

Statistics in the Community:

Community-University Partnerships Fostering Data Science Education

Stephen Salerno

Statistics in the Community (STATCOM)

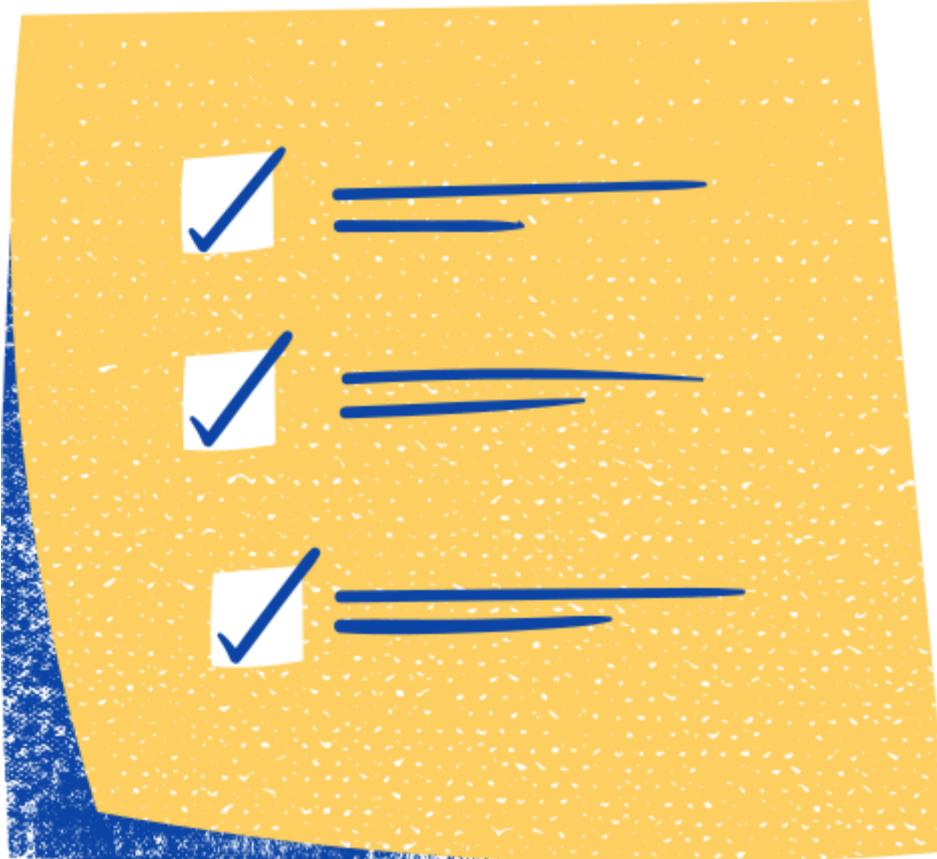
Department of Biostatistics

University of Michigan

SDSS 2020 | June 4, 2020



OUTLINE



- The Need
- who We Are
- Our Approach
- Impact and Growth
- Broader Initiatives
- Future Directions
- Many, Many Thanks

CONSIDER...



- Allocating \$18 million to improve quality of life services for a senior population
- Determining optimal placements of mobile food pantries in low-income areas
- Predicting crisis of calls from high-risk, runaway, and homeless youth

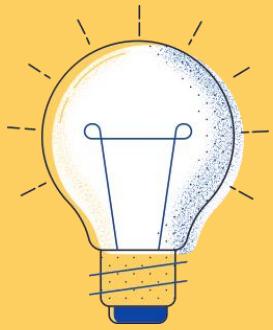


LOCAL NEED FOR DATA

Local non-profits and small governmental organizations could benefit from answering data-driven questions.



Ann Arbor Area
Community Foundation



STATISTICS IN THE COMMUNITY

—

A community outreach program for data organization, analysis, and interpretation

—

Offers the expertise of students, free of charge, to non-profit organizations

—

Provides a valuable link between the university and surrounding community

OUR MISSION: WHY IT MATTERS

Community partners can use their data to allocate resources, understand target populations, and improve their efficiency





