPPORT FOR REGIONAL INDUSTRIAL AND SERVICE CLUSTERS

UW-Milwaukee directly engages companies and key clusters in the region. Examples of this engagement include the advanced manufacturing cluster and the water cluster. The Energy Partnership between Johnson Controls is an example of how UW-Milwaukee is directly engaging the advanced manufacturing sector – a key cluster in the region. The university is also deeply involved with the Water Council and the development of a water cluster in the region. Brief explanations of these two efforts follow.

### **UW-Milwaukee and Johnson Controls Energy Partnership**

Johnson Controls wanted to be close to the talent and employees of the future...so they located the Energy Advancement Center on the UW-Milwaukee and Madison campuses. Opening in the fall of 2012, the center partners with the College of Engineering and Applied Science and is a state-of-the-art laboratory seeking groundbreaking discoveries in the area of energy-storage devices and batteries. Each day this partnership is creating a win-win solution for Johnson Controls the UW-Milwaukee students, faculty, and the State of Wisconsin.



### **UW-Milwaukee and Milwaukee Water Council Water Council**

Opening in 2014 will be a \$54 million innovation and expansion of the School of Freshwater Sciences research facility. The expansion will be the home of the Center for Water Policy and the Great Lakes Genomics Center, laboratories for researchers and students, teaching labs, and many aquaculture labs.



Under the leadership of Dean David E.J. Garman, the School is partnering with other UW-Milwaukee colleges as well as state, national, and international organizations including the National Science Foundation, the National Oceanic and Atmospheric Administration, the Environmental Protection Agency, the National Institute of Health and the Department of Agriculture.

The School of Freshwater Sciences has strong ties with the water industry in the Midwest, including the Milwaukee Water Council, which is a consortium of over 150 water technology companies.

All of these collaborative efforts have positioned the School of Freshwater Sciences as a world hub for freshwater research, education, and economic development. The researchers also observed remarkable urban renewal efforts taking place in the Walker Point neighborhood, partly due to the School of Freshwater Sciences new research facility.

**SUMMARY OF THE RELATIONSHIPS BETWEEN UW-MILWAUKEE AND MAJOR BUSINESS CLUSTERS IN THE MILWAUKEE AREA**

**Table 7. Supporting the Key Clusters Major Linkages**

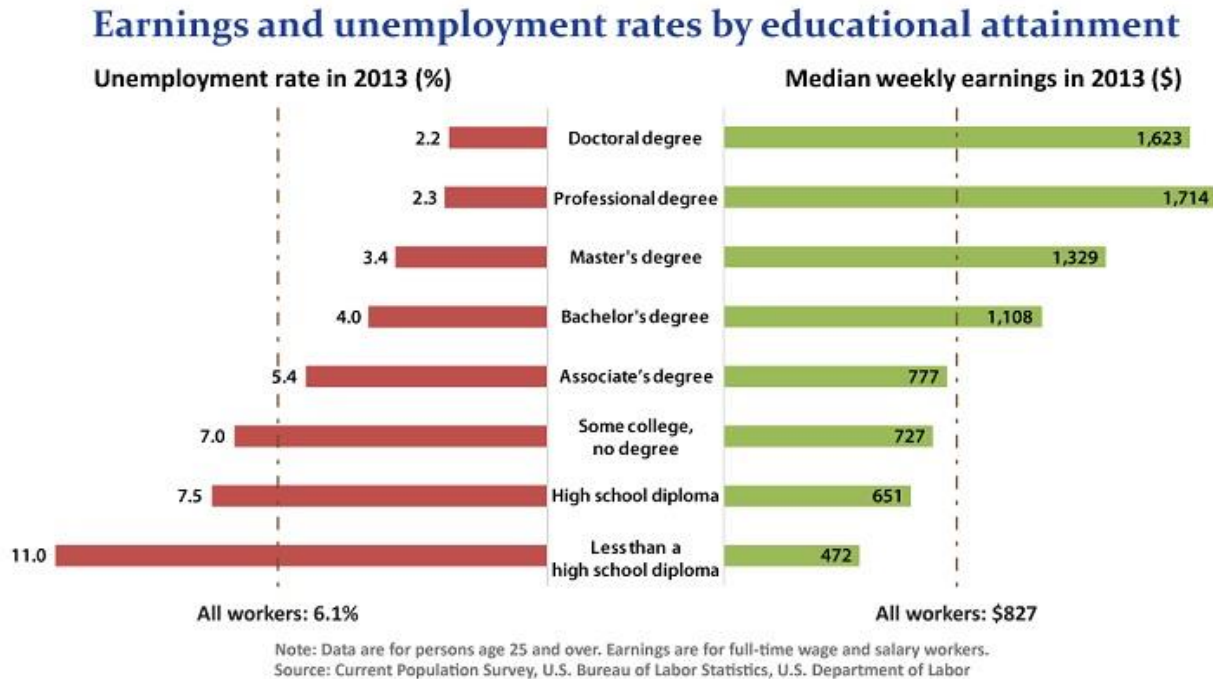
- Water Technologies Cluster – UWM School of Freshwater Sciences; Research; Talent
- Advanced Manufacturing – Johnson Controls – UWM joint laboratory; engineering & IT talent
- Information Technology – UWM a major talent supplier as UWM IT grads work for Fiserv, Red Prairie, Fidelity National and other IT firms
- Financial Services – UWM supplies talent to major firms including Northwestern Mutual, BMO Harris, Wells Fargo, U.W. Baird, U.S. Bancorp, and others
- Health Care – UWM School of Nursing; School of Public Health; Healthcare informatics academic programs & research; GE Healthcare Center

