The University of Wisconsin – Milwaukee (UWM) is the second largest 4-year university in Wisconsin and provides an affordable, world-class education to over 24,000 students on three campuses in Milwaukee, Waukesha and Washington County. The university is a top educator of architects, engineers, entrepreneurs, business leaders, teachers, nurses, and other health professionals. UWM is one of the nation’s top research universities, ranked in the top 3 percent, a category known as R1, by the Carnegie Classification of Institutions of Higher Education. We are also a Carnegie Community Engaged University.

Over 80% of our students come from Wisconsin and stay in Wisconsin, contributing to the state’s health, vibrancy and economic growth. Our region has a 40,000 employee shortage, with about two thirds of jobs requiring higher education and UWM helps serve that need by producing 5,000+ graduates annually. About 32% of our students are of color and we have the largest student population of veterans and first-generation college students in Wisconsin. Our dual mission of providing access and research excellence is unique in Wisconsin and a point of pride.

UWM is nationally recognized for undergraduate research and UWM students get real-world experiences that shape their education and careers, such as paid internships, entrepreneurship programs and community-based classes and volunteer opportunities. As a top-tier research university we support groundbreaking work that helps real people and real communities. UWM has more than 202,000 successful alumni in architecture firms, film studios, hospitals, classrooms, research labs, Fortune 500 companies and more.

We look forward to sharing our strengths with you. You’ll find additional information about some our assets in this packet.

Jennifer Abele  
Chief Partnership Officer  
gonda@uwm.edu  
414-477-8207

Keri L. Duce  
Chief Government Relations Officer  
klduce@uwm.edu  
414-303-5538
STUDENTS
Total enrollment: 24,029 students
- Milwaukee campus: 22,592 students
  - 18,171 undergraduates
  - 4,421 graduate students
- UWM at Washington County: 387 students
- UWM at Waukesha: 1,050 students
- Students from 72 Wisconsin counties and 49 states
- 38% of undergraduates are first-generation college students
- 982 veterans and military-related students enrolled, more than any other Wisconsin university

ECONOMIC IMPACT
- $1.5 billion economic impact on Wisconsin, according to NorthStar Consulting Group

RESEARCH
- Ranked in the top 4 percent of research universities, a category known as R1, by the Carnegie Classification of Institutions of Higher Education
- More than $40 million in grants in 2020-21
- Recognized by national Council on Undergraduate Research - UWM has more than 1,000 undergraduate researchers

ALUMNI
Over 200,000 alumni
- 74% live and work in Wisconsin

ACADEMICS
206 academic programs
- 2 associate programs
- 100 bachelor’s programs
- 66 master’s programs
- 38 doctoral programs
Largest and top-rated online education program in Wisconsin
- More than 900 online courses
- 49 fully online degree and certificate programs

ONLY AT UWM
- Wisconsin’s only schools of architecture, freshwater sciences and public health
- The state’s largest nursing program
- An engineering college ranked in the top 10 percent in the U.S.
- A nationally recognized actuarial science program
- The state’s only bachelor’s program in ASL/English interpretation
- A film program ranked among the top 50 in the world (Variety Magazine)
- The best online education program in the state, according to U.S. News & World Report
- The only NCAA Division I baseball team in Wisconsin

COMMUNITY ENGAGEMENT
- Partnerships with more than 3,000 businesses, nonprofits and other organizations
- 33,000 hours of service-learning completed by students in 2021
FACTS AND INFORMATION

2022

STRATEGIC PARTNERSHIPS

• The UWM Lubar Entrepreneurship Center is a powerful resource for entrepreneurs, innovators and anyone who wants to make a positive change in their community. From courses and programs to workshops and networking, LEC provides the tools needed to transform ideas into reality.

• The Connected Systems Institute (CSI) develops manufacturing domain specialists through education, state-of-the-art lab facilities and collaborative research opportunities. CSI facilitates research collaboration between industry and academia to support the development of advanced manufacturing processes, including working with tools that support domain-specific research and education on the industrial internet of things (IIoT), factory automation and the implementation of Industry 4.0 solutions.

• The Center for Water Policy builds on the research of UWM’s School of Freshwater Sciences, the UW System’s Freshwater Collaborative of Wisconsin, and networks and partnerships with top scholars, scientists and policy institutions around the world.

• The Northwestern Mutual Data Science Institute is an industry and academic partnership between Northwestern Mutual, UWM and Marquette formed to inspire and cultivate passion for data science in the Milwaukee region. The groundbreaking partnership is helping to build a technology ecosystem and advance southeastern Wisconsin as a national hub for technology, research, business and talent development, while also creating an organic pipeline of tech talent.

• UWM’s TechEd Frontiers offers innovative online learning pathways for people to learn new workplace skills and advance in their careers. The on-demand learning allows employees and employers to grow together, focusing on the most in-demand skills and individual coaching to help employees immediately apply their new knowledge in the workplace.

• UWM’s Small Business Development Center in its School of Continuing Education is a go-to resource for entrepreneurs and business owners. The center helps build strong frameworks for growing and improving small- and mid-sized companies while also helping launch successful new ventures. The center provides free online training as well as no-cost, confidential consulting and education programs.

