



YOU CAN'T CHAMPION WHAT YOU CAN'T MEASURE: DATA ON UNIVERSITIES' WORKFORCE AND SOCIAL IMPACTS

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Introductions



**Britany Affolter-Caine, Executive Director
University Research Corridor (URC)**

The only national innovation cluster comprised exclusively of public institutions, the URC is dedicated to improving the quality of life for its region while advancing knowledge at a global level. All three member institutions of the URC - Michigan State University, the University of Michigan & Wayne State University - are members of IRIS.



**Kevin Bjorne, Technical Director
Institute for Research on Innovation and Science (IRIS)**

IRIS is a consortium of research universities using big administrative data to understand, explain and improve higher education and research.



**Dan Meisler, Communications Manager,
Institute for Research on Innovation and Science (IRIS)**

URC: Determining the Impacts of Michigan's R1 Universities

Answering the 'So what?' Question

What distinguishes public research-intensive universities and its graduates?

Why should business leaders, elected officials, community leaders, media & voters care?

Economic Impacts

- Net Economic Impact: Econometric modeling estimating the "but for these institutions"
 - Advantage: Consistency over time lends to long-term comparison and analysis
 - Limitation: Easily dismissed by some as estimates of exaggeration and lacks specificity of examples
- Competitiveness - Benchmarking the URC to the nation's top university innovation clusters
- Industry Relevance - Measuring university contributions (e.g., research, talent) to key industries

Quality of Life Impacts - What are the benefits to Michigan residents, communities & businesses?

- Real Examples: Telling impact stories relevant to specific demographics, industries & geographies in the state
 - Analytical Specificity: Proving regional stakeholders with concrete measurements built on specific examples
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URC BENCHMARK



Northern California

- University of California, San Francisco
- University of California, Berkeley
- Stanford University



Southern California

- University of California, Los Angeles
- University of California, San Diego
- University of Southern California



North Carolina

- Duke University
- University of North Carolina, Chapel Hill
- North Carolina State University



Illinois

- University of Chicago
- University of Illinois at Urbana-Champaign
- Northwestern University



Massachusetts

- Harvard University
- Massachusetts Institute of Technology
- Boston University



Pennsylvania

- Pennsylvania State University (all campuses except Penn State World Campus)
- University of Pittsburgh (all campuses)
- Carnegie Mellon University



Texas

- University of Texas, Austin
- Texas A&M University (College Station and Commerce Campuses)
- Rice University

URC Key Indicators

	2007 Report* (FY 2006 Indicators)	2022 Report (FY 2021 Indicators)	Change Since 2007
Operational and Construction Expenditures	\$7.0 billion	\$12.1 billion	+\$5.1 billion
Fall Enrollment (Undergraduate and Graduate)	124,586	139,624	+15,038
Net Economic Impact	\$12.8 billion	\$20.6 billion	+\$7.8 billion
<i>Memo: Tax Revenue Impact on State of Michigan</i>	\$343 million	\$650 million	+\$307 million

Source: AEG economic impact framework utilizing base data from URC Universities; U.S. Bureau of Economic Analysis RIMS II Multipliers; U.S. Census Bureau.

*Estimated 2007 impacts using updated economic impact framework. These numbers reflect revisions made to our methodology in 2014.

Net Economic Impact of the URC by Region

Regions	Output Impact (millions)	Jobs Impact
Upper Peninsula	\$64.7	92
Northwest	\$193.9	184
Northeast	\$59.8	80
West	\$787.6	909
East Central	\$174.8	201
East	\$697.6	2,022
South Central (MSU)	\$4,129.1	12,913
Southwest	\$245.6	266
Southeast (U of M)	\$6,599.3	43,671
Detroit Metro (WSU)	\$7,640.6	19,893
State of Michigan	\$20,592.8	80,231

Source: AEG economic impact framework utilizing base data from URC Universities; BEA RIMS II Multipliers; IPEDS; Census Bureau.

Michigan's Mobility Ecosystem

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EDUCATION

Training current and future mobility workforce

With three engineering schools and three mobility centers, URC institutions train students for tomorrow's mobility workforce.

87

key mobility degrees and programs

#1 in U.S.

The URC confers the most degrees in high-demand mobility industry fields.

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LIVING LABS

Actively engaging with research ecosystems

URC develops systems for deploying autonomous and shared transportation.