## BUILDING THE OVERALL LEVEL OF REGIONAL PERSONAL INCOME

Data collected by the U.S. Department of Labor shows a clear and direct correlation between educational attainment and the level of earnings. This correlation shows the importance of educating the workforce. Higher income levels benefit all sectors of the economy as rising tax revenues provide greater savings (capital) for investment, more sales and income taxes to support public purposes, and more human capital to lead public and private organizations.

Wisconsin higher education institutions help to provide the talent to sustain and grow business clusters across the state. For graduates of the UW and other higher education institutions, the payoff for achieving a degree is generally higher income levels. Based upon the most recent numbers compiled by the U.S. Department of Labor, a college graduate will earn \$23,764 more each year when compared to what a high school graduate will earn. Over an average work life, a four year college degree will enhance a graduate's lifetime earnings by over a \$1,000,000 (nominal dollars).

The figure below shows the data compiled by the U.S. Department of Labor on earnings and unemployment rates in 2013. Not only do college graduates make more money, but their overall unemployment levels are low, lower than the overall U.S. average unemployment rate.



The presence of more college graduates in a region or state will lead to overall higher education levels. For example, the neighboring State of Minnesota has a significantly higher rate of college graduates in its population than does Wisconsin and the Minnesota state per capita income is significantly higher than that of Wisconsin.

Increasing educational attainment is a key strategy to raising income levels in any state or region. Because UW-Milwaukee graduates stay in Wisconsin at a higher rate than any other UW campus, over time the cumulative number of graduates living in the State of Wisconsin becomes quite large. By current estimate the number of living UW-Milwaukee graduates is approximately 141,900 and over 73% of them live in the State of Wisconsin.

The income effect of UW-Milwaukee graduates can be calculated based upon the enhanced earning power they bring to the region. As noted previously, the most recent U.S. Department of Labor Data for 2013 shows that college graduates will earn \$23,764 more per year than a high school graduate. The potential economic impact of that enhanced earning power from those graduates on the total personal income in the state of Wisconsin can be illustrated as follows:

**Table 8. The Income Effect on the M7 Region**

- Over 73% of UWM grads live and work in Wisconsin
- There are approximately 141,900 UWM alums
- Assume 20% are retired and 73% of the remaining alums live in state (nets to 82,869)
- The annual enhanced earning power of those 108,000 alums would be \$1,969,313,000 which directly benefits the Wisconsin economy

The income effect of college graduates, specifically UW-Milwaukee graduates, provides is a significant economic driver in the regional and state economies. UWM graduates are a key factor in the location of and the growth of business enterprises in the region. Table 6 on page 17 illustrates the connection between the talent flow coming out of UWM and employment in the largest businesses in the region.