ELIMINATING EQUITY GAPS

• UWM is one of three major public-education institutions in Milwaukee to co-found M-cubed, a critical initiative to close the achievement gap. UWM is home to the Moon Shot for Equity’s inaugural launch in the Milwaukee region.

OPPORTUNITIES FOR ALL

• UWM has partnered with six other organizations for the Milwaukee Anchor Collaborative, which is dedicated to hiring more people of color and purchasing more goods from disadvantaged areas. Undertaken with the Metropolitan Milwaukee Association of Commerce, UWM’s Student Success and Talent Pipeline Initiative places students from diverse backgrounds into internships to prepare them for career success.
**WISCONSIN’S WORKFORCE NEEDS: JOBS IN DEMAND**

### Health and Human Services
- Audiologists
- Health Services Managers
- Kinesiologists
- Medical Scientists
- Physical Therapists
- Social Workers
- Clinical, counseling and school psychologists
- Nurses/Nurse Practitioners
- Teachers

### Business
- Accountants
- Actuaries
- Business Analytics
- Financial Examiners
- Human Resources Specialists and Managers
- Marketing Researchers and Analysts
- Supply Chain Managers

### Computer Science
- Computer Systems Analysts
- Data Science
- IT Project Managers
- Software Developers/Applications
- Systems Software

### Engineering, Science and Related Fields
- Architects
- Biomedical, Electrical and Other Engineers
- Biochemists and Biophysicists
- Freshwater Science

---

**WHAT UWM DELIVERS EACH YEAR TO MEET THE NEEDS**

<table>
<thead>
<tr>
<th>2,050 UWM graduates in the fields of:</th>
<th>1,540 UWM business graduates in the fields of:</th>
<th>548 UWM graduates in the fields of:</th>
<th>365 UWM graduates in the field of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology and Biomedical Sciences</td>
<td>Accounting</td>
<td>Computer Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td>Criminal Justice</td>
<td>Finance</td>
<td>Computer Science</td>
<td>42 UWM graduates in the fields of:</td>
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<tr>
<td>Education</td>
<td>Human Resources</td>
<td>Information Science</td>
<td>Biochemistry</td>
</tr>
<tr>
<td>Health Care Administration</td>
<td>Information Systems</td>
<td>Marketing</td>
<td>Biophysics</td>
</tr>
<tr>
<td>Kinesiology</td>
<td>Marketing</td>
<td>Supply Chain</td>
<td>135 UWM graduates in the field of:</td>
</tr>
<tr>
<td>Nursing</td>
<td></td>
<td></td>
<td>Architecture/Urban Planning</td>
</tr>
<tr>
<td>Nursing Educators</td>
<td></td>
<td></td>
<td>20 UWM graduates in the field of:</td>
</tr>
<tr>
<td>Psychology</td>
<td></td>
<td></td>
<td>Freshwater Sciences</td>
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<tr>
<td>Public Health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Work</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Data reflect the 2019-20 school year and include 79% of graduates earning bachelor’s, master’s and doctoral degrees at the UWM Milwaukee campus; the remaining 21% includes artists, communication professionals, entrepreneurs, historians, journalists, linguists, musicians, policy analysts, political scientists and others who address regional job needs. 208 associate degrees were also awarded.

For more information visit uwm.edu/budget
Our region has a 40K employee shortage, with about two thirds of jobs requiring higher education.

UWM produces 5,000+ graduates annually:

83% of UWM students are from Wisconsin.

82% of UWM graduates from the past 10 years live and work in Wisconsin.

UWM ALUMNI make up a significant portion of our region’s workforce.

Number of graduates employed by top regional businesses:

- Amazon: 192
- American Family Insurance: 178
- Ascension: 825
- Aurora Health Care and Advocate Aurora Health: 1507
- Baird: 296
- BMO Harris Bank: 243
- Direct Supply: 237
- Fiserv: 442
- Froedtert Hospital: 439
- Froedtert Health: 362
- GE Healthcare: 507
- Harley Davidson Motor Company: 284
- Johnson Controls: 387
- Kohl's: 578
- Kohler Company: 236
- Local Universities: 526
- Marquette University: 274
- Medical College of Wisconsin (MCW): 490
- Milwaukee Public Schools (MPS): 1069
- Milwaukee Tool: 235
- Milwaukee Area Technical College (MATC): 252
- Northwestern Mutual (interns included): 2195
- Quad Graphics: 168
- Rockwell Automation: 721
- U.S. Bank: 539
- We Energies: 210
- Wells Fargo: 297

# The Statewide Impact of UWM Students & Alumni

**Voters by Senate District | 2021**

**UWM Voters in Wisconsin**

- Total WI Alumni: 137,884*  
- Total WI Students: 18,867*  

*Includes students from the Milwaukee, Waukesha and Washington County campuses*

**Total UWM Alumni:** 195,000  
**Total UWM Students:** 24,725

*District numbers shown for students and alumni who have provided a WI address.