OUR MEMBERS

Our membership is comprised of students in over 10 UM departments



Emily
Morris

Amy
Singer

Cathie
Spino

Emily
Roberts

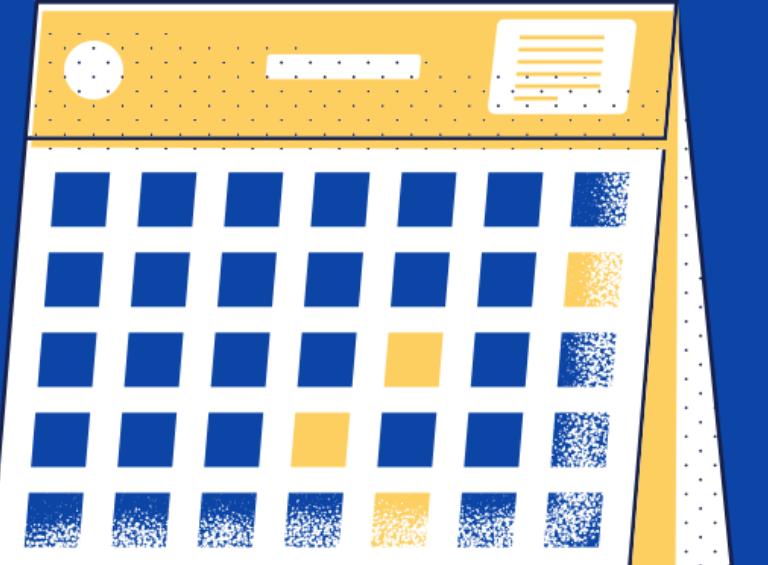
Tom
Braun

Stephen
Salerno

LEADERSHIP TEAM

Not Pictured:
Edmund Woolridge,
Ben Brennan

A BRIEF HISTORY OF STATCOM



2001

STATCOM was founded
at Purdue University



2006

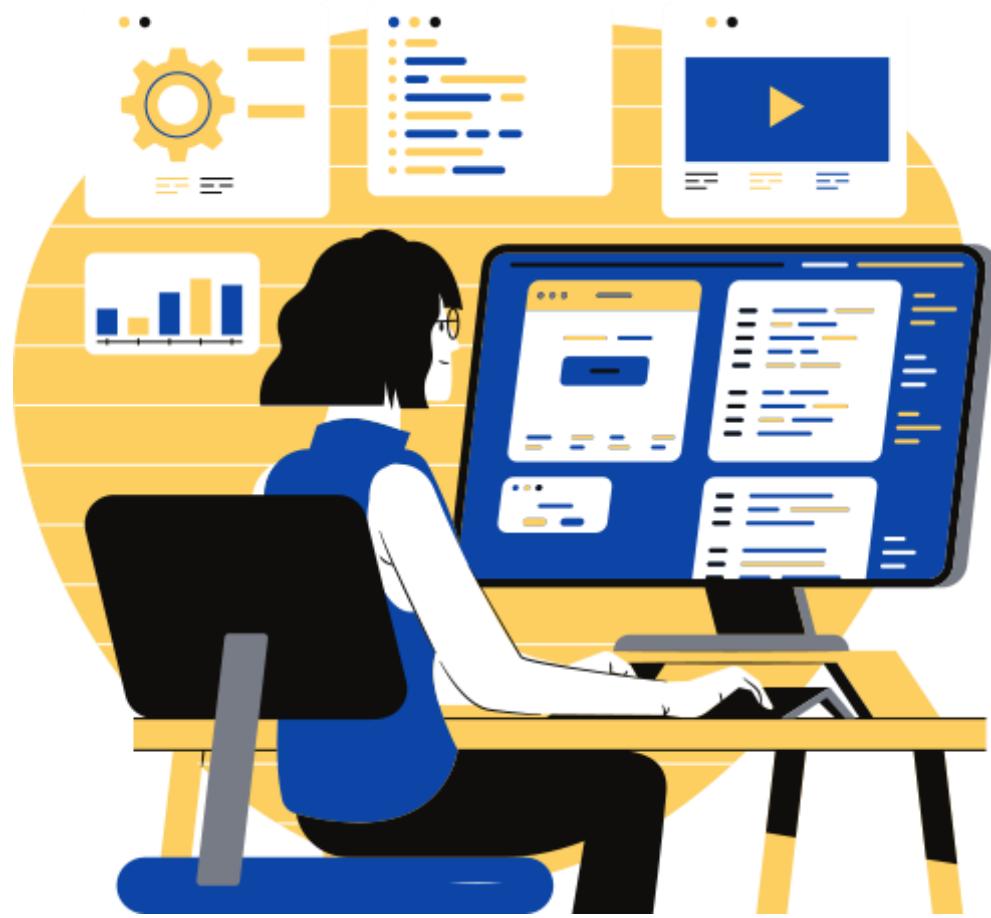
Our chapter was
chartered at Michigan



Today

100+ members from
10+ departments

SCOPE OF WORK



60+ Survey of Washtenaw County
Genesee (Flint) County Health Department
Myeloproliferative Neoplasms (MPN) Research Foundation
Area Agency on Aging 1-B, Washtenaw County
Washtenaw County Water Resource Commission
United Way of Washtenaw County
The Detroit Children's Center
Catholic Social Services
Ozone House of Ann Arbor
Michigan Broadband Access Network
Food For Thought, Toledo
Stand with Trans
Food Gatherers of Washtenaw County
Detroit College Access Network
Ann Arbor Public Schools Education Foundation
Adolescent Health Initiative
University of Michigan Health System
... and many more!

