

The National Consortium for SDG Impact and Geodesign (NCSIG)

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Vice President for Research



UNIVERSITY OF MINNESOTA

Driven to Discover[®]

Crookston Duluth Morris Rochester **Twin Cities**





University of Minnesota Research and Innovation

8 in the US



14,500+
RESEARCHERS



70+
LABS & FACILITIES



\$1.1B+
RESEARCH EXPENDITURES



300+
CENTERS & INSTITUTES



How Minnesota Ranks

Business climate. Workforce. Innovation. Infrastructure. Quality of life.
Minnesota consistently ranks at or near the top of all the factors important to business success.

<https://mn.gov/deed/joinusmn/>

#1

Fortune 500
Companies Per
Capita

#2

Best State for
Economic
Opportunity

#3

Best Overall
State in
America

#3

Small-Business
Job Growth
(Minneapolis
Market)

University of Minnesota System



Crookston

Ag Innovation campus; NXT GEN AG;
NW Rsrch & Outreach Ctr.



Duluth

Natural resource and water research;
Outdoor recreation hub



Morris

Top public liberal arts campus;
Innovative wind energy research;
NASNTI



Twin Cities

Largest campus; AAU, APLU, R1, AANAPISI
18 Fortune 500 Companies



Rochester

Innovative health-focused undergrad program, NXT GEN MED
Partnership with Mayo Clinic