<table>
<thead>
<tr>
<th>SENATE DISTRICT</th>
<th>STATE SENATOR</th>
<th>TOTAL STUDENTS</th>
<th>TOTAL ALUMNI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jacque</td>
<td>228</td>
<td>2170</td>
</tr>
<tr>
<td>2</td>
<td>Cowles</td>
<td>215</td>
<td>1723</td>
</tr>
<tr>
<td>3</td>
<td>Carpenter</td>
<td>942</td>
<td>5198</td>
</tr>
<tr>
<td>4</td>
<td>Taylor</td>
<td>1119</td>
<td>7574</td>
</tr>
<tr>
<td>5</td>
<td>Kooyenga</td>
<td>1303</td>
<td>14,772</td>
</tr>
<tr>
<td>6</td>
<td>Johnson</td>
<td>830</td>
<td>6307</td>
</tr>
<tr>
<td>7</td>
<td>Larson</td>
<td>3347</td>
<td>17,335</td>
</tr>
<tr>
<td>8</td>
<td>Darling</td>
<td>1248</td>
<td>15,790</td>
</tr>
<tr>
<td>9</td>
<td>LeMahieu</td>
<td>307</td>
<td>3,388</td>
</tr>
<tr>
<td>10</td>
<td>Stafsholt</td>
<td>37</td>
<td>326</td>
</tr>
<tr>
<td>11</td>
<td>Nass</td>
<td>373</td>
<td>2,871</td>
</tr>
<tr>
<td>12</td>
<td>Felzkowski</td>
<td>74</td>
<td>1161</td>
</tr>
<tr>
<td>13</td>
<td>Vacant</td>
<td>445</td>
<td>3323</td>
</tr>
<tr>
<td>14</td>
<td>Ballweg</td>
<td>88</td>
<td>914</td>
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<tr>
<td>15</td>
<td>Ringhand</td>
<td>149</td>
<td>1042</td>
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<tr>
<td>16</td>
<td>Agard</td>
<td>243</td>
<td>2057</td>
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<tr>
<td>17</td>
<td>Marklein</td>
<td>69</td>
<td>646</td>
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<td>18</td>
<td>Feyen</td>
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<td>1399</td>
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<tr>
<td>19</td>
<td>Roth</td>
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<tr>
<td>20</td>
<td>Stroebel</td>
<td>967</td>
<td>7793</td>
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<tr>
<td>21</td>
<td>Wanggaard</td>
<td>506</td>
<td>4525</td>
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<td>22</td>
<td>Wirch</td>
<td>261</td>
<td>2273</td>
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<tr>
<td>23</td>
<td>Bernier</td>
<td>40</td>
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</tr>
<tr>
<td>24</td>
<td>Testin</td>
<td>55</td>
<td>755</td>
</tr>
<tr>
<td>25</td>
<td>Bewley</td>
<td>42</td>
<td>430</td>
</tr>
<tr>
<td>26</td>
<td>Roys</td>
<td>169</td>
<td>1989</td>
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<tr>
<td>27</td>
<td>Erpenbach</td>
<td>245</td>
<td>1909</td>
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<tr>
<td>28</td>
<td>Bradley</td>
<td>1273</td>
<td>12,856</td>
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<tr>
<td>29</td>
<td>Petrowski</td>
<td>123</td>
<td>802</td>
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<tr>
<td>30</td>
<td>Wimberger</td>
<td>204</td>
<td>1587</td>
</tr>
<tr>
<td>31</td>
<td>Smith</td>
<td>36</td>
<td>429</td>
</tr>
<tr>
<td>32</td>
<td>Pfaff</td>
<td>74</td>
<td>626</td>
</tr>
<tr>
<td>33</td>
<td>Kapenga</td>
<td>1091</td>
<td>10,254</td>
</tr>
</tbody>
</table>

*For more information visit [uwm.edu/budget](http://uwm.edu/budget)*
## Statewide Impact of UWM Students & Alumni

**Voters by Assembly District | 2021**

**UWM Voters in Wisconsin**
- Total WI Alumni: 137,884*
- Total WI Students: 18,867*

Includes students from the Milwaukee, Waukesha and Washington County campuses.

Total UWM Alumni: 195,000
Total UWM Students: 24,725

*District numbers shown for students and alumni who have provided a WI address.