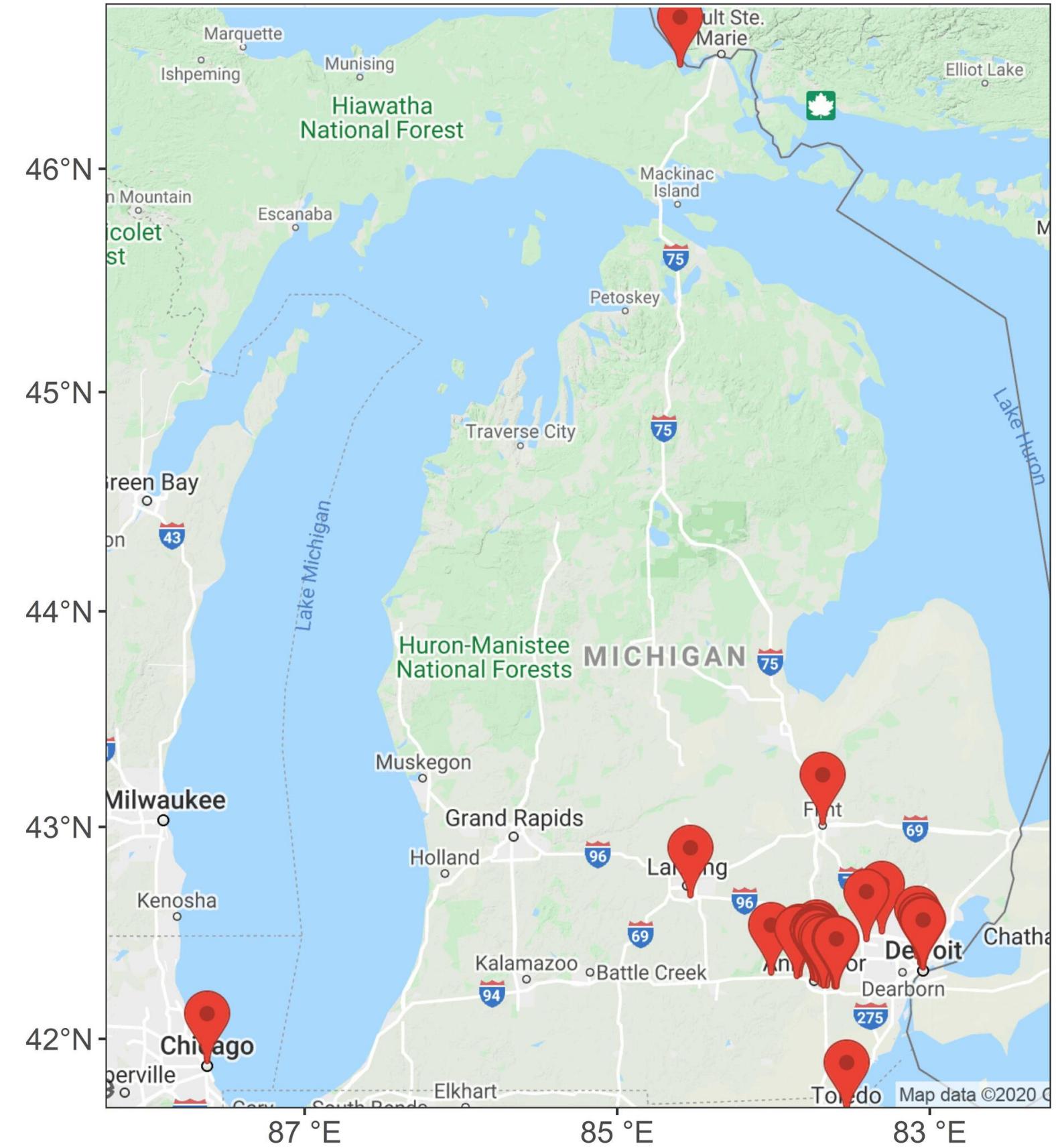
Impact & Growth

(This would not
be a proper
statistics talk
without tables
and figures)



WHERE ARE OUR PROJECTS?