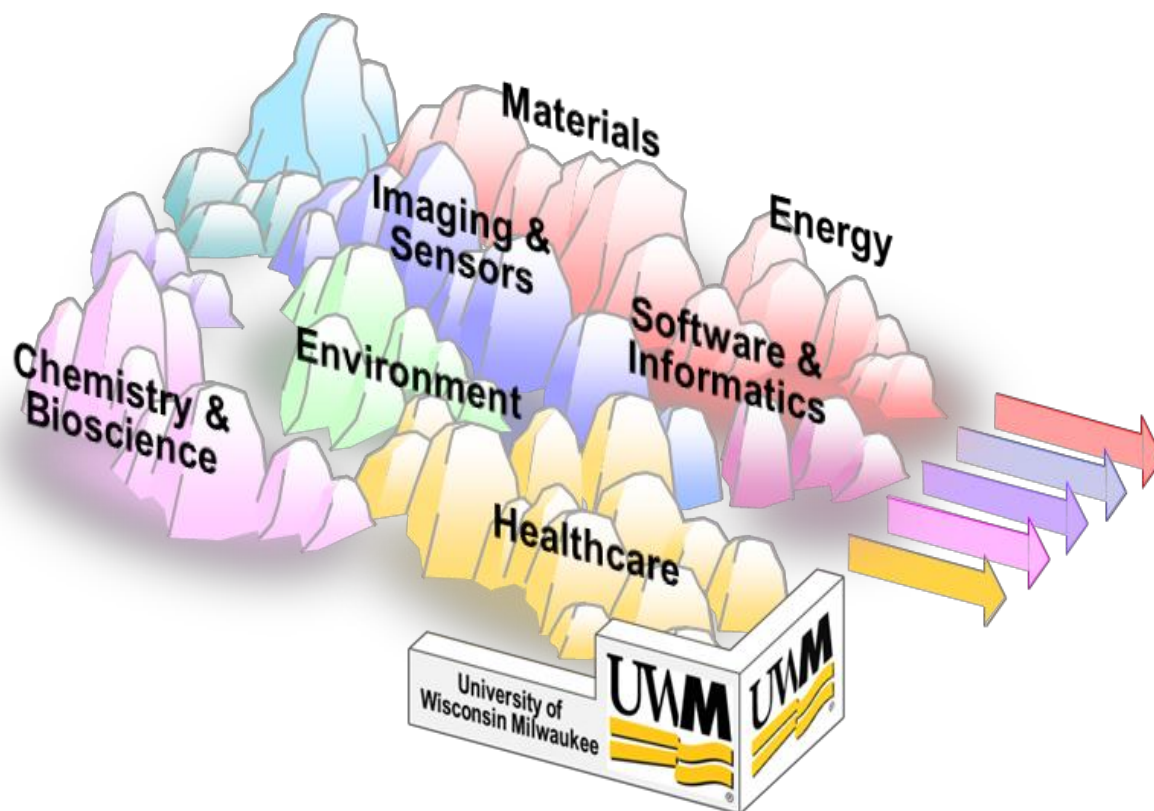
In addition to the data in Table 6, the database of the UWM Alumni Association shows that hundreds of UWM graduates have started businesses of their own. This entrepreneurial element adds to the employment and income growth in the region.

## FOSTERING RESEARCH & INNOVATION

The University of Wisconsin-Milwaukee continues to enhance the Wisconsin economy through research and development efforts. UW-Milwaukee's commitment by its faculty, staff, and students, as well as strong partnerships with the business community has created a knowledge base that is producing a variety of products and services for future generations. Through these R&D efforts, the university is also preparing the next generation of talented employees.

UW-Milwaukee's growing base of research expertise is a key part of research and innovation in the region. UW-Milwaukee has developed significant research programs in healthcare, software and informatics, energy, imaging and sensors, environment (water and aqua culture technologies), materials, and chemistry and bioscience. The illustration below offers a visual landscape of major UW-Milwaukee research areas.