7,849

acres of living lab capacity

Conducting research independently and with industry partners, URC institutions feature live, controlled, connected ecosystems for mobility research and development to advance smart-vehicle technology.



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TALENT

Cultivating and connecting skilled workforce with mobility industry leaders

14,824

mobility-related degrees granted (2019–2020)

#1 in U.S.

The URC confers the most undergraduate degrees in high-demand mobility industry fields.

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INDUSTRY PARTNERSHIPS

Expanding unique, successful, and sustained partnerships

URC institutions partner with industry leaders and agencies include The Car Lab, Michigan Mobility Institute, Center for Advanced Mobility, TechStars Mobility, TechTown Detroit, Michigan Council for Future Mobility, MDOT, Ford Smart Mobility, Toyota at Ann Arbor, Waymo, Lyft and Uber, Google, Roush, ICAMI.

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INNOVATION & TECH TRANSFER

Accelerating ideas to market

The URC creates ecosystems to accelerate ideas to market, license technologies to companies, incubate startups and provide mentoring expertise.

TOP 10

Michigan is a Top Ten State for Academic R&D, 92 percent of which is conducted by URC institutions.

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TESTING & VALIDATION

Incubating and launching new technologies

The URC helps anchor Michigan as a premier location for young companies to start, scale, commercialize and grow technologies redefining the movement of people.

3

Testing facilities for connected and autonomous vehicles

University owned/sponsored spaces include Mcity, Automation Alley, Ford City Insights Platform, UMTRI, Detroit Mobility Lab, MSU Mobility, MSU Connected and Autonomous Networked Vehicles for Active Safety (CANVAS).

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RESEARCH

Growing capacity to explore burgeoning possibilities

URC leads in first/last mile, biometrics, user experience, sociomobility, mobility policy, advanced materials, cybersecurity, software, Industry 4.0.

\$542.4M

Automotive R&D between 2015–2019

94%

of Michigan's federally funded R&D is conducted by the URC

The logo for IRIS features the word "IRIS" in a bold, dark blue, sans-serif font. Below the text is a thick, red, curved line that starts under the 'I' and ends under the 'S', resembling a smile or a wide arc. The logo is set against a white background with teal and purple geometric shapes in the corners.

IRIS

IRIS Data & Analysis

Why IRIS?