### Assembly District | State Rep. | Total Students | Total Alumni
--- | --- | --- | ---
1 | Kitchens | 67 | 765
2 | Sortwell | 65 | 653
3 | Tusler | 96 | 752
4 | Steffen | 94 | 769
5 | Steineke | 78 | 589
6 | Tauchen | 43 | 365
7 | Riemer | 420 | 3129
8 | Ortiz-Velez | 223 | 767
9 | Cabrera | 299 | 1302
10 | Bowen | 632 | 3547
11 | Drake | 246 | 1846
12 | Myers | 241 | 2181
13 | Rodriguez | 455 | 5338
14 | Vining | 500 | 6066
15 | Sanfelippo | 348 | 3368
16 | Haywood | 316 | 2043
17 | Moore Omokunde | 267 | 2147
18 | Goyke | 247 | 2117
19 | Brostoff | 2465 | 10,277
20 | Sinicki | 413 | 3732
21 | Rodriguez | 469 | 3326
22 | Brandtjen | 354 | 4029
23 | Andraa | 458 | 6442
24 | Knowl | 436 | 5319
25 | Tittl | 78 | 805
26 | Katsma | 113 | 1243
27 | Vorpagel | 116 | 1340
28 | Magnifici | 13 | 62
29 | Moses | 12 | 86
30 | Zimmerman | 12 | 178
31 | Loudenbeck | 103 | 585
32 | August | 137 | 837
33 | Horlacher | 133 | 1449
34 | Swearingen | 30 | 561
35 | Callahan | 18 | 263
36 | Mursau | 26 | 337
37 | Jagler | 110 | 649
38 | Dittrich | 225 | 1926
39 | Born | 110 | 748
40 | Petersen | 21 | 301
41 | Dallman | 22 | 278
42 | Plumer | 45 | 335
43 | Vruwink | 56 | 397
44 | Conley | 46 | 390
45 | Spreitzer | 47 | 255
46 | Hebl | 117 | 723
47 | Anderson | 69 | 704
48 | Baldeh | 57 | 630
49 | Tranell | 10 | 159
50 | Ruetz | 25 | 242
51 | Novak | 34 | 245
52 | Thiesfeldt | 80 | 665
53 | Schraa | 60 | 387
54 | Hintz | 38 | 347
55 | Cabral-Guevara | 98 | 669
56 | Murphy | 120 | 766
57 | Snodgrass | 52 | 526
58 | Gundrum | 391 | 2619
59 | Ramthun | 214 | 1444
60 | Brooks | 362 | 3730
61 | Kerkmann | 154 | 982
62 | Wittke | 193 | 2039
63 | Vos | 159 | 1504
64 | McGuire | 116 | 894
65 | Ohnstad | 57 | 697
66 | Neubauer | 88 | 682
67 | Summerfield | 11 | 121
68 | James | 16 | 128
69 | Rozar | 13 | 171
70 | VanderMeer | 19 | 184
71 | Shankland | 24 | 318
72 | Krug | 12 | 253
73 | Milroy | 9 | 68
74 | Meyers | 21 | 256
75 | Armstrong | 12 | 106
76 | Hong | 48 | 501
77 | Stubbs | 53 | 632
78 | Subeck | 68 | 856
79 | Hesselbein | 105 | 882
80 | Pope | 86 | 621
81 | Considine | 54 | 406
82 | Skowronski | 489 | 4516
83 | Wichgers | 329 | 3837
84 | Kuglitsch | 455 | 4503
85 | Snyder | 55 | 357
86 | Spiros | 62 | 332
87 | Edging | 6 | 113
88 | Maccio | 107 | 794
89 | Vacant | 58 | 467
90 | Shelton | 39 | 326
91 | Emerson | 21 | 190
92 | Pronschinske | 8 | 120
93 | Petryk | 7 | 119
94 | Doyle | 36 | 239
95 | Billings | 22 | 203
96 | Oldenburg | 16 | 184
97 | Allen | 362 | 2815
98 | Neylon | 430 | 3783
99 | Duchow | 299 | 3656

*For more information visit [uwm.edu/budget](http://uwm.edu/budget)
The University of Wisconsin-Milwaukee is one of the nation’s top research universities, as recognized by the Carnegie Classification of Institutions of Higher Education. In FY 2022, the university had $54.1 million in research awards. More than three-quarters of that amount – $41.5 million – came from federal agencies. Here is a look at the largest federal grants.

**ENVIRONMENT AND CHILDREN’S BRAINS**

**Krista Lisdahl, psychology**  
*$8 million over seven years, National Institutes of Health*

A partner in the largest long-term study of brain development and child health, UWM is tracking biological and behavioral factors in 384 Wisconsin children to identify how environment and biology interact to affect brain development. The children are being followed from ages 9 or 10 through young adulthood.

**GRAVITATIONAL WAVE DATA ANALYSIS**

**Patrick Brady and Warren Anderson, physics**  
*$7.5 million over four years, National Science Foundation*

The Laser Interferometer Gravitational-Wave Observatory (LIGO) is part of a global network of detectors that use gravitational waves to learn more about the universe. This grant invests in LIGO’s massive computational data analysis and cyber infrastructure.

**A BETTER WAY TO WEIGH**

**Michele Polfuss, nursing**  
*$3.6 million over five years, National Institutes of Health*

Children with spina bifida, a developmental disability, have higher rates of obesity than typically developing peers. But aspects of the disease make it difficult to obtain body measurements. This project aims to develop an accurate method of measuring body composition in a clinical setting.

**RISK AND RESILIENCE IN BLACK TRAUMA SURVIVORS**

**Christine Larson, psychology**  
*$3.6 million over five years, National Institutes of Health*

This project explores neurobiological factors that predict risk for long-term, post-traumatic stress disorder in Black trauma survivors. The study focuses on assessment of people soon after they have experienced trauma, with the goal of earlier intervention to improve health after trauma.

