

# All IRIS Member Universities Vendor Profile Report

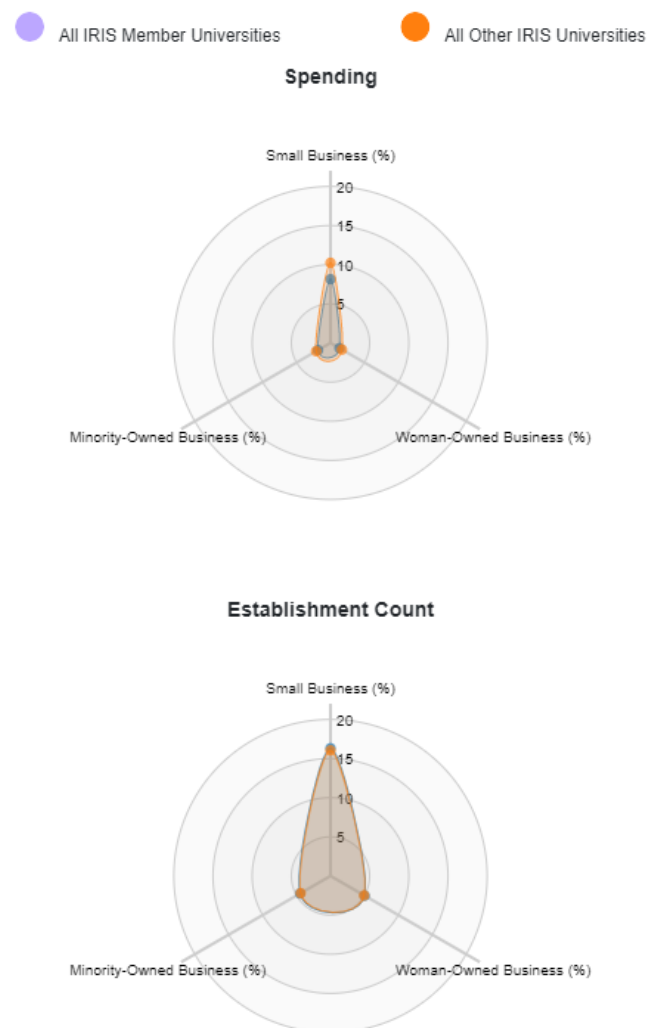
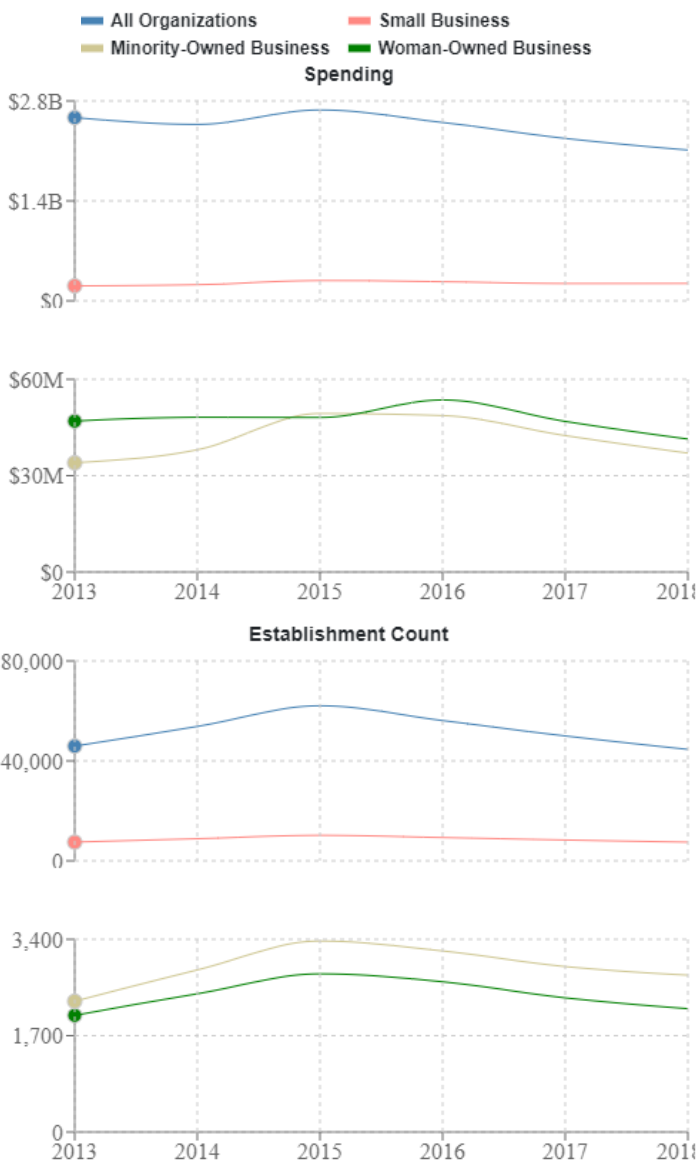
This report details the economic impacts of research spending by exploring direct expenditures of All IRIS Member Universities's research funding to outside vendors and subcontractors. This section shows such spending at the national level, including expenditures to minority-owned, woman-owned, and small businesses. Other sections of the report show spending by state and county (Vendor Location/Industry), and by industry (Industry Revenue Analysis). See note at the bottom of this page for important information about the data underlying this report.