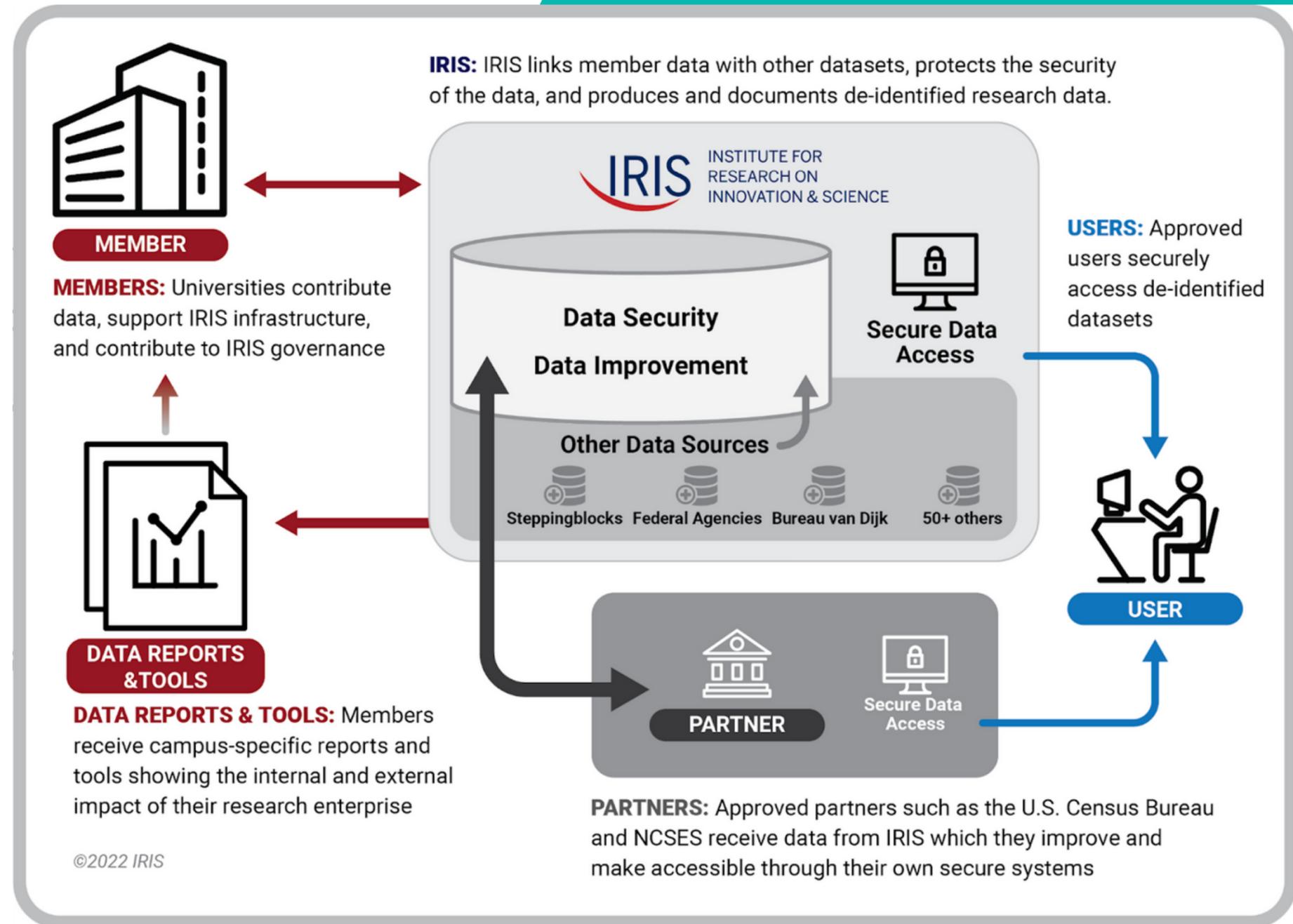
Granularity of data enables the URC to better answer the "So what?" for our stakeholders.

How does this data help?

- Provides greater specificity of data on economic impacts.
 - Enables greater sourcing of examples and stories that illustrate distributed quality of life impacts.
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What is IRIS?

Where do we get our data, what outside datasets do we link to, etc.



Assumption: Small & minority-owned businesses drive mobility

“Not only do small businesses generate two thirds of new jobs and employ 47 percent of our workforce, but entrepreneurship provides a critical path to economic and social stability as well as wealth-building opportunities for many Americans.”

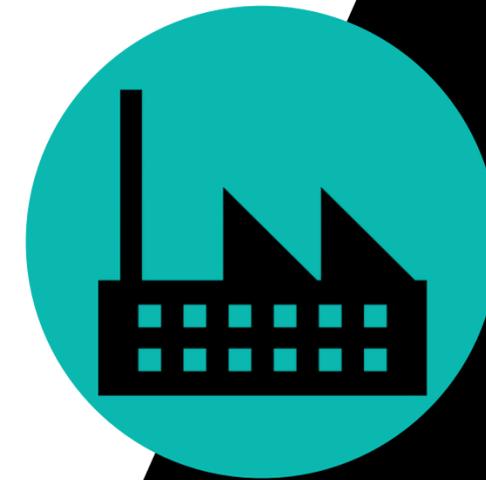
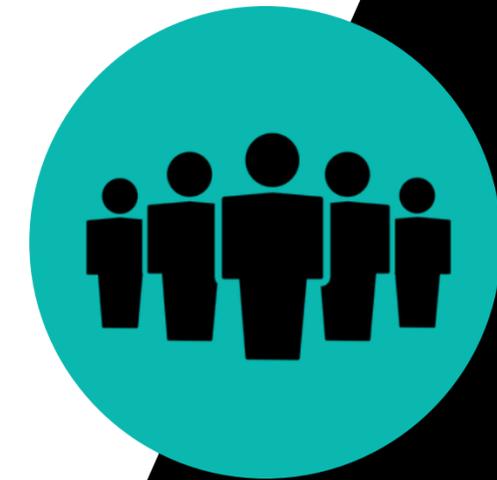
NATIONAL LEAGUE OF CITIES, 2022

“Of the new jobs created between 1995 and 2020, small businesses accounted for 62%.”