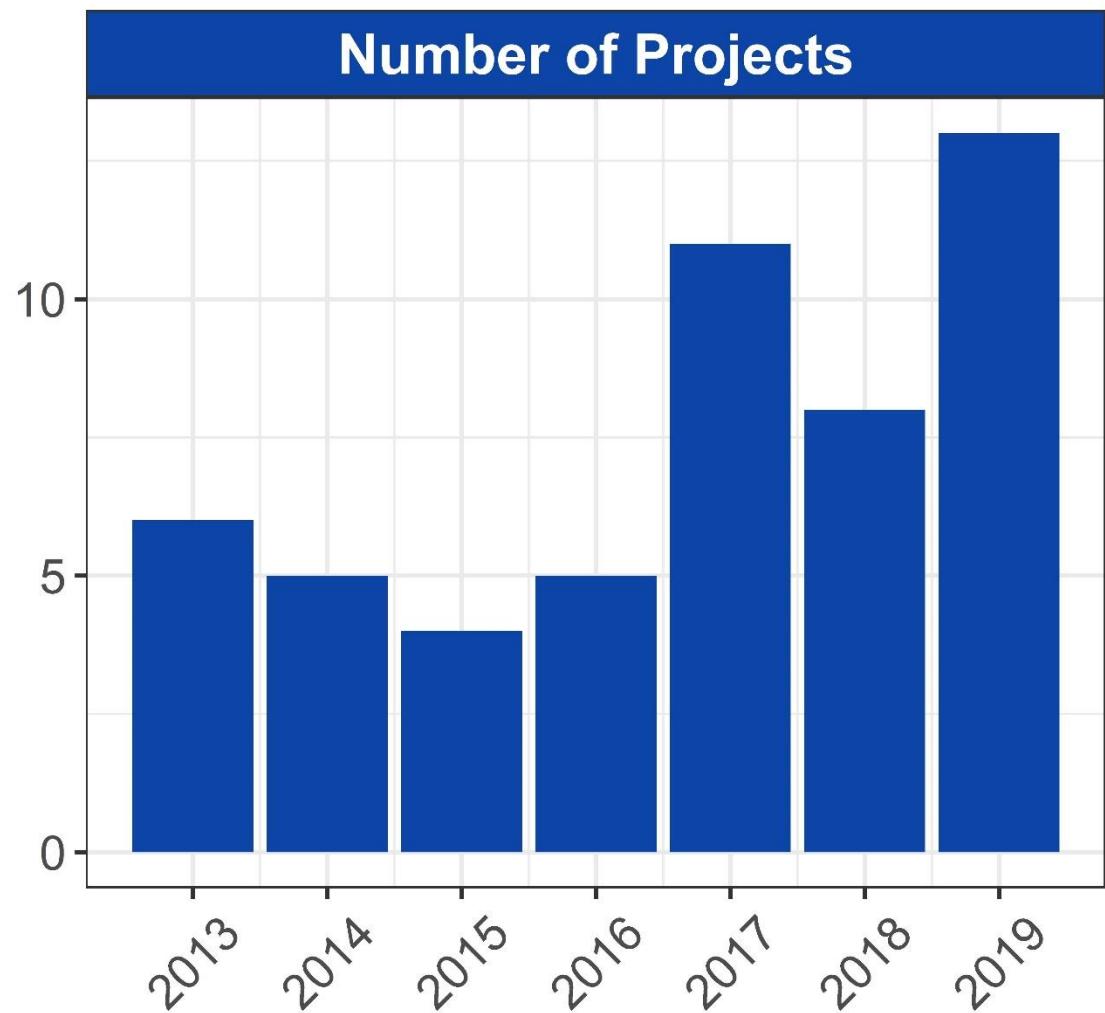
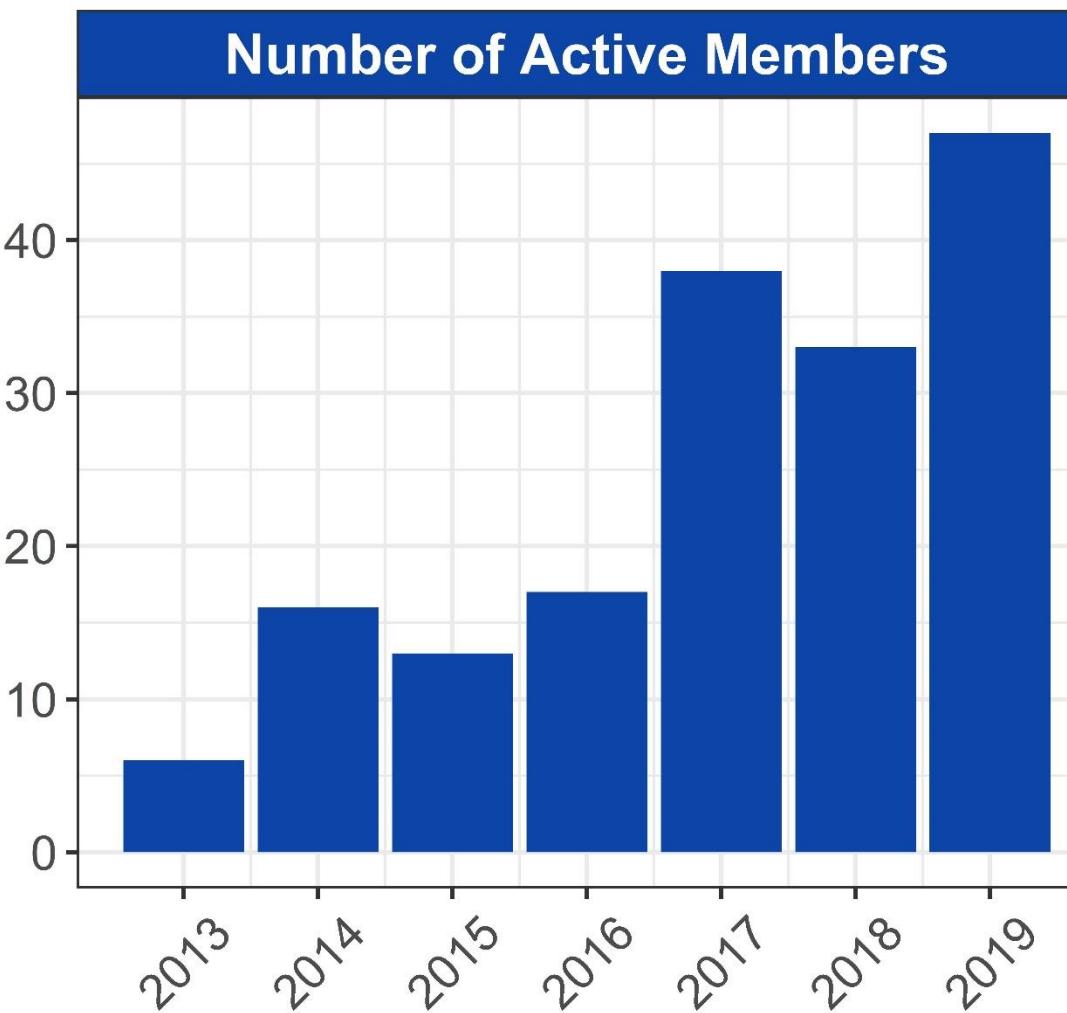
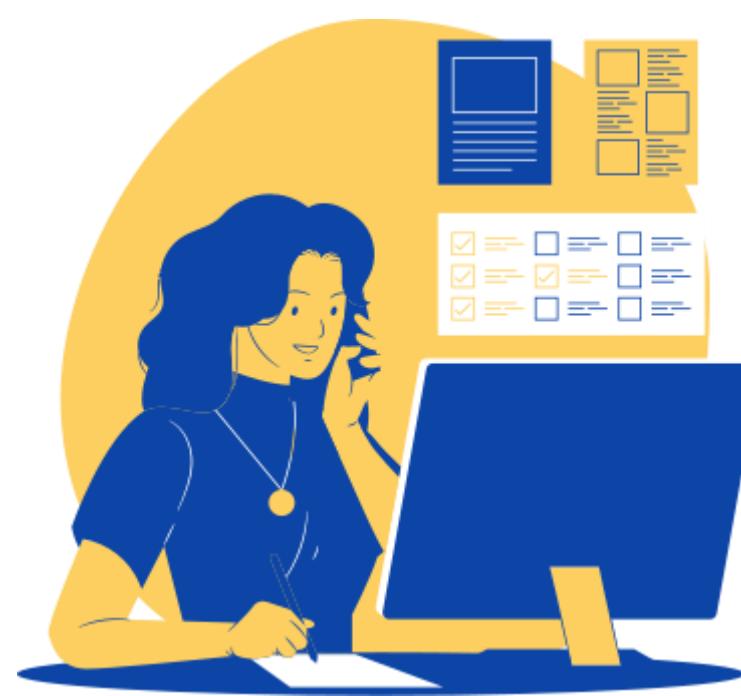
Our reach is expanding beyond southeast Michigan to Illinois and Ohio