**CHILDREN, TRAUMA AND PTSD RISK**

**Christine Larson, psychology**  
*$3.5 million over five years, National Institutes of Health*

This study uses brain imaging and machine learning techniques to assess neurological and social factors among children who have experienced violence. The goal is to identify predictors of post-traumatic stress disorder risk, enabling early interventions.

**OCEAN FARMING A BIOFUEL SOURCE**

**Filipe Alberto, biological sciences**  
*$2.8 million over three years, U.S. Department of Energy*

Giant kelp, the fastest growing organism on Earth, could be a valuable biofuel source. UWM researchers are creating a seed bank and using genomic selection to improve traits. This will allow others to not only breed the crop and farm it in the ocean, but also protect it from environmental threats.
ALCOHOL AND INTIMATE PARTNER VIOLENCE AMONG LGB PEOPLE

Ryan Shorey, psychology  
$2.7 million over five years, National Institutes of Health

The researchers are conducting the most comprehensive look at the associations between alcohol use and intimate partner violence among people who identify as lesbian, gay or bisexual – a population overlooked in this research. The goal is to improve prevention efforts.

REVEALING HOW AUTISM BEGINS

Christopher Quinn, biological sciences  
$1.7 million over five years, National Institutes of Health

The onset of autism usually involves complicated interactions between many genes. In order to better understand how autism begins at the genetic level, this project studies a simplified model: a single-gene mutation that causes a childhood disease called Timothy syndrome. A symptom of this gene mutation is autism.

ASTRONOMY WITH GRAVITATIONAL WAVES

Jolien Creighton and Patrick Brady, physics  
$1.5 million over three years, National Science Foundation

A global network of gravitational wave detectors, including LIGO detectors in the U.S., is detecting gravitational waves at an increasing pace. This project aims to identify and interpret signals as the detection rate increases to facilitate multimessenger astronomy – coordinated observations from multiple observatories.

PUBLIC TRANSIT SOLUTIONS TO IMPROVE ACCESS TO JOBS

Robert Schneider, urban planning  
$1 million for one year, National Science Foundation

In this project, two on-demand microtransit service models will be implemented and compared. The models coordinate public transit services across county jurisdictions so that job seekers in segregated, urban Black neighborhoods can access jobs in surrounding suburban counties where employers need workers.

FIVE PENDING FEDERAL GRANTS, 2022-23

Roger O. Smith, health sciences  
U.S. Department of Health & Human Services, $4.6 million

Using Artificial Intelligence to Ease Home-Life Challenges for People with Disabilities

Mohammad Rahman, biomedical engineering and mechanical engineering  
U.S. Department of Health & Human Services, $4.6 million

Augmented Reality Systems to Reduce Social Isolation for People with Disabilities

Jeanne Erickson, nursing  
National Institutes of Health, $3.95 million

Can Physical Activity Reduce Fatigue in Adolescents with Cancer?

Krista Lisdahl, psychology  
National Institutes of Health, $3.8 million

Determining the Onset of Alcohol and Cannabis Binging in Adolescents Enrolled in Brain Development Study

Ryan Shorey, psychology  
National Institutes of Health, $3.2 million

Alcohol Use, Intimate Partner Violence, and LGBT Stress as Predictors of Suicide Contemplation

Inclusion in the list is determined by aggregated funding actions in fiscal year 2022 on federal research grants led by UWM employees. The grants are ordered by total amount over the life of the grant.
FEDERAL RESEARCH AT UWM

Since 2013, the University of Wisconsin-Milwaukee has received over $380 million in federal awards. Our faculty and staff work in conjunction with many federal partners, including the U.S. Department of Education, the U.S. Department of Health and Human Services, the National Science Foundation, the U.S. Department of Energy, the National Institutes of Health and others.

UWM FUNDING, 2013-2022, FEDERAL SOURCES ONLY
Grand Total: $380,731,376
<table>
<thead>
<tr>
<th>Federal Agency</th>
<th>Award Value Since 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Agriculture</td>
<td>$5,155,496</td>
</tr>
<tr>
<td>Department of Commerce</td>
<td>$699,013</td>
</tr>
<tr>
<td>Department of Defense</td>
<td>$5,030,101</td>
</tr>
<tr>
<td>Department of Education</td>
<td>$59,440,132</td>
</tr>
<tr>
<td>Department of Energy</td>
<td>$24,798,973</td>
</tr>
<tr>
<td>Department of Health and Human Services</td>
<td>$46,136,628</td>
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<tr>
<td>Department of Homeland Security</td>
<td>$326,889</td>
</tr>
<tr>
<td>Department of Housing and Urban Development</td>
<td>$2,200</td>
</tr>
<tr>
<td>Department of the Interior</td>
<td>$2,509,451</td>
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<tr>
<td>Department of Justice</td>
<td>$2,688,863</td>
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<td>Department of Labor</td>
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<td>Department of State</td>
<td>$609,834</td>
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<tr>
<td>Department of Transportation</td>
<td>$2,072,872</td>
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<tr>
<td>Department of the Treasury</td>
<td>$201,967</td>
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<tr>
<td>Environmental Protection Agency</td>
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<tr>
<td>Executive Office of the President</td>
<td>$15,360,036</td>
</tr>
<tr>
<td>Federal – Other</td>
<td>$2,632,523</td>
</tr>
<tr>
<td>Institute of Museum and Library Services</td>
<td>$1,807,794</td>
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<tr>
<td>National Academies</td>
<td>$2,982,290</td>
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<td>National Aeronautics and Space Administration</td>
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<td>National Endowment for the Arts</td>
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<td>National Institutes of Health</td>
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<td>National Oceanic and Atmospheric Administration</td>
<td>$9,545,395</td>
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<td>National Science Foundation</td>
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<tr>
<td>Small Business Administration</td>
<td>$1,980,366</td>
</tr>
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<td><strong>Grand Total</strong></td>
<td><strong>$380,731,376</strong></td>
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CREATING A TALENT PIPELINE FOR WISCONSIN’S MANUFACTURERS
CONNECTED SYSTEMS INSTITUTE