FORBES MAGAZINE, 2022

Does your university's research operation help promote upward mobility?

By linking university administrative data on research, procurement and employment with proprietary datasets on locations and types of businesses, IRIS can provide granular data on the impacts university research on workforce development (people) and economic development (companies).



Measuring the Economic Impact of Research

“Research vendors”: Business entities that provide research-related goods and services, paid for by sponsored funding.

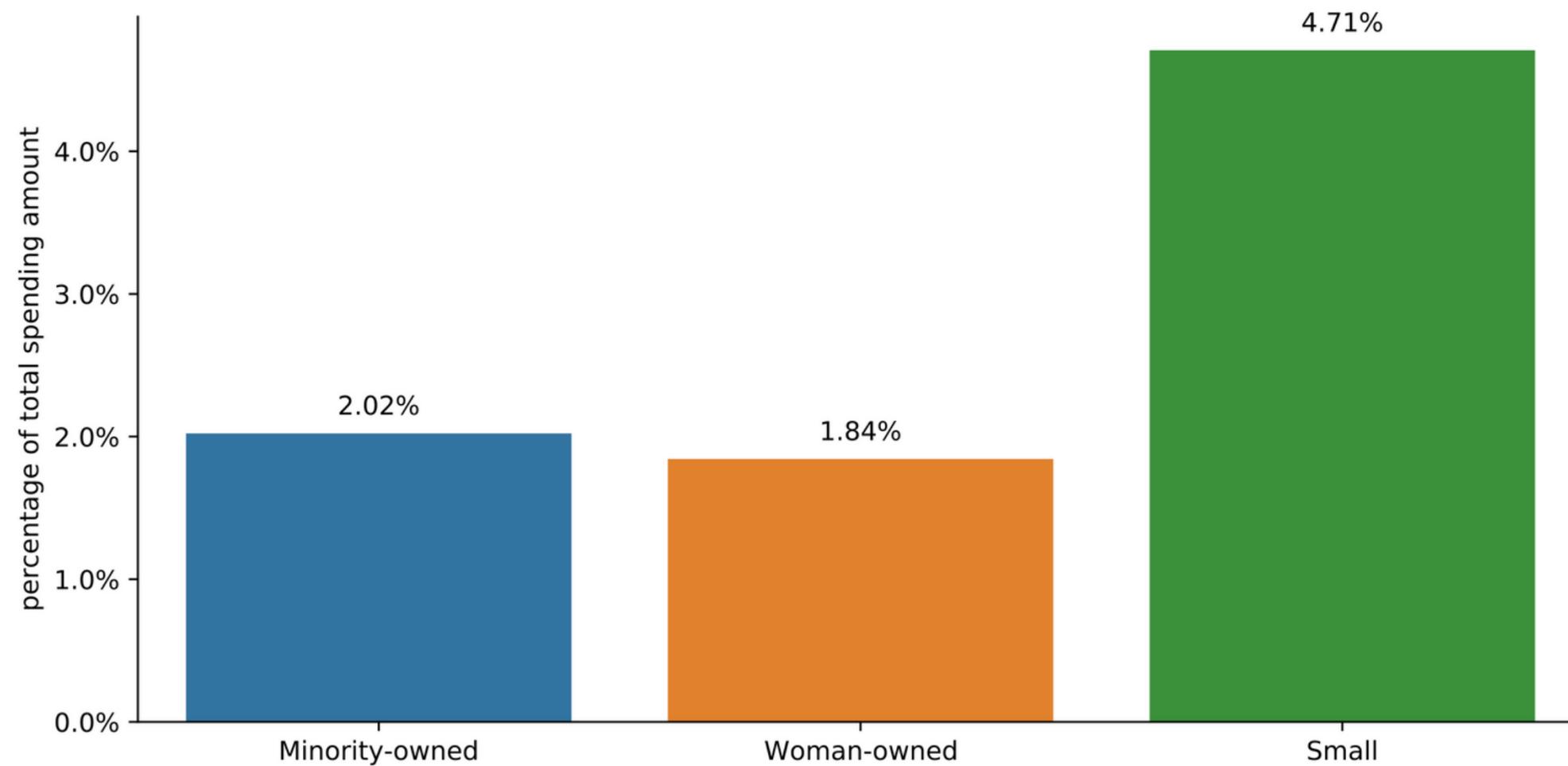
Types of businesses IRIS can identify:

- Small, medium, large
- Minority-owned
- Woman-owned

Note: Does not include university general fund spending.