*Excluding one location in Portland, OR
Data current as of: Sat May 16 15:04:17 2020*

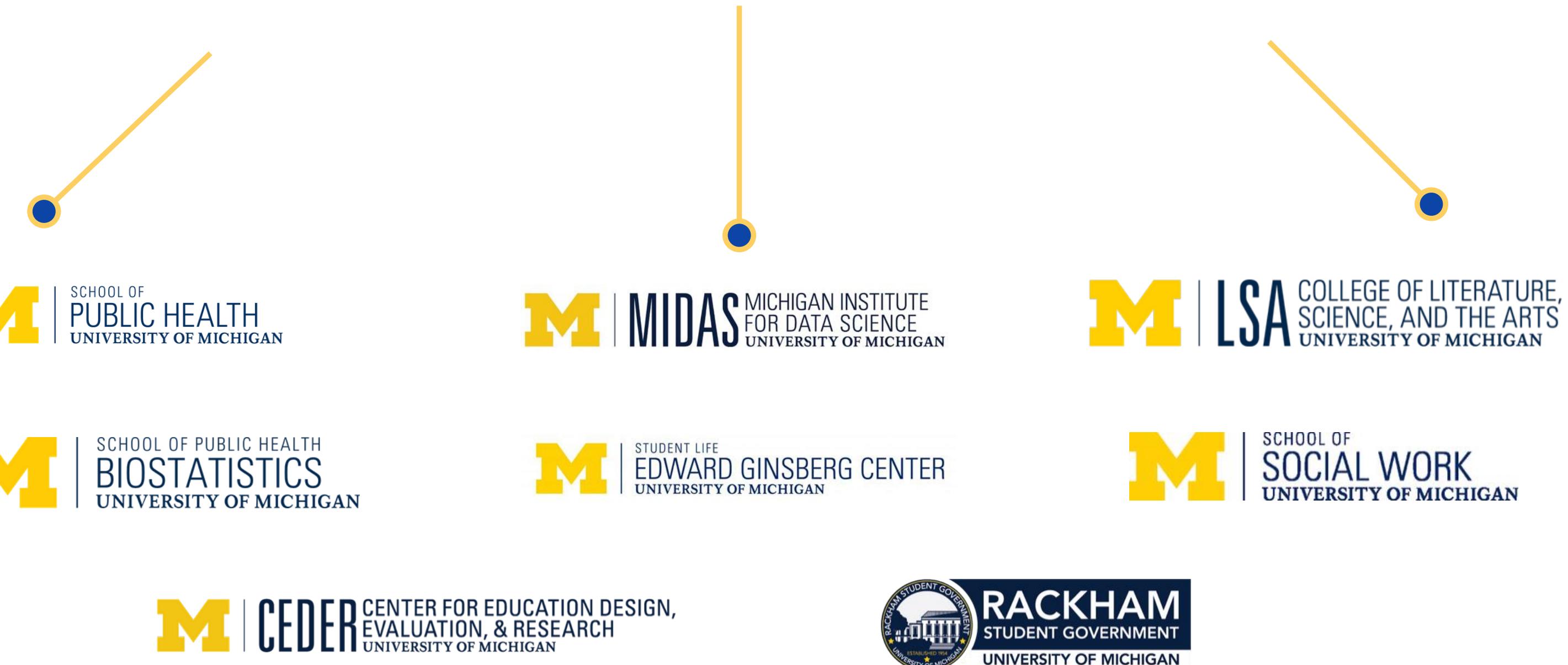
STATCOM'S GROWTH

Engagement up from 6 active members on 6 projects (2013) to 47 members on 13 projects (2019)





statii.com



UNIVERSITY PARTNERSHIPS

Broader Initiatives





R WORKSHOPS

STATCOM developed a series of workshops in R syntax, exploratory data analysis, data visualization, and reproducible research with RMarkdown/Projects:

- > Offered semesterly to the School of Social Work and CTAC
- > Expanded last year to included the School of Education and CEDER

DATA FOR PUBLIC GOOD SYMPOSIUM

Year	Attendees	Disciplines	Talks	Posters
2018	50	12	6	10
2019	75	32	10	12
2020	139*	48	10	14

*92 In-Person Attendees + 47 Live-Streaming

STATCOM, CTAC, CEDER, and MIDAS host a university-wide symposium to showcase research efforts and community-based partnerships at the university that improve humanity by using data for good.



NATIONAL OUTREACH

Our chapter has begun several outreach initiatives:

- magazine.amstat.org/blog/2018/04/01/statcom-universities/
- bloomberg.com/lp/d4gx-2018/



The screenshot shows the homepage of AMSTATNEWS, the membership magazine of the American Statistical Association. The main header reads "AMSTATNEWS" with the subtitle "The Membership Magazine of the American Statistical Association". Below the header is a navigation bar with links for "HOME", "ABOUT", "EDITORIAL CALENDAR", "PDF ARCHIVES", "ADVERTISE", and "STATISTICIANS IN HISTORY". A secondary navigation bar below it includes "Home", "Additional Features", "STATCOM: Revitalization of Statistical Community Service at Universities", "1 APRIL 2018", "1,598 VIEWS", and "ONE COMMENT". The author's name, "Evan Reynolds and Timothy NeCamp", is mentioned at the bottom.

The screenshot shows a blog post titled "Data for Good In Your Neighborhood: A case study on how data can benefit your local community". The post is authored by four individuals from the University of Michigan: Timothy NeCamp, Emily Morris, Evan Reynolds, and Stephen Salerno. Their names, titles, and contact information are listed below their respective names. The post discusses the revitalization of statistical community service at universities.

