Federal and Non-Federal Research Funding:

A Detailed Analysis of Research Expenditures at Research Universities for Michigan (RU4M)

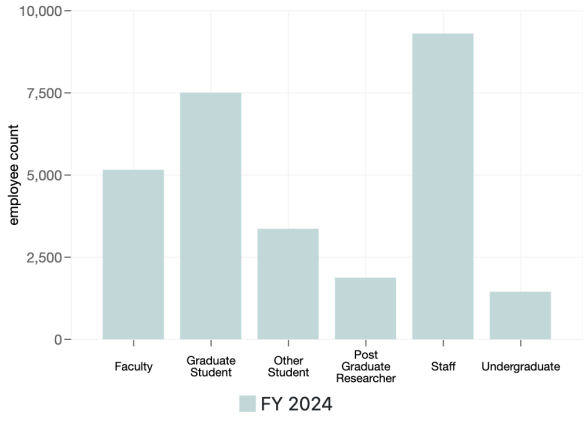
IRIS INSTITUTE FOR RESEARCH ON INNOVATION & SCIENCE

This report characterizes Research Universities for Michigan (RU4M) based on financial and payroll records submitted to IRIS for fiscal year 2024.

Individuals Employed by Federal and Non-Federal Research Funding

During 2024, federal and non-federal research expenditures supported 28,663 individuals at Research Universities for Michigan (RU4M).
43.0% of individuals supported by federal and non-federal research funding at these universities were students, while 18.0% were faculty.

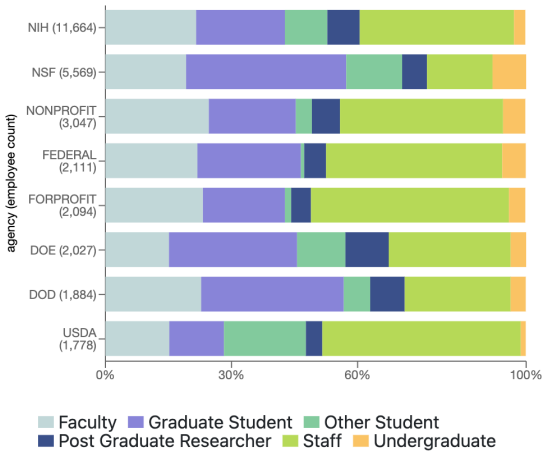
Counts of total individuals on Research Universities for Michigan (RU4M), broken down by occupational category (2024)



Organization of the Scientific Workforce

During 2024, students at Research Universities for Michigan (RU4M) constituted 59.4% of the research workforce supported by NSF awards and 33.9% of employees supported by awards from NIH.
Post graduate researchers comprised 10.3% (208), 8.2% (154), 7.7% (903), and 6.7% (203) of the employees on awards from DOE (2,027), DOD (1,884), NIH (11,664) and NONPROFIT (3,047), respectively.

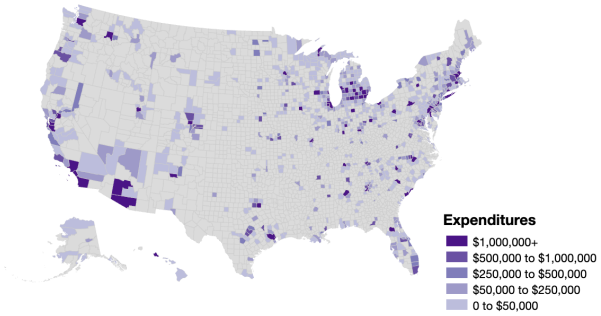
Employment patterns of Research Universities for Michigan (RU4M) for 2024



National Distribution of Research-Related Expenditures

The production of science requires the purchase of scientific equipment and technology as well as collaboration with private/public research organizations.
Research-related spending from federal and non-federal grants to Research Universities for Michigan (RU4M) exceeded $639.2 million during 2024 and included transactions with vendors in 780 US counties.

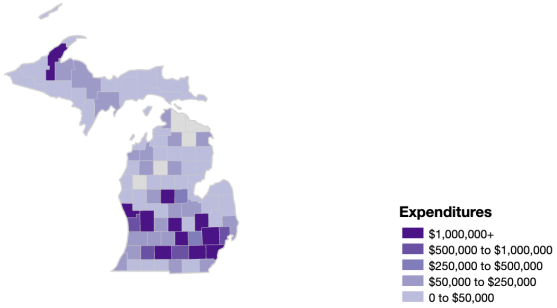
Total vendor and subaward expenditures on Research Universities for Michigan (RU4M) (2024)*



Regional Distribution of Research-Related Expenditures

During 2024, Research Universities for Michigan (RU4M) federal and non-federal research generated over $279.9 million in expenditures in Michigan.
Purchases from contractors in Washtenaw County exceeded $117.8 million, making it the top-ranking county in the state.