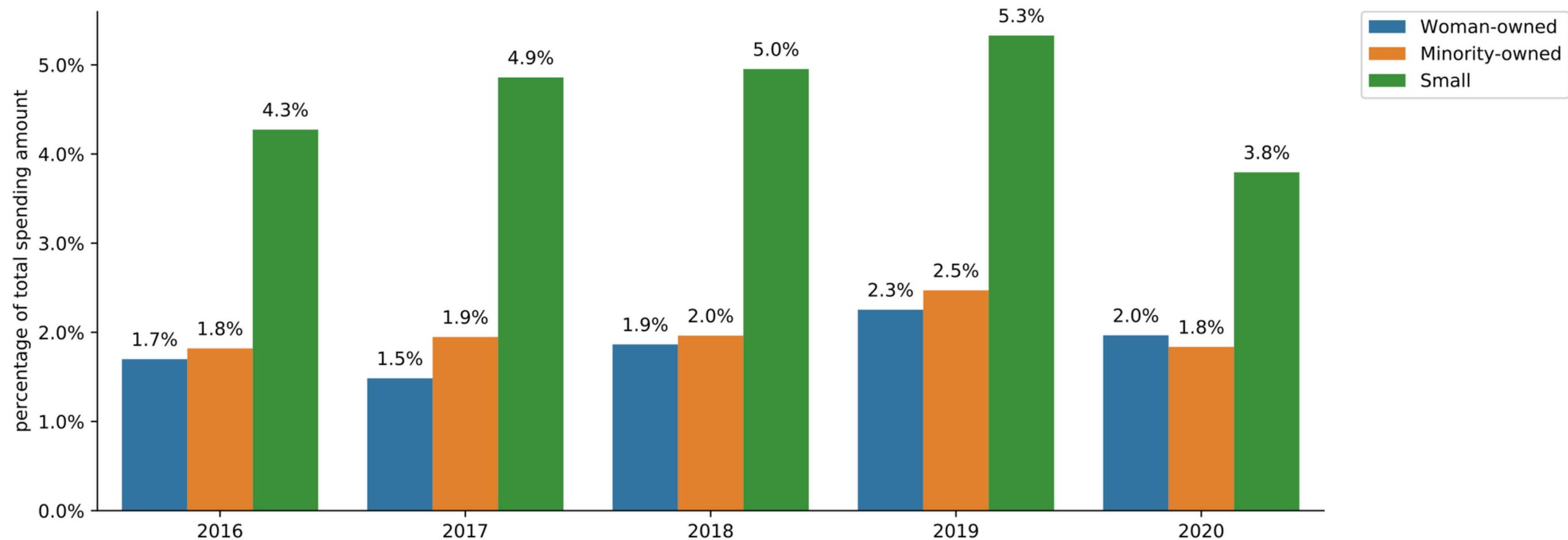
Measuring the Economic Impact of Research

Percentage of spending on research-related goods and services by type of business, 2016-2020