Timothy NeCamp
University of Michigan
Ann Arbor, MI
tnecamp@umich.edu

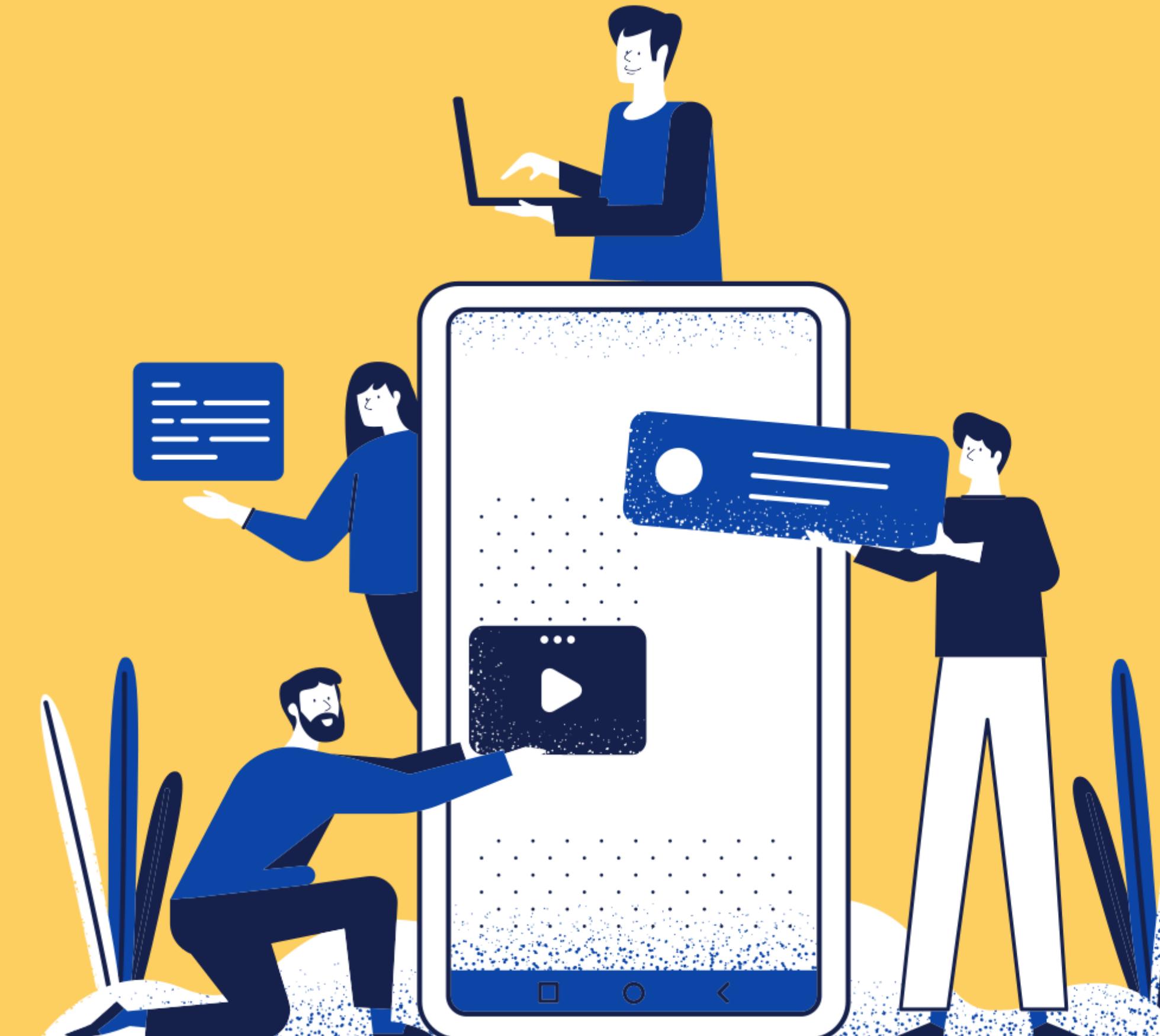
Emily Morris
University of Michigan
Ann Arbor, MI
emorrisl@umich.edu

Evan Reynolds
University of Michigan
Ann Arbor, MI
evanlr@umich.edu

Stephen Salerno
University of Michigan
Ann Arbor, MI
salernos@umich.edu

Data 4 Good Dashboard

—
Many more details forthcoming!



60+ SURVEY



Ann Arbor Area
Community Foundation
For **good.** For **ever.**™

Background: \$18 million to improve quality of life for older adults, focusing on those with lower life expectancy and socioeconomic status

Goal: Inform funding allocation by developing, administering, and analyzing a survey assessing the quality of life of older adults



60+ SURVEY

Utilized a validated questionnaire to assess quality of life (QOL)

Administered 750 surveys through other community organizations

Regressed composite QOL score on three vulnerabilities of interest

60+ SURVEY RESULTS

Financial vulnerability was associated with lower QOL

Presented AAACF with community reports

Information is being used to allocate funding for services





WHY THIS WAS A GOOD PROJECT

—
Oversaw from conception to interpretation

—
Findings used to inform policy decisions

—
Leveraged many community partnerships

—
Students directly impacted this population

"STATCOM fills such an important gap in data management and analysis for community-based organizations."

LESLI HOEY, PHD, ASSISTANT PROFESSOR,
URBAN AND REGIONAL PLANNING

"This connection between classroom knowledge and real-world practice has been invaluable to me in furthering my understanding of applied statistics."

ADAM PETERSON, PHD CANDIDATE,
BIOSTATISTICS



"It's been incredibly beneficial having highly trained and knowledgeable STATCOM representatives help us."