DIGITAL ADOPTION OUTREACH TO SMALL AND MEDIUM-SIZED MANUFACTURERS

The University of Wisconsin-Milwaukee’s Connected Systems Institute is working to create a new team to support Small and Medium Manufacturers in Southeast Wisconsin on their digital adoption journey. $300,000 in funding for this initiative would fund a full-time employee, two graduate assistants, working space, equipment and recruitment marketing.

About 140,000 small and medium manufacturing jobs are located in the M7 region, and at least 20% of those jobs are at risk over the next 30 years. About 85% of Wisconsin’s 9,400 manufacturers are small or medium, and most have made little to no progress in adopting digital technologies necessary to survive in today’s supply chain.

To ensure that the Milwaukee region remains globally competitive and the economic impact of our manufacturing sector remains sustainable, two urgent and interrelated problems must be addressed:

1) Our small and midsize manufacturers are facing an adopt-or-die moment. They must make a technological transition to remain viable.

2) Meanwhile, we must address the economic distress tied to the decline of traditional manufacturing that has had a staggeringly disproportionate effect on our diverse populations.

This project is to start a team of business-facing coaches in digital manufacturing adoption who can serve as a support system for manufacturing companies as their move along their digital adoption journey. Specialists would work with individual companies to assess their digital readiness, and coach them through creating an implementation plan that will have the highest return on investment.

The Outreach Center would be hosted by and housed at the CSI. Staffing the center with a program specialist along with student workers would cost approximately $300,000 per year. This includes staff, equipment, and recruitment materials. Minor space reconfiguration will be required to create a “service center” for SMMS to visit the team. Referrals will be made where appropriate to the MEPs, to partner companies who provide digital adoption consulting and integration services and to educational programming offered through the CSI’s growing Manufacturing Workforce Innovation Program.

Follow on funding will be necessary to continue the program beyond the one-year proposed for the CFP. Please note that aligned proposals have been submitted to NIST for MfgTech road-mapping and to WEDC for a workforce learning program expansion. This proposed project is the third leg of the stool for CSI to support SMMs which includes: 1) digital manufacturing education, 2) cutting edge research and 3) digital adoption outreach services.
CSI’s Manufacturing Workforce Innovation Program (MWIP) will help address the talent gap and worker shortage that preceded the pandemic and has only been made worse by it.

Of the 400 employers surveyed in 2021 by the Wisconsin Center for Manufacturing and Productivity, 83 percent stated they were having difficulty finding the right talent. The impact has been widespread across manufacturers of all sizes in all areas of Wisconsin.

The MWIP will provide in-demand comprehensive set of technology and digital skills needed in the manufacturing environment. Participants will be nominated by employers from within their workforce, from nearly qualified applicants, or recruited from job centers.

While concentrated in the M7 region, where there are 180,000 manufacturing jobs, the courses will be made available to individuals across the state. Special emphasis will be placed on recruiting underrepresented learners.

**MWIP currently offers two in-demand courses:**

- **Digital Manufacturing Leadership**
  
  This course is geared toward business leaders of small and medium manufacturing facilities who are ready to steer their team toward adopting Industry 4.0 advanced technologies. This nine-week course is designed to help participants better understand, measure, and mitigate risk in manufacturing. Each learner emerges with an individualized written asset management strategy, a financial plan for measuring improvement, and a digital governance strategy for mitigating specific risks.

- **Microsoft Azure for Manufacturing**
  
  This course introduces manufacturing professionals to the possibilities of IIoT solutions using Azure. In collaboration with Microsoft, CSI has created Microsoft Azure in Manufacturing, a six-week hybrid course that includes online and in-person instructor-guided labs at CSI’s fully functioning state-of-the-art manufacturing facility, leveraging the testbed data and contextualizing lessons for manufacturing domains.