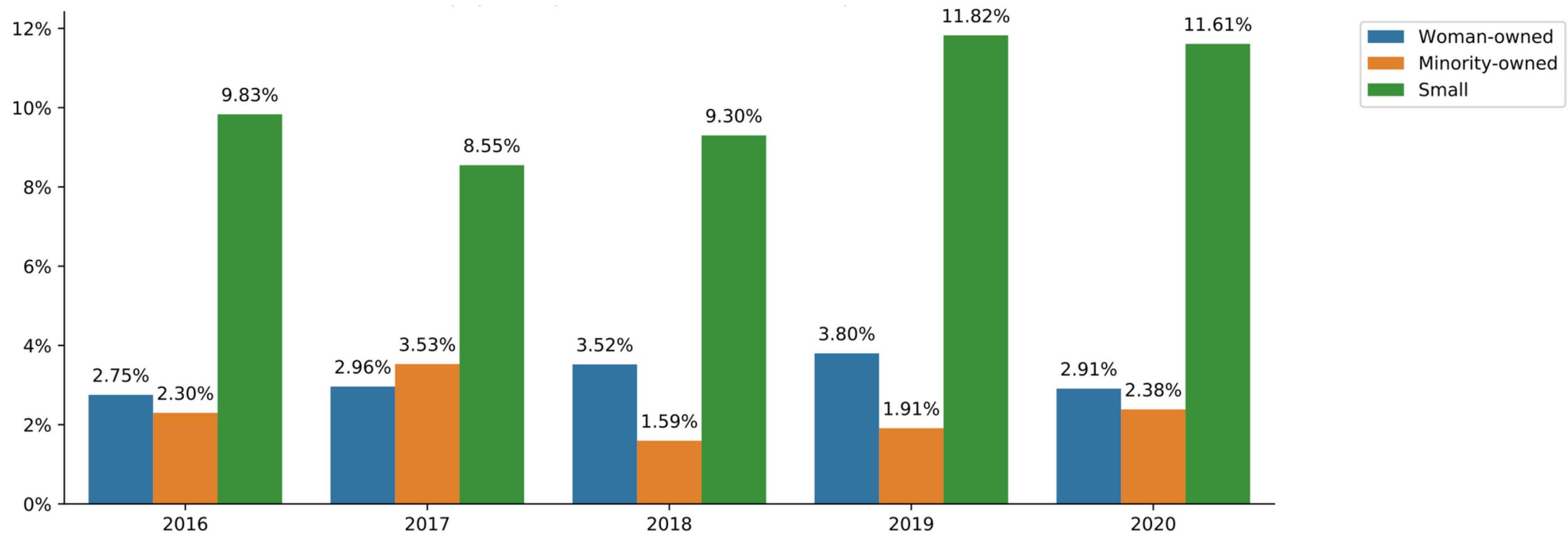
Measuring the Economic Impact of Research

Nationwide percentage of spending on research-related goods and services by type of business, by year, 2016-2020



Measuring the Economic Impact of Research

Percentage of spending on research-related goods and services by type of business, Michigan, 2016-2020



Measuring Workforce Impact of Research

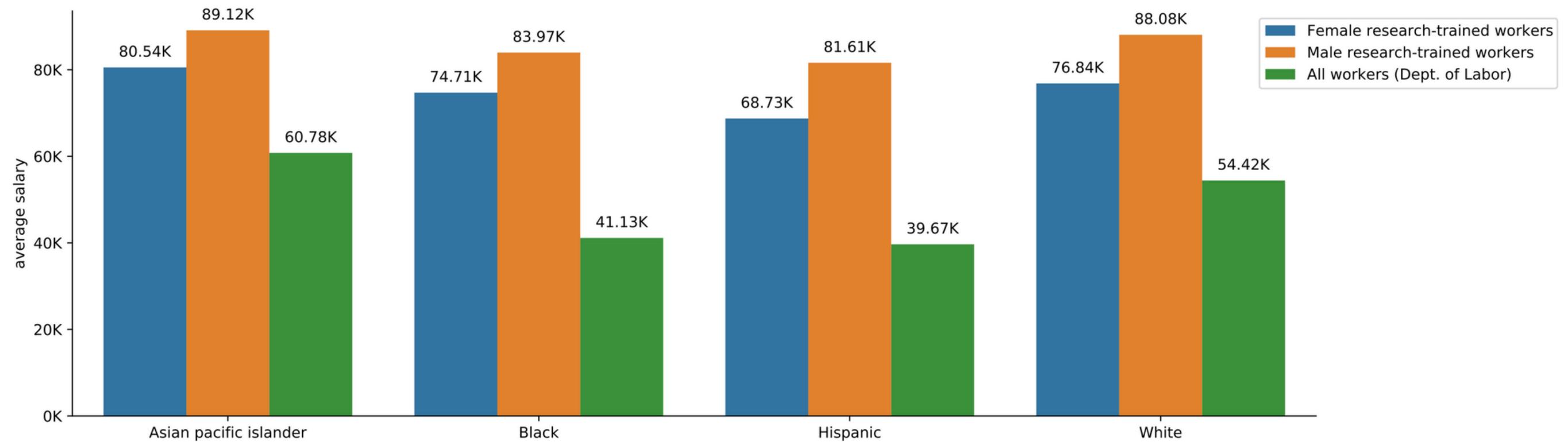
“Research funded university employees”: Anyone (staff, student, post-doc, faculty member) at a university that was ever paid on a federal or non-federal sponsored research project.