SHELAGH SAENZ, DIRECTOR OF CAREER DEVELOPMENT,
SCHOOL OF PUBLIC HEALTH

MEDIA & RECOGNITION

U-M symposium focuses on how data can be used in service to others

EVENT ANNOUNCEMENT

DATE: 10 a.m.-4:30 p.m. Feb. 25, 2020

EVENT: The 3rd annual University of Michigan Data for Public Good Symposium will highlight the unique ways in which students, faculty, staff and community members have worked together to analyze and assess data to benefit others.

The event also includes a presentation by [Data for Good](#) on how governments, businesses and individuals can use quality information and analysis to nonprofit organizations, governments, businesses and individuals. The discussion will focus on how census data, and how

FEBRUARY 12, 2019
U-M symposium: Where data and doing good intersect
by Nitya Gupta, Michigan News

Working in Everyone's Backyard: Statistics in the Community

Stephen Salerno
PhD Student, Biostatistics
June 7, 2018. Biostatistics, PhD, Students, Advocacy, Big Data, Biostatistics, Community Partnership, Detroit, Engaged Learning, Health Disparities, Health Informatics, Michigan, Practice, Research, Statistics, Student Organizations, Teaching

Discovering Biostatistics and Its Broad Applications

Katherine Hoffman, MS '18
Arch Biostatistician, Weill Cornell Medicine
Ver 3, 2019. Biostatistics, Big Data, Engaged Learning, Mental Health, Professional Publications, What Is Public Health?

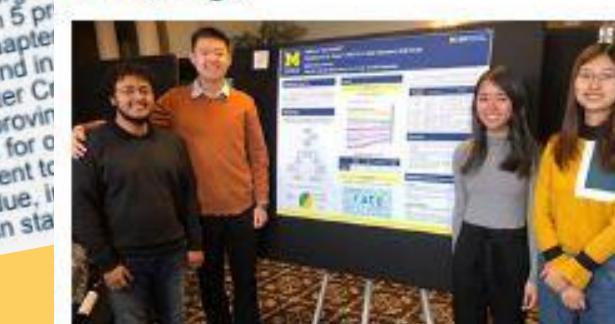
Evan Reynolds
Graduate Student of the Year Award

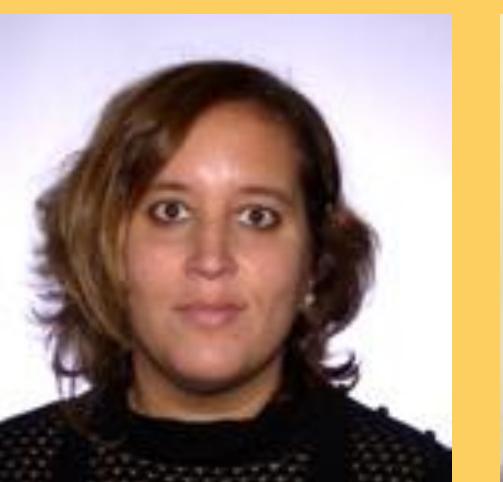
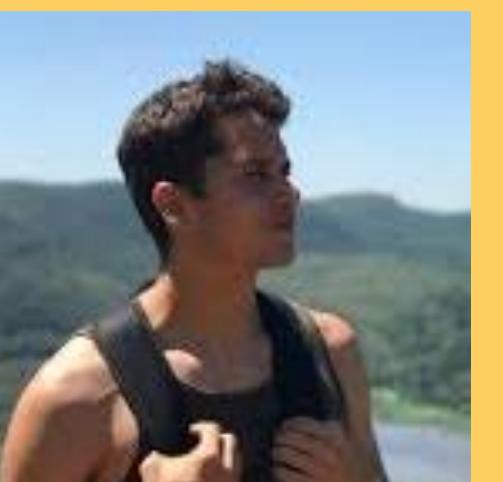
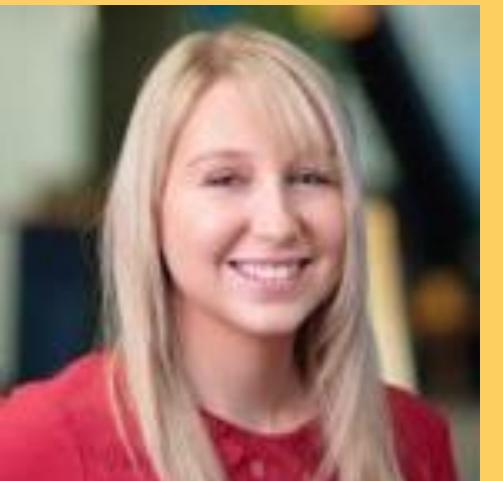
STATCOM members win Best Challenge

Community Engagement
This certificate is proud
Statistics in the Comm
in recognition of your
within the School of Pub
PRESENTED ON



The image is a collage of various graphic elements. At the top right, there's a banner for the "University Of Michigan Data For Public Good Symposium Feb 25th" with a background of colored dots. Below it is a section for the "Michigan Difference Student Leadership Awards" featuring wooden blocks with icons like people and hearts. In the center, there's a large blue and yellow graphic with text about the symposium and awards. The bottom left contains a snippet of text about Michigan being a community of graduate students. The bottom right features the M-LEAD logo and information about Simone Himbeault Taylor.