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**ROADMAP FOR COURSE DEVELOPMENT**

*Our roadmap for course development looks ahead two years and is informed by manufacturing industry leaders*

- **January 2023**
  
  Integrated Robotics for Manufacturing

- **January 2023**
  
  Operational Technology Cybersecurity

- **June 2023**
  
  Fundamentals of Robotics in Manufacturing

- **September 2023**
  
  Networking for Industrial Control Systems

- **September 2023**
  
  Industrial Automation and Controls

- **October 2023**
  
  Data Structuring for Advanced Manufacturing

- **January 2024**
  
  AR/VR in Manufacturing

- **March 2024**
  
  Digital Twins in Manufacturing

- **June 2024**
  
  Industrial IoT: Smart Sensors

- **September 2024**
  
  MES Systems and Implementation

- **October 2024**
  
  CMMS Systems and Implementation
UWM’s College of Engineering & Applied Science is known for high-impact, applied research and collaborative partnerships. Our rich and productive partnerships with industry and government ensure a meaningful path for discoveries through innovation and tech transfer.

**ENERGY AND SUSTAINABILITY**

Southeast Wisconsin is home to over 1,000 energy, power and controls companies. The College of Engineering & Applied Science is in the ideal location for researchers to drive innovation, cost savings and fuel talent pipelines for the next generation of energy engineers. Their focus includes microgrids that complement the nation’s energy grid, cheaper and cleaner lithium-ion batteries, including faster charging batteries and safer and improved energy storage.

UWM hosts Wisconsin’s only U.S. Department of Energy Industrial Assessment Center, helping manufacturers and utilities increase productivity and competitiveness by reducing energy and water consumption, enhancing cybersecurity and adopting smart manufacturing technology.

GRAPES: The Midwest’s university partner in the Grid-connected Advanced Power Electronic Systems, a National Science Foundation Industry/University Cooperative Research Center (I/UCRC) with a mission to accelerate the adoption and insertion of power electronics into the grid to improve system stability, robustness and economy.

**WATER AND THE ENVIRONMENT**

Researchers are focused on designing more cost-effective filters, sensors and membranes, making our water supply cleaner and safer. The new Freshwater Collaborative of Wisconsin is led by an alumna from the college.

UWM faculty leads Water Equipment and Policy Center (WEP), a National Science Foundation Industry/University Cooperative Research Center (I/UCRC). WEP provides innovative water technologies and processes to promote advancement of the water industry, conducting research to inform water policy makers. Nearly 100 pre-competitive research projects have been completed in the past decade.

**INFRASTRUCTURE AND TRANSPORTATION**

The college hosts the largest structural testing facility in Wisconsin, providing a ready workspace for industry and government collaboration. Our researchers are known worldwide for their expertise in concrete, structural engineering, traffic safety, urban mobility, and transportation solutions.

Researchers from the college lead the Institute of Physical Infrastructure and Transportation, fostering collaboration with transportation and infrastructure companies and agencies across Southeast Wisconsin and beyond.
BIOMEDICAL AND HEALTH
World-renowned faculty and their students are making an impact on our world on many fronts: more accurate scanners so medical providers have sharper images to make better diagnoses; prosthetics, robotics and medical devices to promote better outcomes; and biomaterial-based therapies to improve bone healing are just a few examples.

ADVANCED MANUFACTURING
UWM researchers have long-standing collaborations with the region’s strong manufacturing community.

The Connected Systems Institute, established in partnership with Rockwell Automation, hosts an Advanced Manufacturing Testbed, the only one of its kind in the U.S. CSU provides students and researchers an integrated manufacturing platform, supporting development of advanced manufacturing processes.

Additional support is provided from We Energies, the Wisconsin Economic development Corporation, Microsoft, Cisco and Dell.

GREAT STUDENT OUTCOMES
The average starting salary Bachelor’s Degree student is $71,800 and 95% of students start careers or continue their education upon graduation. 74% of graduates stay in Wisconsin to contribute to the local economy

CEAS graduates have been hired by:
Amazon • Apple • Briggs & Stratton • Eaton • FCA Fiat Chrysler Automobiles • FIS • GE Healthcare • Generac GRAEF • Harley-Davidson • Intel • Johnson Controls Kohler Company • Microsoft • Milwaukee Tool • Modine Manufacturing • Molson Coors • Northwestern Mutual Raytheon Missile Systems • Rockwell Automation • Tesla We Energies

A DIVERSE STUDENT POPULATION
• Over 2,000 students enrolled in CEAS and 41% of students in the college are non-white.
• First-generation students comprise 28% of the students in the college — up 28% over the last 10 years.
• College saw a 44% increase in veteran students in the college over the last 10 years, and female students have nearly doubled at the college over the last 10 years.