42,212

undergraduate students

16,780

graduate & professional
students

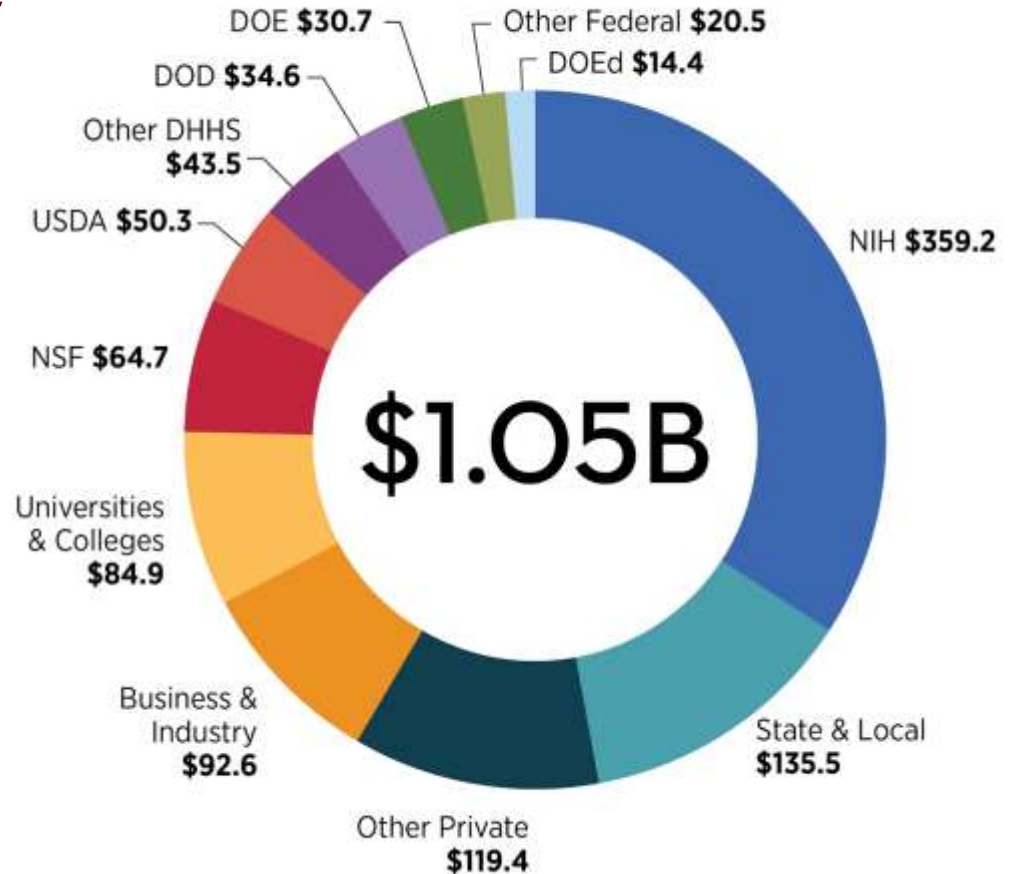
26,000

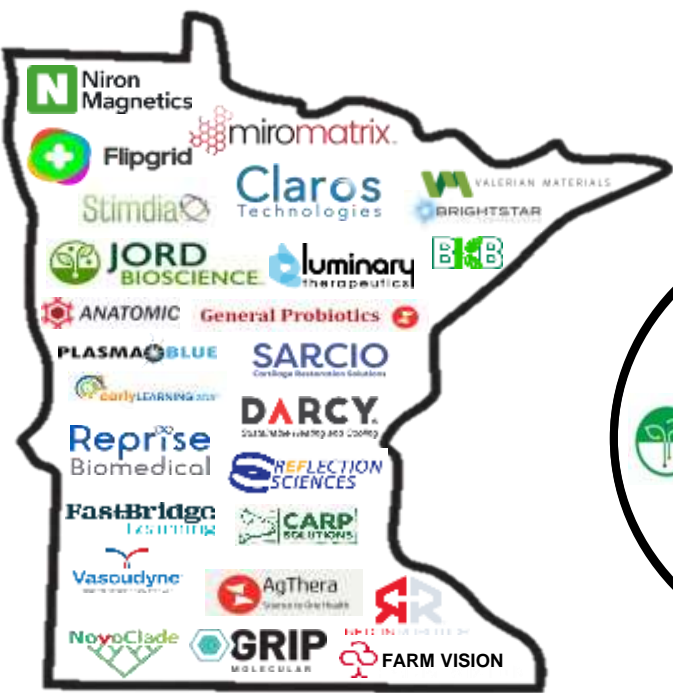
employees

UMN Awards by Source

FY22, \$ in millions

- **Second largest** sponsored award total in history
- 59% of awards from **direct federal sources**
- **DoD/Nat'l Security** an area of focus for us which includes Geospatial mapping
- Identify ways for us to **leverage** each others portfolio
- Create industry – government – university **partnerships**






 **Jord BioScience**

Jord BioScience delivers custom microbial solutions for the world's leading ag companies.



 **miromatrix.**

MiroMatrix is on a mission to eliminate the organ donor waitlist, by pioneering a technology that creates fully transplantable human organs.



 **Claros**
technologies

Claros Technologies conducts PFAS remediation testing and analyzing, capturing, destroying, and monitoring of PFAS and other pollutants.

228 Startups Launched (ref. 2006)
71% Headquartered in MN
\$1.8B+ Additional Investment





University of Minnesota

The Spatial University

What does it mean to think Spatially?

Spatial science employs spatial technologies to understand people, places, and processes on the earth. Geographic Information Science (GIS) or Spatial Science is being discovered by a wide array of disciplines as both an integrative approach and research topic in and of itself. Tens of thousands of scholars employ spatial approaches that recognize the spatiotemporal nature of people, places, and processes through concepts such as location, space, scale, and distance.

Maps tell the story

Shiga prefecture

How is the weather throughout the year?
What are the demographics? What type of food?
What type of jobs exists here? What is average cost of living?
How is the traffic? How is medical system?
What are sight-seeing places?