Data that IRIS can identify:

- Where they worked after leaving a university
 - How much they earned after leaving a university
 - Gender
 - Imputed ethnicity
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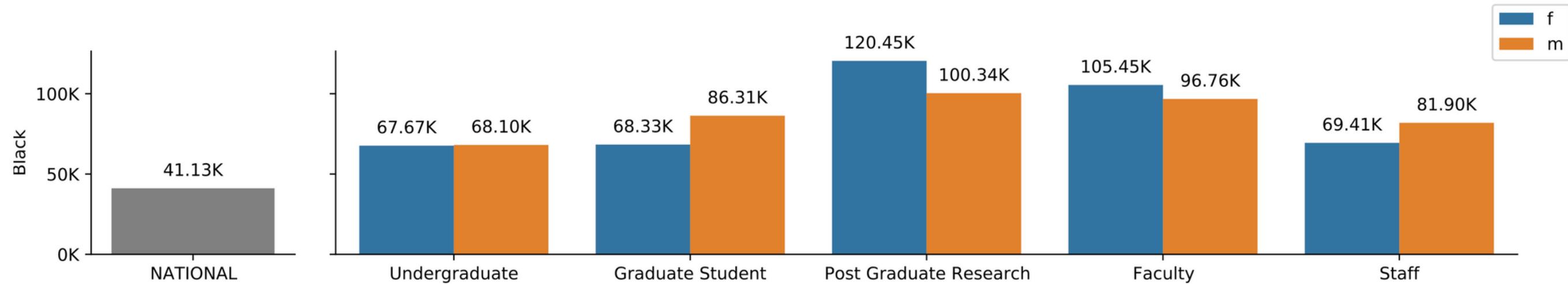
Impact of Research on the Workforce

Average salaries, all workers vs. research-trained workers, 2017-2019



Impact of Research on the Workforce

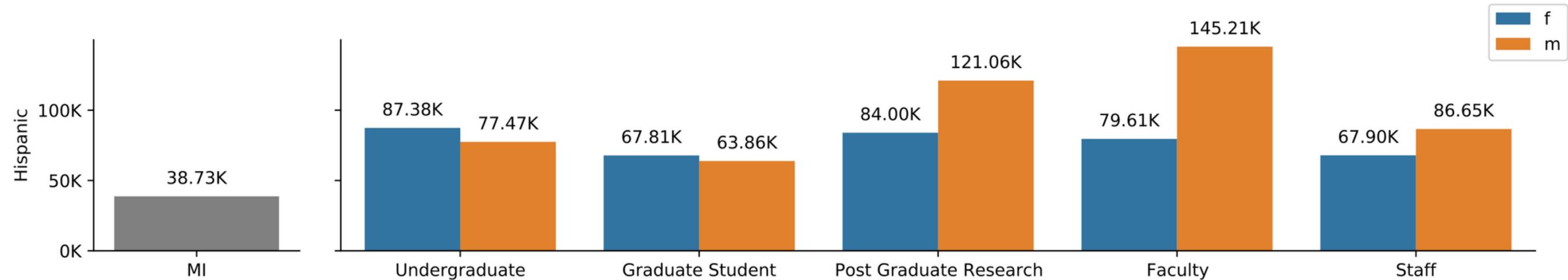
Average salaries, all workers vs. research-trained workers, U.S., 2017-2019



Black people who worked on university-based sponsored research projects earned significantly more than the national average in their subsequent employment.