## UW-MILWAUKEE RESEARCH STRENGTHS



Much of the UW-Milwaukee's movement forward to be a top-tier research university is due to a focused business engagement model that was reviewed earlier. This model provides a systematic approach regarding how the university's faculty, staff, students, and administration can effectively partner with the business community and create win-win relationships. A key element of the engagement model is joint partnerships with industry in research and product development.

There are several examples of joint partnerships evident on the UW-Milwaukee campus. The researchers would like to highlight a few examples that illustrate the economic impact created by each university-business partnership.

### **UW-Milwaukee and GE Healthcare Healthcare Partnership**

GE Healthcare has recently partnered with UW-Milwaukee to build a workforce, bring new talent into the field and foster imaging research. GE is investing more than \$3 million with the help of UW-Milwaukee to support a first-of-its-kind talent



pipeline for Wisconsin-based medical imaging software developers and researchers. This five-year collaboration will have GE health professionals working side-by-side with UW-Milwaukee students in state-of-the-art medical research laboratories. The result of this unique partnership will be an enhanced Wisconsin medical workforce, enhanced medical imaging hardware and software, and the opportunity to reduce healthcare costs.

### **UW-Milwaukee and the Medical College of Wisconsin Drug Discovery Partnerships**



The UWM Research Foundation is working with UW-Milwaukee's new Milwaukee Institute for Drug Discovery (MIDD), which was created to advance research and later-stage development of new drugs from research at the University of Wisconsin-Milwaukee and collaborating institutions. The institute will focus on several areas of research strength at UW-Milwaukee, with initiatives in neuroscience, cancer and infectious diseases. The organization, led by Dr. Doug Stafford, is building strong ties with institutions under the Medical College of Wisconsin's Center for Translational Science Institute.

### **The University of Wisconsin-Milwaukee Research Foundation**

Another critical factor in the UWM's research and development growth has been the establishment of the University of Wisconsin-Milwaukee Research Foundation (UWMRF). The UWMRF has several goals that include the support and commercialization of the university's research and innovation. UWMRF provides intellectual property management, supports technology transfer, encourages corporate sponsored research, fosters entrepreneurship and supplies corporate partnerships services to the university's researchers.

Through highly effective UWM leadership, the growth of the university's R&D efforts has shown significant progress. Key points to note are the following:

**Over \$55 million in research expenditures in 2013**

UW-Milwaukee has a broad portfolio of strengths in the arts, humanities, sciences, and engineering. Annual research spending of approximately \$55 million includes research in water, energy and healthcare, and builds on expertise in advanced materials, sensing platforms, nanotechnology, software, healthcare informatics, and many other areas. These strengths span UW-Milwaukee schools and colleges and are closely linked to the needs of regional partners.

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- **\$3.4 million awarded in catalyst projects**
  - **58 projects**
  - **3 catalyst start-up companies**

The Catalyst Grant Program was created in 2007 as part of a \$1 million gift from the Rockwell Automation Charitable Corporation. The Lynde and Harry Bradley Foundation's commitment of more than \$2 million over six years has allowed the program to grow and have a sustained impact on discovery and commercialization at UW-Milwaukee.

The Richard and Ethel Herzfeld Foundation added their support to the Catalyst Grant Program starting in 2010. And in 2012, GE Healthcare announced a four-year commitment to the program as part of a \$1 million gift to the UW-Milwaukee Research Foundation.

The Catalyst Grant Program has made 58 awards totaling more than \$3.4 million since its inception. The selection process focuses on both strong science (judged by external reviewers) and high commercialization potential (including intellectual property, partnerships and potential for startup companies). The sustained support for the program is having immediate impact on the ability of UWMRF to cultivate researchers and opportunities.



## **\$110K in support of student start-ups**

The Student Startup Challenge (SSC) is one of the ways that UW-Milwaukee is creating innovation pathways for students. The interdisciplinary program combines engineering, arts, business and sciences to help student develop their ideas, creating not just a business plan, but also a prototype of their idea. Teams from across the campus pitch their ideas, and the winning concepts receive up to \$10,000 in support to turn their ideas into products. The program leverages existing classes to engage more students in the process while building hardware and software prototypes.