- All IRIS Member Universities spent **\$19.82B** in research funding with **167,316** vendors and subcontractors across the U.S. between **2013** and **2018**.
- **29,874** of member universities' vendors were small businesses.
- **12,590** of member universities' vendors were minority - or woman - owned.

From **2013** to **2018**, this report matched **\$14.6B** in research spending from **All IRIS Member Universities** to specific vendors and subcontractors. Of that amount, **\$1.47B** matched to **29,874** small businesses across the country. **12,590** minority- and woman-owned businesses received **\$429.62M** in research spending during that time.

In **2013**, **All IRIS Member Universities** spent **\$209.26M** with **7,496** small businesses; **\$34.01M** with woman-owned businesses; and **\$46.98M** with minority-owned businesses. A total of **3,355** woman- or minority-owned businesses sold goods and services to the universities to support research.

These charts include percentages of spending and counts of establishments.



The visualizations on this page represent a portion of the total research spending of All IRIS Member Universities that was used to purchase goods and services from vendors or subcontracts and include both federal and non-federal research expenditures. The matched data used in this section account for 78% of the total vendor and subcontractor spending of your university. Data were excluded when spending went to businesses outside the United States or to individuals. Data that could not be matched to Bureau van Dijk's Orbis dataset are also excluded. The identities of the businesses in this report have been masked. You may download the underlying data by clicking the "Download Data" link at the top and bottom of the report. The report can be shared by clicking the "Share Report" link at the top and bottom of the report. Please see the Methodology tab of the report for more information about match rates and processes as well as measure calculations.

## Vendor Spending by Location and Industry

This section displays information about which geographic locations and industries supply goods and services to support All IRIS Member Universities's research. The data are based on the most recent year for which your university provided complete information — in this case, 2018. Narrower, more specialized industries can be identified using North American Industrial Classification (NAICS) codes, which nest more specific industry data within more general categories. See note at the bottom of this page for important information about the data underlying this report.

- The top five states receiving research spending from the All IRIS Member Universities in 2018 were California, Massachusetts, Illinois, Pennsylvania, New York.
- The top industry sectors (2-digit level) receiving research spending were Educational Services, Manufacturing, Professional, Scientific, and Technical Services, Public Administration, Health Care and Social Assistance.

### Vendor Spending Distribution - National

This table is based on 2018 purchases of goods and services and subcontracts from the direct costs portion of sponsored research projects. Data are presented at the national level. All IRIS Member Universities spent the most in California, which accounts for 7.0% of vendor purchases and subcontracts.