Impact of Research on the Workforce

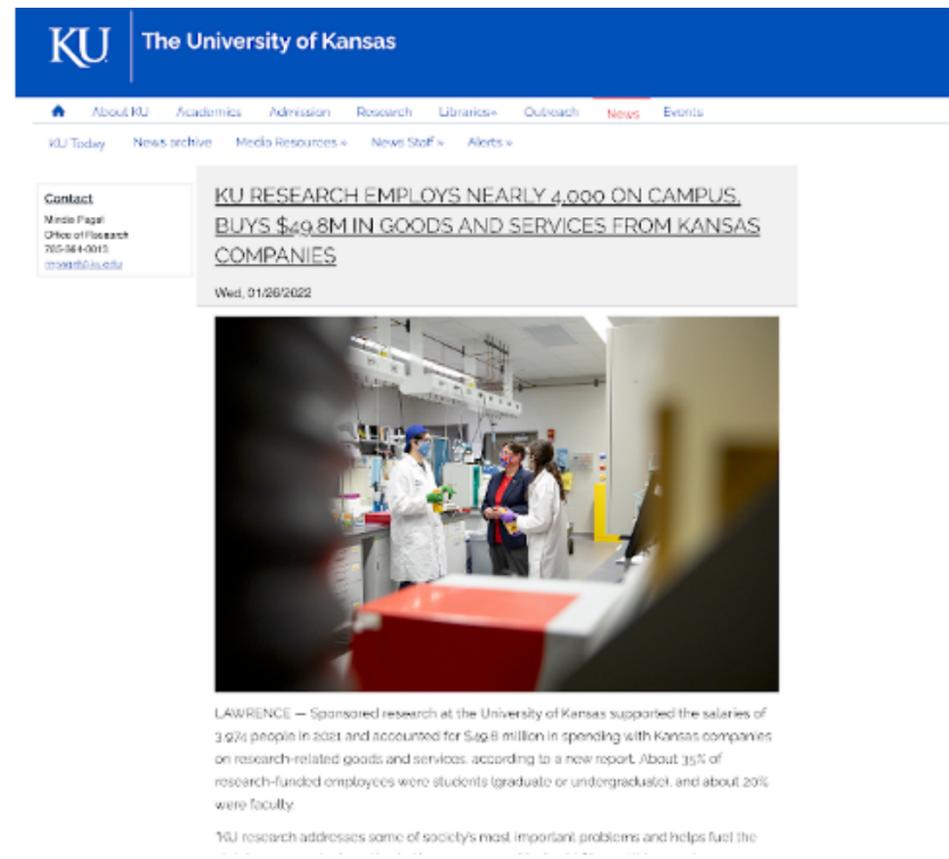
Average salaries, all workers vs. research-trained workers, Michigan, 2017-2019



Hispanic people who worked on university-based sponsored research projects earned significantly more than the Michigan average in their subsequent employment in the state.

Use Cases

UNIVERSITY OF KANSAS PRESS RELEASE



The screenshot shows a web page from the University of Kansas. At the top is the KU logo and the text "The University of Kansas". Below this is a navigation menu with links for "About KU", "Academics", "Admission", "Research", "Libraries", "Outreach", "News", and "Events". A secondary menu includes "KU Today", "News archive", "Media Resources", "New Staff", and "Alerts". On the left side, there is a "Contact" box for the "Office of Research" with the phone number "785-944-0015" and the email "ornews@ku.edu". The main content area features a headline: "KU RESEARCH EMPLOYS NEARLY 4,000 ON CAMPUS, BUYS \$49.8M IN GOODS AND SERVICES FROM KANSAS COMPANIES". Below the headline is the date "Wed, 01/26/2022" and a photograph of a laboratory setting with several people in white lab coats. Below the photo, the text begins with "LAWRENCE — Sponsored research at the University of Kansas supported the salaries of 3,974 people in 2021, and accounted for \$49.8 million in spending with Kansas companies on research-related goods and services, according to a new report. About 35% of research-funded employees were students (graduate or undergraduate), and about 20% were faculty. KU research addresses some of society's most important problems and helps fuel the..."

UNIVERSITY OF MICHIGAN FEATURE

SPACE STARTUP SUCCESS IN THE UPPER PENINSULA



University of Michigan alumnus and CEO of Orbion Space Technology Dr. Lyon (Brad) King is no stranger to out-of-this-world technological advancement. From the company's upper peninsula headquarters, the Orbion team has developed revolutionary small satellite propulsion systems designed to make spaceflight more simple, affordable and reliable for any in-space maneuvers.

In its early stages, Orbion benefited greatly from the support it received through the mentor-in-residence program



UNIVERSITY RESEARCH CORRIDOR



URC Opportunities

IRIS offers more unique opportunities to articulate URC universities' impacts.

- Greater granularity of data
- Larger catalogue of stories
- Comparative analytics potential

Last 15 mins: Q&A

What types of data do your universities collect to illustrate:



ECONOMIC IMPACT



WORKFORCE DEVELOPMENT



UPWARD MOBILITY

- What data would you like to have?
 - What are the stumbling blocks to getting those data?
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