The Student Startup Challenge has expanded from three winning teams in the first year to eight additional teams in its second year. More than 100 ideas proposed in the two years of the competition have yielded winning teams comprised of students from diverse disciplines, such as health sciences, engineering, arts, business, and freshwater sciences.

UWMRF is playing a key role in supporting innovative pathways to start their own businesses. Teams from across the campus compete for up to \$10,000 to support their business products and ideas.

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## **250 inventions disclosed**

Now in its eighth year of operation, the UWMRF has built an efficient and professional organization for technology transfer and intellectual property management that is among the best for organizations its size. The intellectual property management process focuses on key metrics, including leading indicators and success outcomes. The foundation has logged more than 250 invention disclosures since 2006, filed over 125 patent applications, and has received 25 issued patents. The value of these assets depends on connecting them to partners – including licensees and UW-Milwaukee startup companies.

## **1000 marketing contacts**

Last year, UWMRF reached out to more than 1000 marketing contacts. These important linkages led to partner meetings, evaluation of UWM technologies, partner agreements and several license/option agreements.

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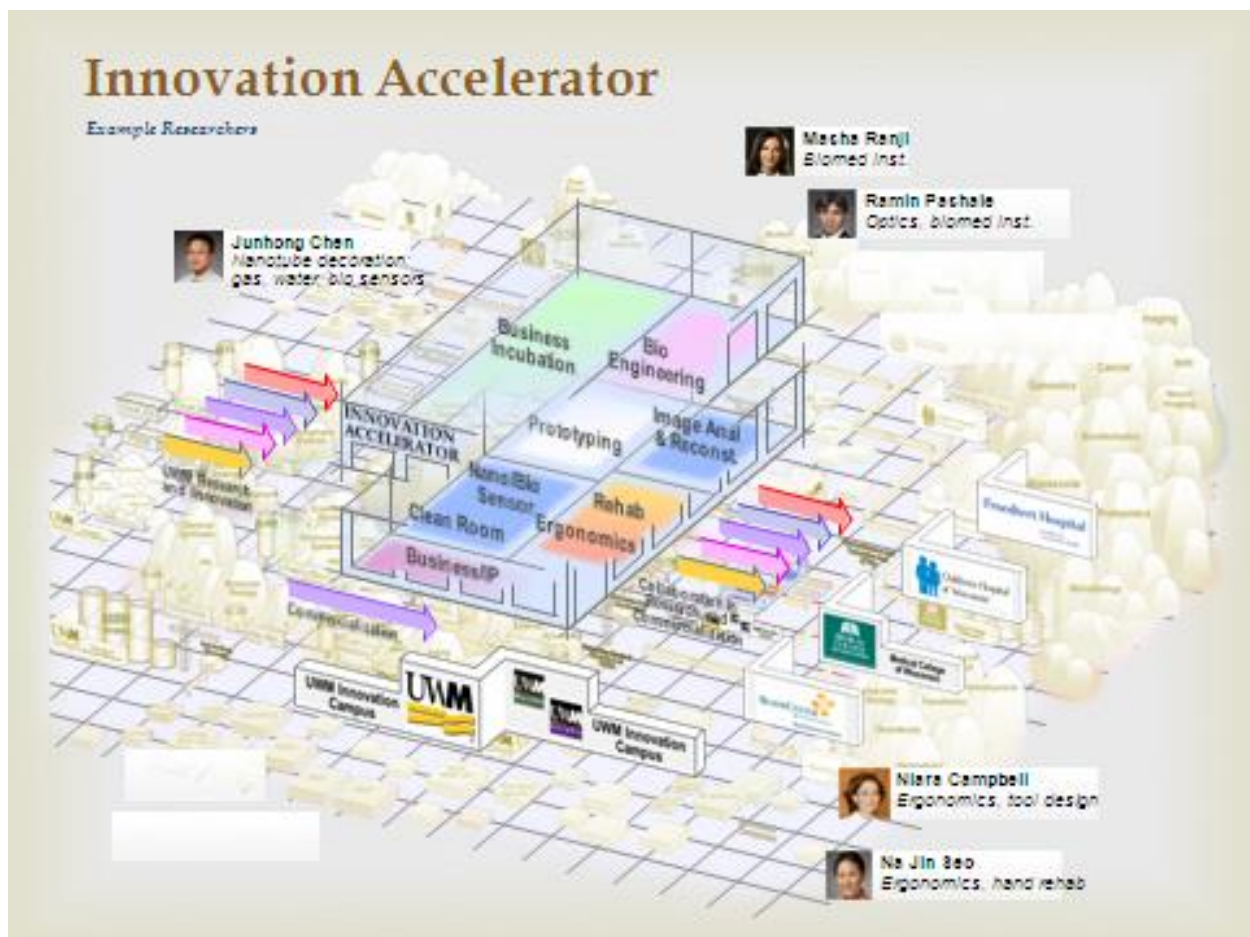
## **Regional Partners and Business Cluster Identification**