State	Total Spending
California	\$268.45M
Massachusetts	\$176.62M
Illinois	\$160.08M
Pennsylvania	\$122.9M
New York	\$119.09M
Michigan	\$105.95M
Texas	\$77.6M
Maryland	\$71.01M
North Carolina	\$64.01M
Indiana	\$58.05M
Georgia	\$53.6M
Virginia	\$49.15M
Florida	\$48.25M
Missouri	\$47.56M
District of Columbia	\$46.87M

### Top 5 Industries - National Spending

All IRIS Member Universities expended the greatest amount of research funds in the five industries displayed below

Industry	Total Spending
Educational Services	\$488.42M
Manufacturing	\$338.18M
Professional, Scientific, and Technical Services	\$311.58M
Public Administration	\$288.01M
Health Care and Social Assistance	\$201.76M

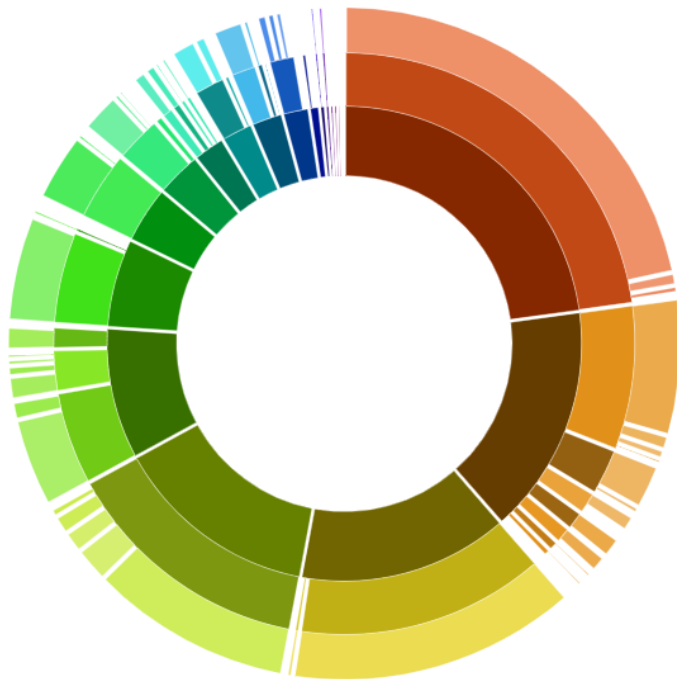
The visualizations on this page represent a portion of the total research spending of your university that was used to purchase goods and services from vendors or subcontracts and include both federal and non-federal research expenditures. The matched data used in this section account for 79.0% of the total vendor and subcontractor spending of your university. Data were excluded when spending went to businesses outside the United States or to individuals. Data that could not be matched to Bureau van Dijk's Orbis dataset are also excluded. The identities of the businesses in this report have been masked. You may download the underlying data by clicking the "Download Data" link at the top and bottom of the report. The report can be shared by clicking the "Share Report" link at the top of the report. Please see the Methodology tab of the report for more information about match rates and processes as well as measure calculations.

# Top Industries Receiving All IRIS Member Universities Research Spending by Revenue

Many businesses do work in multiple industries. This section uses Bureau Van Dijk’s Orbis data to classify businesses into a primary industry based on the revenue they bring from activities in that industry. The data displayed in this section thus emphasize the effects All IRIS Member Universities’s vendor spending and subcontracts have on the economic bottom line of companies in a particular industry. The spending shown represents the total period of time covered by All IRIS Member Universities’s data in constant 2018 dollars. This section also shows the amount of research spending received by minority- and woman-owned businesses, and by small businesses.

- The top five industries receiving research spending from All IRIS Member Universities between **2013** and **2018**, as measured by individual business revenue, were
  - Educational Services
  - Manufacturing
  - Public Administration
  - Professional, Scientific, and Technical Services
  - Health Care and Social Assistance
- In the Educational Services industry, **2975** businesses that received **\$443.53M** of research spending from All IRIS Member Universities were small businesses; **346** that received **\$45.75M** were minority-owned businesses; and **113** that received **\$5.04M** were woman-owned businesses.

b>Instructions: Use the sunburst spending visualization to examine the industry impact of research spending at All IRIS Member Universities. Each segment represents a specific industry and each ring represents a specific industry level with different amounts of aggregation. The outermost ring represents 4-digit NAICS industries at the more detailed level of aggregation. The middle ring represents 3-digit NAICS which rolls up all similar 4-digit NAICS into more aggregate industry sectors. The innermost ring represents the top level aggregation of 2-digit NAICS that rolls up entire stacks of similar sector and sub-sector spending.