Vendor and subaward expenditures on federal and non-federal research awards to Research Universities for Michigan (RU4M) by Michigan county (2024)*



*Generally, about 94% of research expenditures can be matched to location information with available data and methodology.

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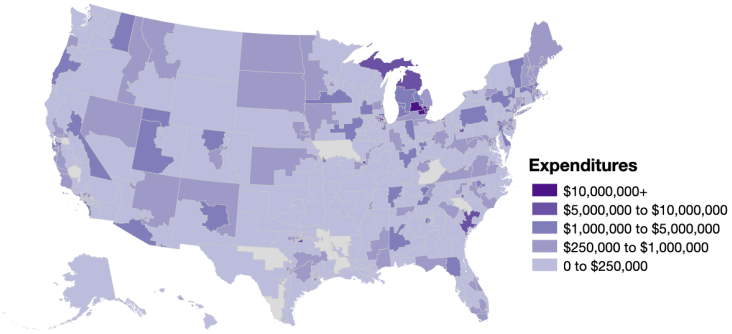
Congressional District Map.

National Distribution of Research-Related Expenditures

Total vendor and subaward expenditures on Research Universities for Michigan (RU4M) by congressional district (2024)

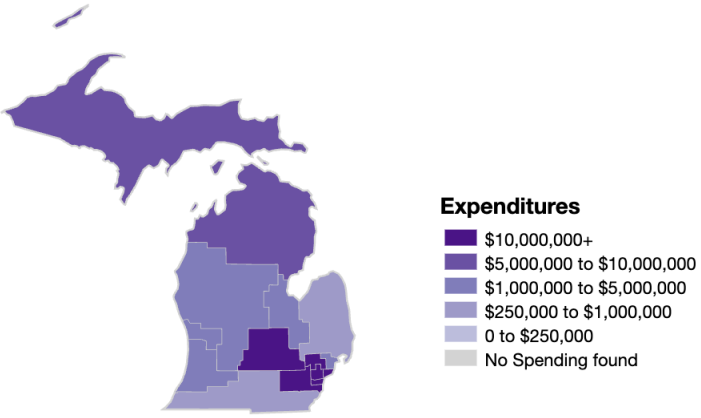
The production of science requires the purchase of scientific equipment and technology as well as collaboration with private/public research organizations.
Research-related spending on goods and services from federal and non-federal grants to Research Universities for Michigan (RU4M) exceeded $639.2 million during 2024 and included transactions with vendors in 426 US congressional districts (includes Washington, D.C.).



Regional Distribution of Research-Related Expenditures

Vendor and subaward expenditures on federal and non-federal research awards to Research Universities for Michigan (RU4M) by congressional district (2024)*

During 2024, Research Universities for Michigan (RU4M) federal and non-federal research generated over $279.9 million in expenditures on research-related goods and services in Michigan congressional districts.
Purchases from vendors in Michigan's 6th congressional district exceeded $119M, making it the top-ranking district in the state.



*Generally, about 94% of research expenditures can be matched to location information with available data and methodology.

Spending Report Methodology

This technical documentation describes how IRIS generates the data for this report.
This report includes data from universities that are members of IRIS and that have reported to IRIS the relevant employee data for FY2021-FY2025. Due to variations in data availability, some years may not include data from all IRIS members listed here:
Michigan State University, Michigan Technological University, University of Michigan, and Wayne State University.

Updates

This report uses inflation-adjusted dollars normalized to 2025 for all calculations, rather than nominal dollars.

Identifying and Characterizing Federal Awards in UMETRICS Data

Federal awards are identified by their corresponding Assistance Listing (previously known as CFDA [Catalog of Federal Domestic Assistance] code). All other awards are considered nonfederal and are filtered out before the Federal Spending Report is generated. Both Federal and nonfederal awards are reported in the All Spending Report.

The Assistance Listing is submitted to IRIS in each university's UMETRICS award file and corresponds to a specific Federal agency. In order to qualify for inclusion in the Federal Spending Report, an award must have an Assistance Listing that has the following characteristics:

- the listing IS NOT NULL (That means that a listing was submitted with the award)
- the listing IS NOT 99.xxx (99 is designated as 'UNKNOWN' and cannot be classified into a Federal agency)
- the listing does not start with 00. or 0. unless your university has specifically assigned a 00.700 code , which is a federal code as per the IRIS portal's OFS coding scheme
- the listing must have a period (.) in it. (This is important to place awards in the proper agencies, e.g., 12.800 - Air Force Defense Research Sciences Program.)

