



**ANNUAL
REPORT**
2018–2019

CURA

THE CENTER FOR URBAN AND REGIONAL ANALYSIS

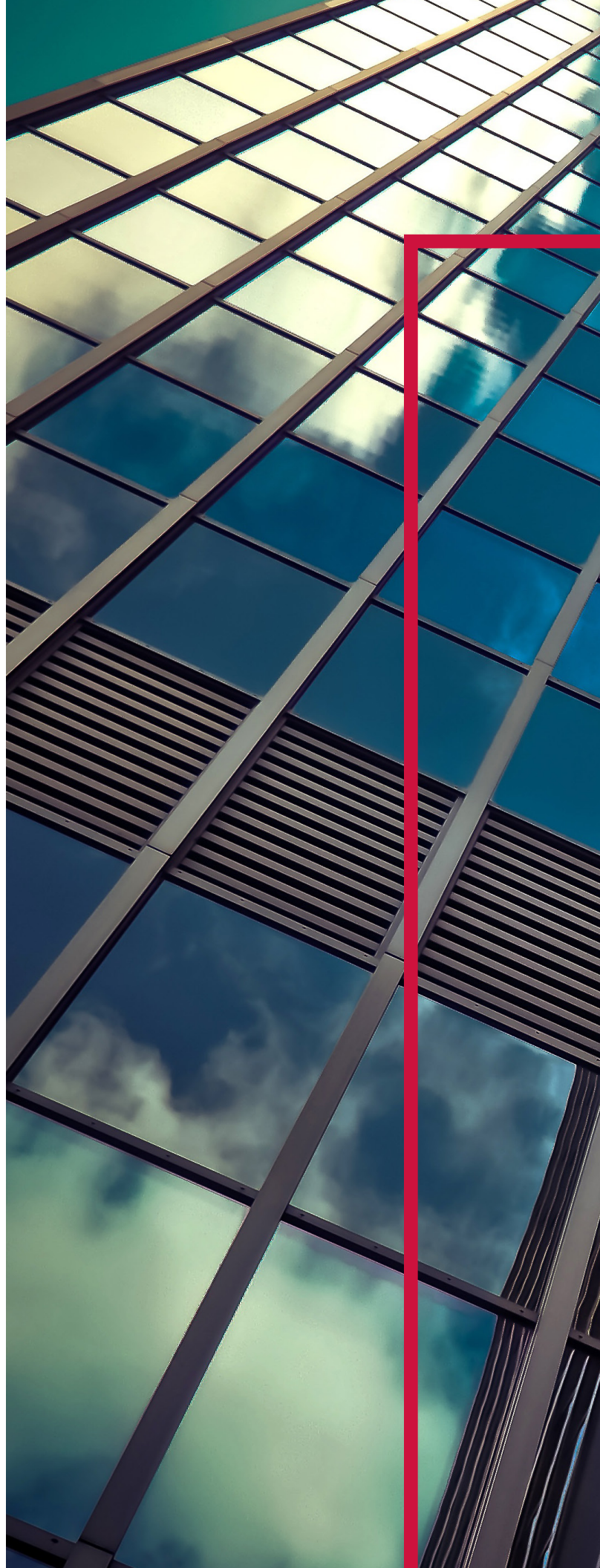


THE OHIO STATE UNIVERSITY

CENTER FOR URBAN AND
REGIONAL ANALYSIS

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LETTER FROM THE DIRECTOR



Dear friends of CURA,

Once again, it's been a wonderfully busy year for the Center for Urban and Regional Analysis (CURA). We have a lot of projects, events and activities this year, as the rest of this report will describe. This letter will serve as a welcome – a welcome to our new staff, our new advisory board and our new partners, both on-campus and in the community.

Welcome new staff! We had some staff turnover this past year – Rebekah Sims (Program Coordinator) left to join the Geography department, and Jerry Mount (GIS Project Manager) left to be with family. But we used this opportunity to re-imagine our staff, configuring new positions and responsibilities that better reflect the evolution in our mission. I am very pleased to welcome Adam Porr, CURA's GIS Project Manager and Katie Phillips, our Outreach Coordinator. Adam has a background in electric engineering and spent some time in the private sector, returning to Ohio State for a Master's in City and Regional Planning, joining us first as a Graduate Research Associate and now a full-time staff member. Katie has a background in Geology and spent some time as a GIS Technician for Franklin Soil and Water Conservation District.

We also created an Associate Director position, and I want to welcome Ningchuan Xiao who accepted our offer. Ningchaun is a Professor in the Geography department; he is supervising our GIS and geospatial data technical infrastructure and projects.

Although she is not new, I want to acknowledge and celebrate Suzanne Mikos, CURA's HR/Fiscal Officer. Suzanne has been essential in keeping CURA running well, and helping with our strategic planning. I couldn't do this job without her!

Welcome new advisory board! We also spent considerable time this year reconceptualizing our Advisory Board to reflect key entities and organizations on-campus and in the community. We now have representation from the College of Arts and Sciences (Janet M. Box-Steffensmeier), ASC Social and Behavioral Sciences division (Morton O'Kelly), the Sustainability Institute (Elena Irwin), the Translational Data Analytics Institute (TBD), Ohio State Libraries (Joshua Sadvari), the John Glenn College of Public Affairs (Robert Greenbaum), the Knowlton School City and Regional Planning section (Gulsah Akar), the Kirwan Institute for the Study of Race and Ethnicity (Darrick Hamilton), the City of Columbus (Shoreh Elhami) and the Mid-Ohio Regional Planning Commission (Aaron Schill). We look forward to continuing and expanding our engagement with these crucial stakeholders.