MANY, MANY THANKS



CONTACT STATCOM:



statcom-um@umich.edu



sph.umich.edu/biostat/statcom/



@statcom_um

CONTACT STEPHEN:



salernos@umich.edu



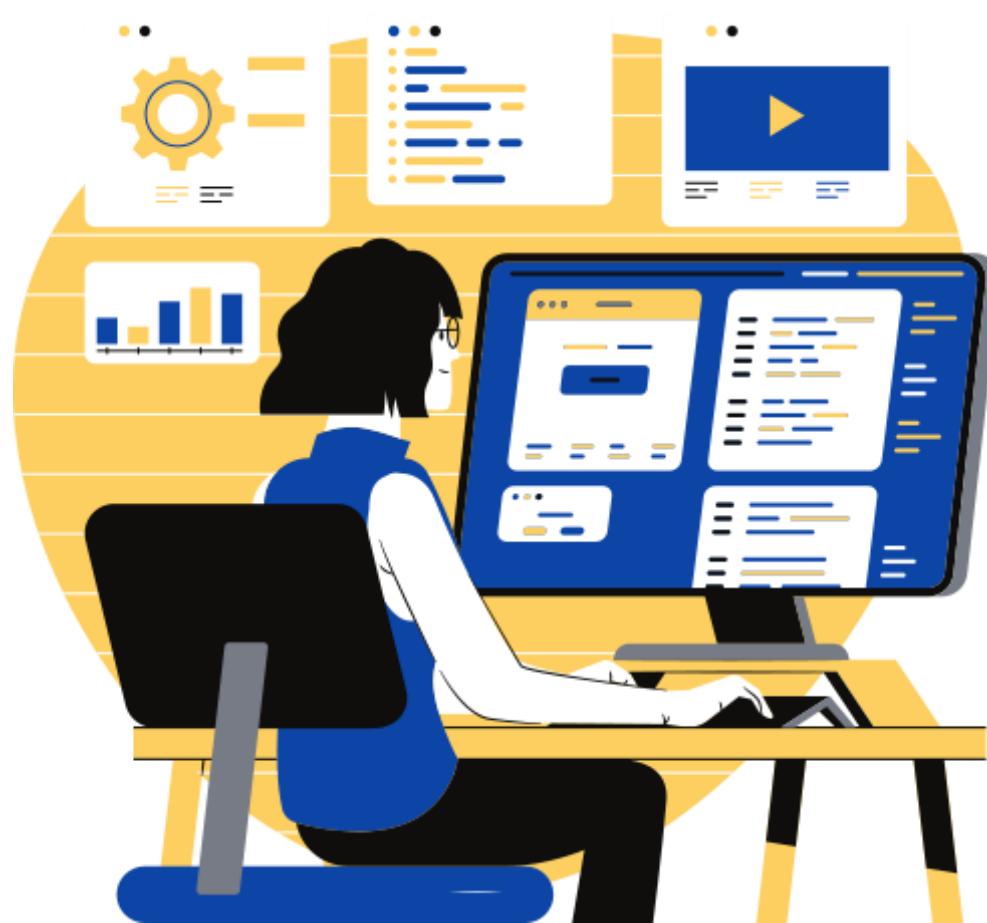
sph.umich.edu/biostat/



@StephenSalerno4

Additional References

SCOPE OF WORK



Advice and assistance are offered on a wide variety of statistical issues including:

- Use of data to improve decision making processes
- Survey/sample design and analysis
- Design and analysis of studies and experiments
- Methods of summarizing and visualizing data
- Use of data to detect trends and make predictions

STATCOM is able to assist with study design, data analysis, and the interpretation of results, but does not have the resources to collect or enter data



STATCOM was featured in several recent articles and editorials:

- The Pursuit (2018): <https://sph.umich.edu/pursuit/2018posts/working-in-everyones-backyard.html>
- SPH Findings (2018): sph.umich.edu/news/2018posts/statcom-062718.html
- Michigan News (2019): engaged.umich.edu/news-features/u-m-symposium-where-data-and-doing-good-intersect/
- Michigan Research (2019): research.umich.edu/news-issues/michigan-research/big-data-big-impact
- We are Michigan Public Health (2019): sph.umich.edu/stories/2019posts/stephen-salerno.html
- We are Michigan Public Health (2019): sph.umich.edu/stories/2019posts/katherine-hoffman.html
- Michigan News (2020): news.umich.edu/u-m-symposium-focuses-on-how-data-can-be-used-in-service-to-others/
- Chronicle Tech Press (2020): <https://chronicle.press/2020/02/18/attend-the-university-of-michigan-data-for-public-good-symposium-feb-25th/>

Listed below are recent accolades received by members of STATCOM:

- April 2018: University of Michigan Professional Organization of the Year
- April 2018: Evan Reynolds, University of Michigan Student Leader of the Year
- October 2019: Best Presentation, MIDAS Student Data Challenge
- April 2020: University of Michigan Professional Organization of the Year
- April 2020: School of Public Health Community Engagement Award

MEDIA & RECOGNITION

MANY, MANY THANKS

- Current STATCOM Leadership: Emily Morris, Emily Roberts, Amy Singer, Edmund Woolridge, Ben Brennan, Cathie Spino (Faculty Advisor), Tom Braun (Faculty Advisor)
- (Recent) Past Leadership: Evan Reynolds, Tim NeCamp, Mike Elliott (Faculty Advisor)
- Faculty: Bhramar Mukherjee, Rod Little, Lili Zhao, Veronica Berrocal, Josh Errickson
- University Collaborators: Jing Liu (MIDAS), Trisha Fountain (MIDAS), Sarah Hallum (MIDAS), Bri Christy (CTAC), Sarah Gallagher (CTAC), Sarah Beu (CEDER)
- This Session: Leah Jager, Lynne Steuerle Schofield, Aboozar Hadavand
- My Advisor: Yi Li + many others who contribute to or support our mission and work
- Our Volunteers, Our Volunteers, Our Volunteers, Our Volunteers, Our Volunteers