Map details

- Transit
- Traffic
- Biking
- Terrain
- Street View
- Wildfires
- Air Quality



Google Maps








UMN SDG Initiative: Mobilizing the University for SDG Action



SDG Tools and Resources

A Growing Portfolio

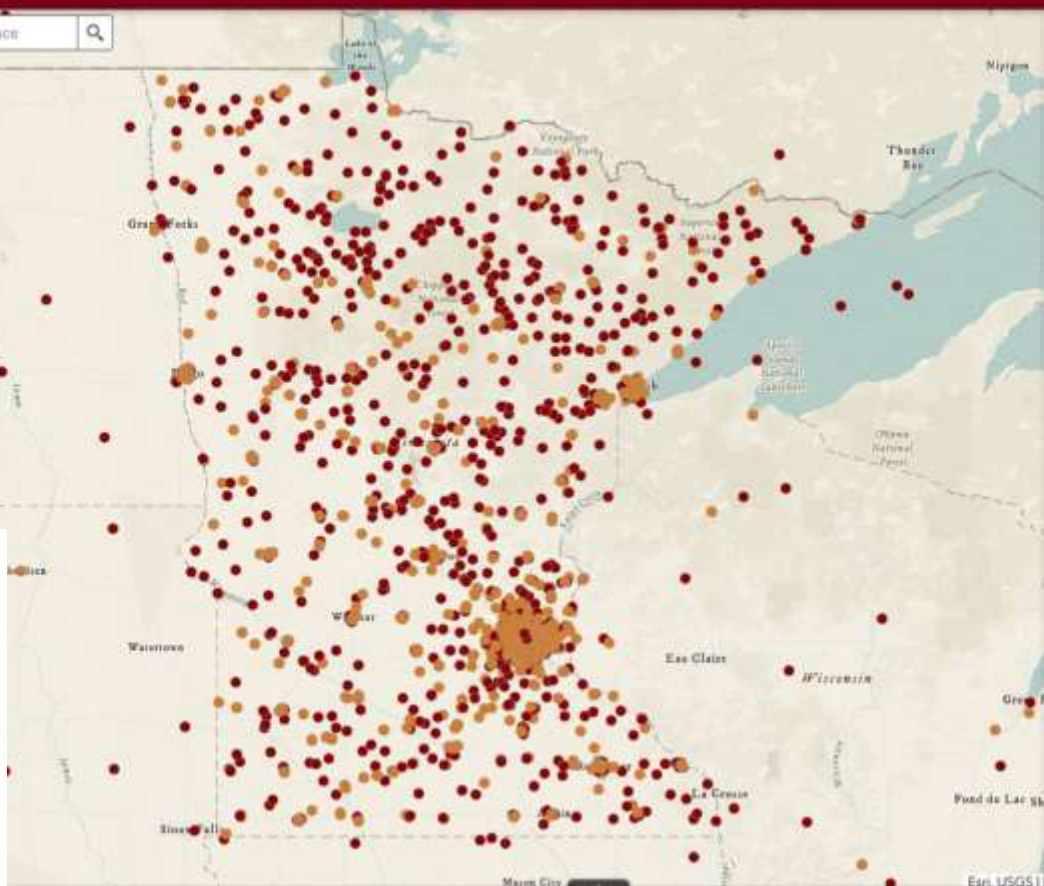
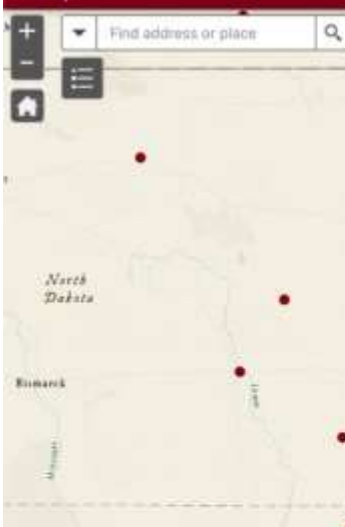
Mapping the Course Catalog

Course Number	Course Name	Subject	Campus	Goals
AGEC 1004	Introduction to Agribusiness	Agricultural Economics	Crookston	2 
AGRO 3660	Plant Genetic Resources	Agronomy and Plant Genetics	Twin Cities	2 
AGRO 4605	Strategies for Ag Production & Management	Agronomy and Plant Genetics	Twin Cities	2 
AGRO 2573	Entomology	Agronomy	Crookston	2 
AGRO 4888	Issues in Sustainable Ag	Agronomy and Plant Genetics	Twin Cities	2 



Mapping Research Impact (example: SDG 3: Good Health and Well Being)

Find address or place



Sustainable Development Goals

- 1: No poverty
- 2: Zero hunger
- 3: Good health and well-being
- 4: Quality education
- 5: Gender equality
- 6: Clean water and sanitation
- 7: Affordable and clean energy
- 8: Decent work and economic growth
- 9: Industry, innovation, and infrastructure
- 10: Reduced inequalities
- 11: Sustainable cities and communities
- 12: Responsible consumption and production
- 13: Climate action
- 14: Life below water
- 15: Life on land
- 16: Peace, justice, and strong institutions
- 17: Partnerships