**Top Industry (NAICS) Sectors Receiving Research Spending from All IRIS Member Universities**

In order of total funds received between 2013 and 2018

Rank	Industry (NAICS Code)	Amount
1	Educational Services (61)	\$3.18B
2	Manufacturing (31-33)	\$2.19B
3	Public Administration (92)	\$2.01B
4	Professional, Scientific, and Technical Services (54)	\$1.97B
5	Health Care and Social Assistance (62)	\$1.25B
6	Retail Trade (44-45)	\$848.66M
7	Administrative and Support and Waste Management and Remediation Services (56)	\$545.3M
8	Wholesale Trade (42)	\$436.34M
9	Information (51)	\$305.47M
10	Construction (23)	\$305.29M
11	Finance and Insurance (52)	\$301.99M
12	Other Services (except Public Administration) (81)	\$254.98M
13	Transportation and Warehousing (48-49)	\$98.49M
14	Accommodation and Food Services (72)	\$54.46M
15	Mining, Quarrying, and Oil and Gas Extraction (21)	\$43.26M
16	Real Estate and Rental and Leasing (53)	\$36.28M
17	Arts, Entertainment, and Recreation (71)	\$33.5M
18	Management of Companies and Enterprises (55)	\$27.87M
19	Agriculture, Forestry, Fishing and Hunting (11)	\$20.4M
20	Utilities (22)	\$16.69M

The visualizations on this page represent a portion of the total research spending of All IRIS Member Universities that was used to purchase goods and services from vendors or subcontracts and include both federal and non-federal research expenditures. The matched data used in this section account for 78% of the total vendor and subcontractor spending of All IRIS Member Universities. Data were excluded when spending went to businesses outside the United States or to individuals. Data that could not be matched to Bureau van Dijk’s Orbis dataset are also excluded. The identities of the businesses in this report have been masked. You may download the underlying data by clicking the “Download Data” link at the top and bottom of the report. The report can be shared by clicking the “Share Report” link at the top and bottom of the report. Please see the Methodology tab of the report for more information about match rates and processes as well as measure calculations.

# Vendor Profile Report Methodology

## Details on how the reports are created, what they show, and the process of matching different datasets

### INTRODUCTION

The IRIS Vendor Profile Report demonstrates the economic impact of universities' research spending by describing the industries, geographic areas, and types of businesses that receive contracts and subawards for goods and services through research grants. The report shows the dollars of research funding spent; the number and types of establishments receiving research spending, including small businesses and minority- and woman-owned businesses; and whether these figures change from year to year. Data include both federal and non-federal research expenditures.

### HOW TO UNDERSTAND THE RESULTS

#### The Vendor Profile Tab

This section provides an overview of the the economic impacts of research spending by describing the direct expenditures of your university's research funding to outside vendors and subcontractors. This section shows such spending at the national level, including expenditures to minority- and women-owned businesses, and small businesses.

Selection of Research Spending or Establishments affects both the line graphs and the radar chart. Yearly spending, including both vendor spending and subawards, is included on the line graphs for every year for which your university has sent complete data. Spending is displayed separately for women-owned businesses, minority-owned businesses, and small businesses, using the designations made in Bureau van Dijk's Orbis data. When using the radar chart, the user must select an individual year to display. The radar chart shows how the percentages of all research spending that your university spends with small businesses, minority-owned businesses and women-owned businesses compares with all other IRIS universities with these types of businesses in that year.

#### The Vendor Location/Industry Tab

This section displays information about which geographic locations and industries receive research spending from your university. The data are based on the most recent year for which your university provided complete information. Spending by industries can be narrowed down using North American Industry Classification (NAICS) codes, down to the 4-digit "Industry Group" level. The visualizations show dollars spent on specific industries in certain parts of a state or county, illustrating the importance of that industry to the local economy. (See below for a description of NAICS codes.) The spending is displayed by state and county for the most recent year of complete data provided by your university, compared to the same year of data about all industries in each state and county, as provided by the U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages.