More information about Assistance Listings can be found here: https://sam.gov/content/assistance-listings

Work-Study

Some universities send IRIS the employment data for students who are paid by the federal work-study program. The federal government categorizes its work-study program with an Assistance Listing of 84.033, and we use this definition to identify a university's work-study-related records in this data. In this report, the option to include work-study data is available if a university has included students paid by federal work-study in the employee records it sends; if the work-study toggle is not available then the university has not provided those records.

Chart 1: Individuals Employed by Research Funding

Chart 1 displays counts of unique employees who are paid on all awards or all Federal awards, broken out by job categories.

IRIS has developed a keyword-based sorting algorithm, which uses job title, university-provided occupational class, Assistance Listing, and employee accounting code description to sort each job into one of six categories. This mechanism ensures a standardized application of sorting rules across all employees at all universities. It also emphasizes an employees status as a student, postgraduate researcher, or faculty member rather than their role in an awards production function.

More information on this method, known as Emphasization and Prioritizing of Student Status or EPSS, can be found in the slide presentation from the 2019 IRIS Summit at http://myumi.ch/W277J

The resulting categories used in Chart 1 are:

1. Faculty
2. Staff
3. Post-Graduate Researcher
4. Graduate Student
5. Undergraduate Student
6. Other Student (graduate or undergraduate, unable to be classified)

Spending Report Methodology

It is possible that an individual employee has multiple classifications if they have multiple job titles for the given time period in the report. To avoid duplication in this case, we use a ranking system to determine which job classification should be used in the report.

Below is the ranking approach to resolve multiple occupational classifications for a given employee. The ranking shows which classifications take precedence over others.

Occupational Classification	Rank
Student	1
Faculty	2
Post Graduate Research	3
Staff	4

When the Graduate Student or Undergraduate categories account for 5% or less of the overall employee count, they are rolled into the "Other Student" category. If the "Other Student" category makes up 5% or less of the overall employee count or if the "Post Graduate Researcher" category makes up 1% or less of the overall employee count, they are rolled into the "Staff" category.

Chart 2: Individuals Employed by Agency

Chart 2 displays counts of unique employees who are paid on all awards or all Federal awards, broken out by occupational categorization and funding source (if a university employee is paid on multiple awards funded by different sources, they are counted for each of those funding sources).

Funding source (agency) for Federal awards is defined by the Assistance Listing in the UMETRICS award file. If the Assistance Listing is identified as a federal agency then it is counted in federal reporting, all other are considered non-federal. Non-federal Assistance Listings that a university has supplied according to the File and Field guide, such as state, nonprofit, for profit, foreign, etc., are grouped by those categories. Those that cannot be categorized are grouped as "UNKNOWN". Funding source (agency) for Federal awards is defined by the CFDA code in the UMETRICS award file. If the CFDA code is identified as a federal agency then it is counted in federal reporting, all other CFDA codes are considered non-federal. Those that cannot be categorized are grouped as "UNKNOWN".

Occupational classifications for these data are assigned as described above.

Charts 3-6: Research Expenditures

These national and state maps display total expenditures to university vendors and subawardees, by U.S. county and congressional district. The data are aggregated from the university's UMETRICS vendor and subaward data files. IRIS applies geocodes to all of the vendor and subaward transactions in the data files. The geocoding relies on accurate addresses for vendors and subawardees.

Prior to any data linking, vendor and subawardee names for individual people are suppressed by IRIS. Name standardization is used to correct common data entry errors in vendor names. Additional quality rules, such as requiring the disambiguated vendor name to be correct and the date of the transaction to be reasonable, are applied.

This report is constructed by linking the vendor and subawardee data your university supplies to IRIS with latitude/longitude data from ArcGIS. For each vendor establishment, if ArcGIS returns a match that meets IRIS's criteria, the associated latitude and longitude from ArcGIS are used. If no suitable match is found, coordinates are assigned based on the centroid of the ZIP code linked to that vendor. These ZIP code centroids are sourced from https://www.unitedstateszipcodes.org. Once latitude and longitude coordinates are assigned, IRIS compares them to shape files published by the U.S. Census Bureau https://www2.census.gov/geo/tiger/TIGER2024/CD/.

When a vendor establishment's latitude and longitude fall within the boundaries of a county or congressional district, its spending is counted toward the total for that area.

Benchmarking and QA

The third tab of the report allows universities to review the quality of their submitted UMETRICS data and to benchmark their data against a set of aggregated data from selected peer universities. Technical documentation is embedded throughout the QA report.

Citation

Institute for Research on Innovation and Science, Research Universities for Michigan (RU4M) Federal Spending Report, Fiscal Year 2024 https://iris.isr.umich.edu
*If a university employee is paid on multiple awards funded by different sources, they are counted for each of those funding sources.