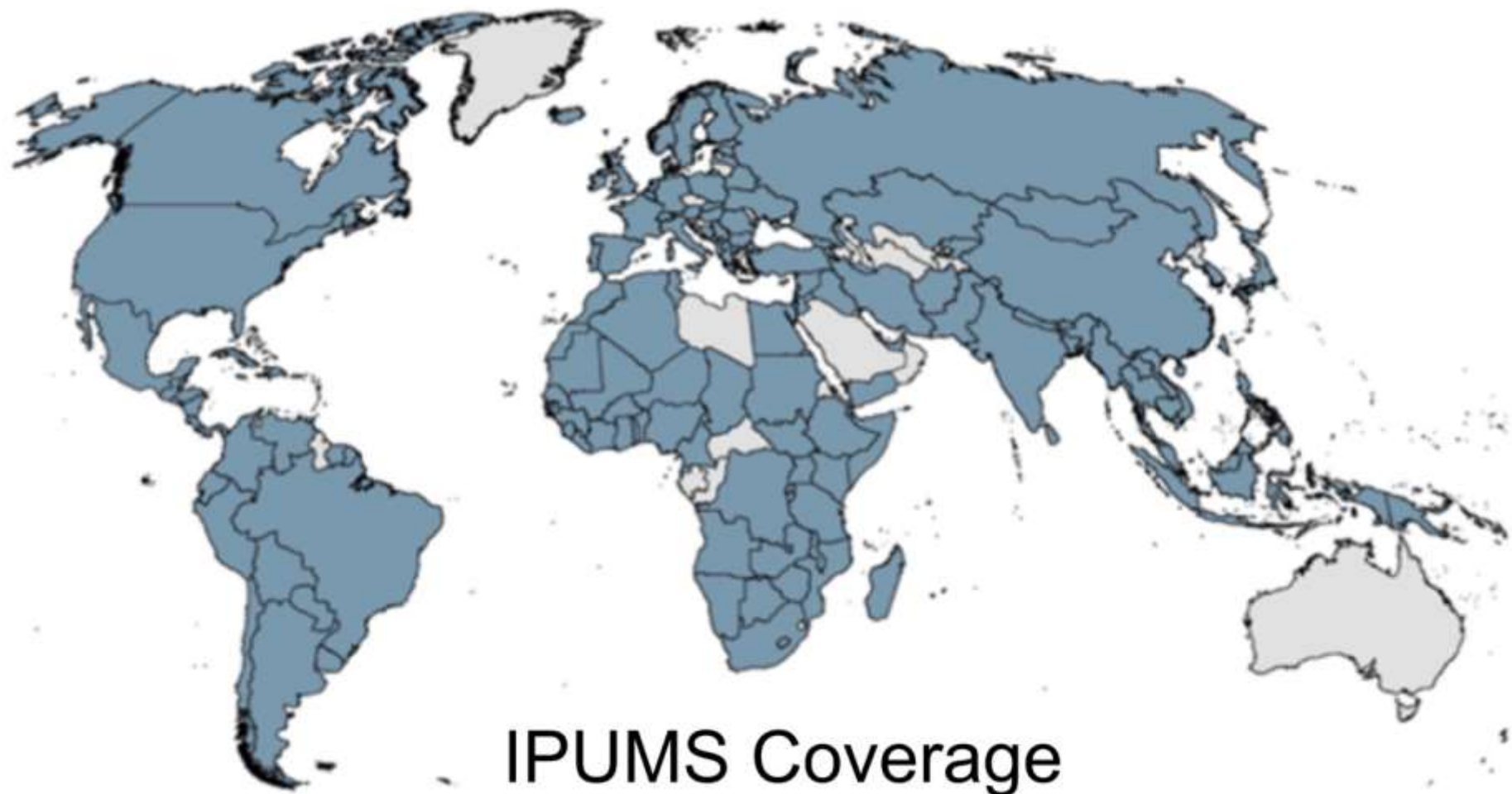


IGC International Geodesign Collaboration



The Global Climate Geodesign Challenge





IPUMS enables SDG-related measurement around the globe

- IPUMS provides researchers with access to high-density samples of census microdata, spanning multiple decades for most countries
- In partnership with UNICEF and the DHS organization, IPUMS harmonizes and disseminates survey data
- For both censuses and surveys, IPUMS makes global, national, and subnational GIS boundary files corresponding to the sub-national geographic units
- IPUMS has worked with UNFPA and ESRI to calculate indicators
- IPUMS has run capacity building workshops
- IPUMS maintains relationships with more than 120 countries around the world



U.S. Census and American Community Survey microdata from 1850 to the present. [Learn More](#)

VISIT SITE



Current Population Survey microdata including basic monthly surveys and supplements from 1962 to the present. [Learn More](#)

VISIT SITE



World's largest collection of census microdata covering over 100 countries, contemporary and historical. [Learn More](#)

VISIT SITE



Health survey data for Africa and Asia, including harmonized data collections for DHS [↗](#) and PMA [↗](#). [Learn More](#)

VISIT SITE



Tabular U.S. Census data and GIS boundary files from 1790 to the present. [Learn More](#)

VISIT SITE



Tabular and GIS data from population, housing, and agricultural censuses around the world. [Learn More](#)

VISIT SITE



Historical and contemporary time use data from 1930 to the present. [Learn More](#)

VISIT SITE



Historical and contemporary U.S. health survey data from NHIS [↗](#) (1963-present) and MEPS [↗](#) (1996-present). [Learn More](#)

VISIT SITE



Survey data on the science and engineering workforce in the U.S. from 1993 to the present. [Learn More](#)

VISIT SITE

Developing a hub that can be used for SDG-centered community sustainability



MN SDGs

Please note that this site is a work in progress. Links may not be fully functional, and the dashboards presenting SDG data are not yet complete and should not be used for decision-making at this time. Comment or Questions? Email uspatial@umn.edu

SDGs in Minnesota

17 goals to transform our state

Open and transparent progress towards the United Nations Sustainable Development Goals.