ALUMNI CEOS AND ENTREPRENEURS
Satya Nadella, CEO of Microsoft, just the third CEO in the company’s history
John Kissinger, CEO of GRAEF, an international engineering, planning and design firm. His work for the Milwaukee Art Museum Calatrava addition was named the “Number One Design of 2001” by Time Magazine.
Carrie Bristoll-Groll, Founder and CEO of Stormwater Solutions Engineering, LLC (SSE), the only stormwater-focused engineering firm in Wisconsin.
Jesse DePinto, Co-founder and CEO of Frontdesk, short-term apartment rental company named to Inc.’s 5000 fastest-growing travel companies in 2021 and 2022.
Ben Caya, Founder and President, Spike Brewing Equipment, overseeing a $9M expansion into a new Milwaukee location.
The University of Wisconsin-Milwaukee School of Freshwater Sciences invites NOAA Great Lakes Environmental Research Laboratory to consider using the UWM Great Lakes Research Facility in Milwaukee as its primary base of operations for research conducted on the western side of Lake Michigan.

- **State-of-the-Art Labs & Facilities**: Access to labs, marine operations, instrument shop, meeting space and equipment located in the Great Lakes Research Facility - no need for NOAA to construct anything new.

- **Collaboration**: Ability to collaborate with faculty, technicians, students and the community who have expertise in freshwater sciences and atmospheric science. Our facility houses nine on-site governmental and non-profit collaborators.

- **Prime Location**: Proximity to the new Lake Michigan NOAA Marine Sanctuary, the entirety of the Wisconsin and Illinois coastline, infrastructure in Milwaukee and Chicago, and access to NOAA’s Muskegon location.

**COLLABORATE WITH A LEADING RESEARCH AND ACADEMIC INSTITUTION**

UWM is ranked nationally among the top four percent of research universities, a category known as R1, by the Carnegie Classification of Institutions of Higher Education. We’re also a Carnegie Engaged Institution. UWM is the most diverse campus within the UW System, thus offering NOAA opportunities for recruiting new talent.

- 24,000+ students on three campuses; 83% are Wisconsin residents
- 5,000+ graduates per year, over 80% of alumni stay in Wisconsin
- 1,023 international students from 87 countries
- Nearly 1,000 veteran and military-related students enrolled
- 38% of undergraduates are first-generation college students
- 33% are students of color

The Great Lakes Research Facility houses UWM’s School of Freshwater Sciences, which has a longstanding history in freshwater research and offers undergraduate and graduate degree programs in freshwater sciences and atmospheric science. The School of Freshwater Sciences is also home to the UW Center for Water Policy and is the lead institution within the Freshwater Collaborative of Wisconsin, a partnership of Wisconsin’s 13 public universities focused on student training, workforce development and freshwater research.
FACILITIES AVAILABLE TO NOAA
The UWM Great Lakes Research Facility is an oceanographic-style facility designed to facilitate Great Lakes and water science research and education. Key features and benefits include:

• ~ 200,000 ft² of laboratory, marine operations, classroom, and conferencing space
• 1,400’ of protected dock space
• Location in Milwaukee’s protected Harbor District with direct access to Lake Michigan
• Easy access to major airports in Milwaukee and Chicago; connected to GLERL’s Lake Michigan Field Station in Muskegon by high-speed ferry

RESEARCH FACILITIES AND ONSITE SUPPORT CENTERS AND LABS
The UWM Great Lakes Research Facility has extensive research centers, labs and other facilities to support NOAA researchers and visiting scientists.

<table>
<thead>
<tr>
<th>Research Centers</th>
<th>Onsite Support Facilities and Labs</th>
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<tr>
<td>Great Lakes Genomics Center</td>
<td>Analytical Core Facility</td>
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<tr>
<td>Great Lakes Aquaculture Center</td>
<td>Aquaria and Fish Research Labs</td>
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<tr>
<td>Water Technology Accelerator</td>
<td>Bio Secure and Quarantine Labs</td>
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<tr>
<td>Center for Water Policy</td>
<td>Data Visualization Labs</td>
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<td>Innovative Weather</td>
<td>DNA Sequencing and Bioinformatics</td>
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<tr>
<td>National Science Foundation Water Equipment and Technology Industry/University Cooperative Research Center</td>
<td>Instrument Shop</td>
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<td>Robotics and Great Lakes Observation Systems Lab</td>
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<td>Marine Operations Facilities</td>
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<td>U.S. EPA Great Lakes Fish Tissue Archive</td>
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RESEARCH FLEET
UWM operates a fleet of craft that includes the R/V Neeskay, small boats, and remotely operated vehicles. It also operates several NOAA GLOS Buos. All UWM craft are available for use by NOAA scientists and partners through UWM’s participation in NOAA CIGLR. In addition, the U.S. EPA R/V Lake Guardian docks and winters at the Great Lakes Research Facility.

The School of Freshwater Sciences has plans to construct the R/V Maggi Sue, which will be the Great Lakes’ most technologically advanced research vessel.

CONCLUSION
UWM’s Great Lakes Research Facility is a hub for freshwater research. By locating the GLERL’s western Lake Michigan research operations at the Great Lakes Research Facility, NOAA could cost-effectively connect with numerous water organizations, tap into UWM’s network of faculty expertise, access workforce talent, and gain immediate use of state-of-the-art facilities.

For questions, discussions, or to set up a visit, please contact Rebecca Klaper at rklaper@uwm.edu or Eric Leaf at leafe@uwm.edu.