When a state is selected, a bee swarm diagram shows the relative amounts of spending in each geographic region, and flower diagrams display that spending compared to the top industries for the selected state or county as defined by the QCEW Employee Location Quotient. By comparing the "flower" that represents your university's spending to the one representing important employers in your state, you can get a sense of how your university's research work contributes to the state's economy and workforce. Clicking on any particular state or county causes another set of charts to display, showing spending in that state or county. In these charts, the size of the bubble for each industry corresponds to the number of dollars your university spends in that industry and the axis along which the bubbles are displayed shows the Location Quotient for that industry for that state or county. (See below for a description of Location Quotient.)

IRIS incorporates a dataset that allows for more spending to be successfully mapped to counties, as well as improving the accuracy of spending allocation in the county maps. County spending is mapped by ZIP code. ZIP codes are matched to county fipscodes using data from the U.S. Department of Housing and Urban Development. HUD provides a value for the percentage of businesses in each county when a ZIP code spans multiple counties. This percentage is used when allocating funds to ZIP codes with multiple associated counties. The HUD data as well as the associated documentation can be found here:

[https://www.huduser.gov/portal/datasets/usps\\_crosswalk.html](https://www.huduser.gov/portal/datasets/usps_crosswalk.html).

Negative transactions are not filtered out of spending calculations in this report. Negative transactions can occur for a variety of reasons, including returns and reimbursements. In some cases, the sum of all transactions in a given county can be negative. When this happens, the impacted county's bubble is not drawn on the map. In a small number of instances, this can cause the sum of spending in all displayed counties to be higher than the sum of all spending in the state, as the statewide figure includes the negative transaction despite the impacted county not being drawn.

## The Industry Revenue Analysis Tab

This section displays spending organized by industry employment, showing the direct impact of the dollars your university spends on the workforce in those industries. The spending shown represents the total period of time covered by your university's data, converted to real 2019 dollars. You can also compare the earnings and number of employees in companies supported by your university's research spending to the national average. To get an approximate estimate of the number of jobs outside the university that are directly affected by your research spending, multiply the number of establishments in an industry by the average number of employees at those establishments.

The sunburst display shows spending organized by industry, using NAICS codes (see below for a description of NAICS codes). In this visualization, NAICS codes are assigned to multi-establishment firms based on the NAICS of the establishment(s) with the largest revenue. Thus, this display shows the impact of the dollars your university spends on industries, as characterized by their most typical revenue stream. The spending displayed represents the total period of time covered by the records sent by your university through 11-15-2019, converted to real 2019 dollars. You can view spending by NAICS industry sector, sub-sector, or group. It is important to note the spending numbers we report for each industry do not include expenditures to establishments/firms that were not matched. Please see the Data Matching section below for more detail on the data underlying this report.

## HOW THE REPORTS ARE CREATED

This report is constructed by linking the vendor and subawardee data your university supplies to IRIS with business directory data (a dataset called Orbis) from Bureau van Dijk. 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. Quality rules, such as requiring the disambiguated vendor name to be correct and the date of the transaction to be reasonable, are applied.

To link to Orbis data, a file of vendor and subawardee names and addresses are submitted to Bureau van Dijk. (No personally identifiable data about individuals are shared with Bureau van Dijk.) Their matching procedures link your university's vendor and subawardee names and address data to their database, testing each potential match and giving it a quality rating of A-E, with A being the highest quality and E being the lowest. In this report, IRIS uses all matches with a grade of "A" or "B", which BvD reports as an average match across all fields of 85% or better. IRIS also uses a subset of records that have received a "C" rating. In order to determine whether or not a record rated as "C" should be included, vendor names and location information are compared against the returned name and location using a token-sorted Levenshtein distance. If the match score for each field exceeds our threshold, the match is verified and included in the report. The data retrieved from these matches includes measures of industry (NAICS) based on revenue.

All spending metrics are expressed in 2019 real dollars.