Decent Work And Economic Growth

Indicator: B.S.2 Unemployment Rate - Sex, ...

Category: A3

Subcategory: A3

Geography: Search...

- Minnesota
- Ancker
- Anoka
- Becker
- Beltrami

Target 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities

Indicator Value

Map | Chart | Table

Powered by Esri

Establishing a Local and Global Hub for Data-Driven SDG Implementation and Action

Leveraging 4 existing institutional pillars at UMN

- Sustainable Development Goal Initiative
- MN Design Center and IGC
- IPUMS
- U-Spatial

Build on partnerships established

Using engagement tools and approaches to mobilize action informed and fostered through the Hub



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ArcGIS Online
19,280 143,056
Students & faculty Maps & apps
creating maps



ESRI

Objective 1

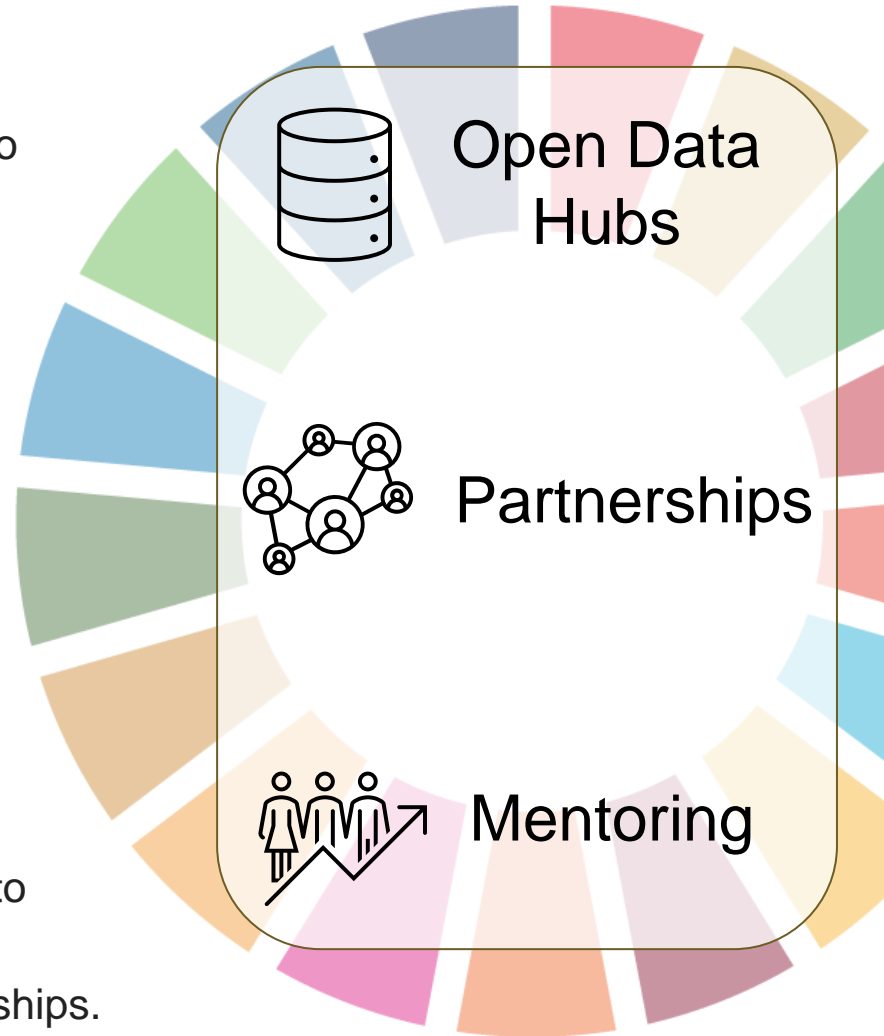
Establish a university-based Geodesign Impact Hub to serve the nation and the world's most vulnerable communities, states and nations.

Objective 2

Develop new US partnerships to foster a global NCSIG Impact Network to support data-driven decision making and implementation and achieve global SDG targets.

Objective 3

Collaborate with some of the world's most vulnerable countries, states and communities and support them to advance SDG implementation through data sharing, training programs, exchange opportunities and fellowships.



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Collaborations