UWMRF continues to refine and expand its focused research collaborations with key business partnerships across the region, state, and nation. Business clusters in the areas of water, energy, healthcare, are training up with UW-Milwaukee faculty in the arts, humanities, science and engineering to enhance and strengthen research opportunities and partnerships.

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## 72 acre innovation campus & The Innovation Accelerator

Innovation Campus opened its first new building in 2014 and will serve as a hub for collaborative research with regional academic and clinical partners. Part of the Innovation Campus will be the Innovation Accelerator. The Accelerator will include a prototyping center, bioengineering transistor biosensors, and rehab technology laboratories. It will house researchers and startup companies that are commercializing ideas and discoveries from UW-Milwaukee research partnerships and programs. A visual diagram of the Accelerator and several of its researchers is shown below.



## SUMMARY

The University of Wisconsin-Milwaukee has a significant economic impact of the City of Milwaukee, the Milwaukee Seven (M7) region, and the State of Wisconsin. That economic impact is really two stories.

First there is an economic story told in the traditional measures of an economic impact study – jobs, taxes, and overall economic impact. UW-Milwaukee’s annual economic impact is \$1.5 billion. That economic activity results in over 14,000 jobs. That activity also results in the generation of \$85,000,000 in local and state taxes. This annual economic impact primarily benefits the private sector as over 90% or \$1.35 billion flows to and through the private sector.

The second story of economic impact involves talent, supporting local and regional business clusters, growing regional personal income, and promoting research and innovation. Talent development includes students and faculty/staff and provides skills, leadership, and innovation that contribute the public and private sectors. Supporting local clusters involves the University Engagement Model which builds on partnerships, internships, joint grant applications, and joint research facilities to help local clusters stay globally competitive. The university also contributes to the personal income growth in the region as 73% of its graduates stay in Wisconsin and their enhanced earning power results in over \$1.9 billion in personal income gain to the state and region. Finally, the university is engaged in research and innovation through research programs and the Innovation Campus and its Innovation Accelerator.

The University of Wisconsin-Milwaukee has a significant annual economic impact on the region and the state. Its dollar impact is in the billions of dollars. But more importantly, the university contributes to the human capital in the region that benefits both public and private sectors and supports the prosperity in the region.

**Table 9. 2012-13 Economic Impact – Two Stories**

- The traditional economic impact message
  - \$1.5 billion overall \$\$\$ Impact
  - 14,489 Wisconsin Jobs
  - \$85,000,000 in state & local taxes
- The economic impact beyond the traditional numbers
  - *Talent* – faculty, staff, students, graduates
  - *Supporting key M7 Clusters* – IT, water, advanced manufacturing, health care, financial services
  - *Income effect* of \$1.9 billion on the regional economy
  - *Research & Innovation*

## APPENDIX

Materials included in this report were derived from many UW-Milwaukee sources including: university promotional brochures, UWM Research Foundation Annual Reports, financial reports, websites, and PowerPoint presentations.

Data was also gathered from the Bureau of Labor Statistics.

Data on student spending was drawn from other primary research studies on student spending on several UW campuses.