## NAICS Codes

The North American Industry Classification System (NAICS) is a system for classifying establishments (individual business locations) by type of economic activity in Canada, Mexico, and the United States. Its purposes are: (1) to facilitate the collection, tabulation, presentation, and analysis of data relating to establishments, and (2) to promote uniformity and comparability in the presentation and analysis of statistical data describing the North American economy. NAICS is used by Federal statistical agencies that collect or publish data by industry. For this report, NAICS codes are used to classify businesses according to the types of economic production in which they participate. The codes are organized into levels beginning with broad industry sectors to more specific groupings. The first two digits of a NAICS code represent general categories of economic activities. Nested within the two digit codes, a third digit represents the subsector. Nested in turn within that, a fourth digit represents the industry group. IRIS matches payments to vendors and subawardees at the four-digit NAICS level. For more information about NAICS codes please visit: <https://www.census.gov/eos/www/naics/>

## Location Quotients

The U.S. Bureau of Labor Statistics includes the Quarterly Census of Employment and Wages (QCEW) program, which publishes quarterly employment measures calculated at the county, state, and national levels by industry. These measures include by-industry comparisons of the distribution of employment in an industry in a given area to that industry's distribution of employment nationally. The QCEW calculates these comparisons as ratios and calls them location quotients. A Location Quotient (LQ) value of 1.0 shows that an industry has the same share of employment in the local area as it has nationally. An LQ value greater than 1.0 indicates that an industry has a greater share of employment in the local area than is true nationally. This report includes three different Location Quotients: Employee LQ, which compares the number of employees, Establishment Count LQ, which compares the number of establishments, and Annual Pay LQ, which compares average annual

pay. For more information about Location Quotients please visit: [https://data.bls.gov/cew/doc/info/location\\_quotients.htm](https://data.bls.gov/cew/doc/info/location_quotients.htm)

## **Data Matching**

IRIS links your vendor and subaward data with the U.S. Census Bureau and Bureau van Dijk data resources to return summaries by year, North American Industry Classification System (NAICS) code, and business ownership. We hope this information will help you understand the results in your report.

Matching vendor and subcontractor information to business data is a multi-step process that starts with the vendor and subawardee name and address information submitted by universities.

### ***Upload And Data Cleaning***

In the first step, a university uploads data to IRIS. Next, IRIS standardizes the names and addresses of vendors and subawardees, creates a list of unique vendors / subawardees, and removes the names of all individual people from that list. For this report, IRIS also imposes a requirement that the vendor or subawardee be in the United States. IRIS performs these data cleaning steps every time we prepare for the next step, matching to data sources.

### ***Matching***

In this step, the list of standardized names and addresses for your university's vendors and subawardees is matched to Orbis and Bureau van Dijk.

### ***Matching To Bureau Van Dijk's Orbis Dataset***

For this report, metrics obtained from Bureau van Dijk's Orbis dataset are based on data universities submitted as of 2020-05-15. 86% or 552,714 of the 640,720 unique U.S. vendors and subawardees in participating universities' data on that date were identified as being in the U.S., accounting for 81% or \$19.82B of your university's spending. Within the spending identified as occurring with U.S. vendors, 95% or \$18.81B of the spending went to organizations rather than individual people. This included 222,540 organizations. Algorithms at Bureau van Dijk matched the vendors and subawardees on participating universities' list of U.S. organizations to their Orbis dataset, using name, street address, city, state and zip code. 75% or 167,316 of these U.S. organizations, accounting for 78% of your spending, were matched using Bureau van Dijk's two most restrictive rules and are used in this report on tabs with the Bureau van Dijk logo.

## **LIMITATIONS**

Only vendors and subawardees with U.S. addresses are included in this report. This is done to ensure a consistent basis across all metrics, since some metrics, such as NAICS codes, cannot be applied to spending in many other countries.

A vendor address in administrative records may be a firm's out-of-state billing address rather than the address of a local establishment that provided a service. To the extent that this occurs, local spending will be underestimated because the spending will be attributed to the out-of-state billing address.

We continue to work to improve the quality of matching and data production in order to address these limitations.