Welcome new partners! We have also made tremendous progress this year in developing strategic partnerships with campus and community entities. We are working closely with the new Sustainability Institute to develop infrastructure to support new types of data-enabled urban sustainability science. Related to this is a partnership with the Mid-Ohio Regional Planning Commission (MORPC) to measure and map progress towards regional sustainability goals. We are working with the Central Ohio Transit Authority (COTA) to help make the case for dedicated bus lanes, understand the impact of bus delays and assess their impact on the economic performance, social equity and environmental sustainability of central Ohio. Our opioid overdose mapping project (described elsewhere in this report) involves researchers in the College of Public Health, the Wexner Medical Center, the Central Ohio Trauma System and health workers in the opioid recovery treatment community in central Ohio. We are continuing our engagement with Smart Columbus on data and analysis associated with smart mobility. We also conduct regular, well-attended workshops with University Libraries on GIS and geospatial technologies. I also want to acknowledge and thank the Office of Academic Affairs at Ohio State for their continuing support of our outreach mission.

CURA is evolving to support Ohio State's urban mission, and to make cities and regions in Ohio and elsewhere more sustainable, equitable and competitive. Enjoy this annual report, and get involved!

Regards,

Harvey J. Miller, PhD
Director

Our mission is to serve as a bridge across academia, industry, and the policy sector by providing spatial analysis of economic, social, environmental and health issues in urban and regional settings in Ohio and beyond.

ABOUT CURA

Founded in 2001, the Center for Urban and Regional Analysis (CURA) has spent more than 15 years working with partners to solve complex geographic problems. As part of the College of Arts and Sciences, CURA boasts a strong interdisciplinary nature and works with multiple departments, schools and colleges across campus and in the local community.

We are an innovation hub specializing in the application of Geographic Information Science (GIScience), spatial analysis and geographic visualization to urban issues ranging from analyzing market potential for commercial developers to mapping the social determinants of the opioid epidemic.

ACTIVITY AREAS

STUDENT ENGAGEMENT

CURA's graduate and undergraduate research are among the best GIS and urban science students in the world. Involvement in our research projects enhances their educational experience as well as provides exposure to a professional setting. Our students not only get to work on cutting edge research projects, but also get a chance to present their findings at scientific conferences, providing national and international exposure. Students often say the experience gained at CURA helped provide them with a skill-set that set them apart from other candidates when seeking employment.

OUTREACH AND EDUCATION

We work closely with campus partners to host events and workshops of interest to professionals in GIScience, urban studies and a variety of other disciplines across campus, as well as the general public. CURA hosts a series of speakers from academia and the private sector every spring and fall semester. Our Speaker Series are highly engaging and dynamic, and introduce students and faculty to emerging topics in the fields of urban science. To further the land grant mission of Ohio State, we engage with organizations in the community to share our technical expertise in spatial and temporal analysis and mapping. This past year we have expanded our partnerships with Central Ohio organizations to include the Mid-Ohio Regional Planning Commission (MORPC) and the Central Ohio Transit Authority (COTA).

RESEARCH SUPPORT

Our researchers can perform sophisticated analyses and create powerful models to help you understand the spatiotemporal patterns hidden in your data. We can also help you communicate your findings to your audience more effectively using maps, charts, interactive applications and other visualization tools. We manage a high-performance computing environment that is optimized for performing analysis of large geospatial datasets.

TOOL AND APPLICATION DEVELOPMENT

Staff and research assistants at CURA are skilled in the development of special-purpose data science and mapping tools and applications. Our customers leverage our expertise in algorithm development, database design, and user interface definition to create custom solutions tailored to their specific needs, whether those needs involve simplifying their analysis or communicating findings with their intended audience.

SERVICES



CURA serves as an innovation hub which brings together researchers from across campus to integrate spatial analysis and modeling and Geographic Information Science (GIScience) into social, natural, and environmental sciences; applied economics; agriculture; engineering; health and medical professions; and the humanities. We provide data management and database design expertise, and we also offer web-based mapping, data hosting, and custom tool and application development. We possess strong technical expertise in many fields related to data science and urban science. **If you would like to consult with us about your research project, please email at cura@osu.edu or call 614-688-0527.**

Our services are provided to clients on campus and in the community. In a fee-for-service context, CURA charges an hourly rate and provides a detailed project proposal that defines the scope of work, budget, and timeline. Alternatively, CURA may participate in the development of proposals to secure grant funding, with faculty serving as co-investigators for relevant portions of the research.

CURA provides the following services:

- Collaboration on Grant Proposals and Projects
- Custom Tool and Application Development
- Database Design
- Data Conversion
- Data Hosting
- Digitization and Geo-referencing
- Educational Seminars and Workshops
- Geocoding
- GIS Automation Using Python and Other Tools
- Mapping
- Spatial Analysis
- Story Map Creation

MAPPING

We create static and interactive maps using state-of-the-art tools and sound cartographic principles to help our customers achieve the greatest impact with their target audience. Effective cartography is all about making the right choices, and we can help customers understand which technology, presentation and design options are ideal for their specific needs.

SPATIAL ANALYSIS

Recent advancements in computing, GIS technologies and data available allow for increasingly nuanced understanding of spatiotemporal patterns. Decisions today are increasingly driven by data and spatial analysis helps us make better decisions based on the results.

CUSTOM TOOL AND APPLICATION DEVELOPMENT

We develop custom web- and mobile applications tailored to any audience so that even non-experts can leverage the power of mapping and spatial analysis. We can also develop tools to simplify the collection of multimedia spatial data.

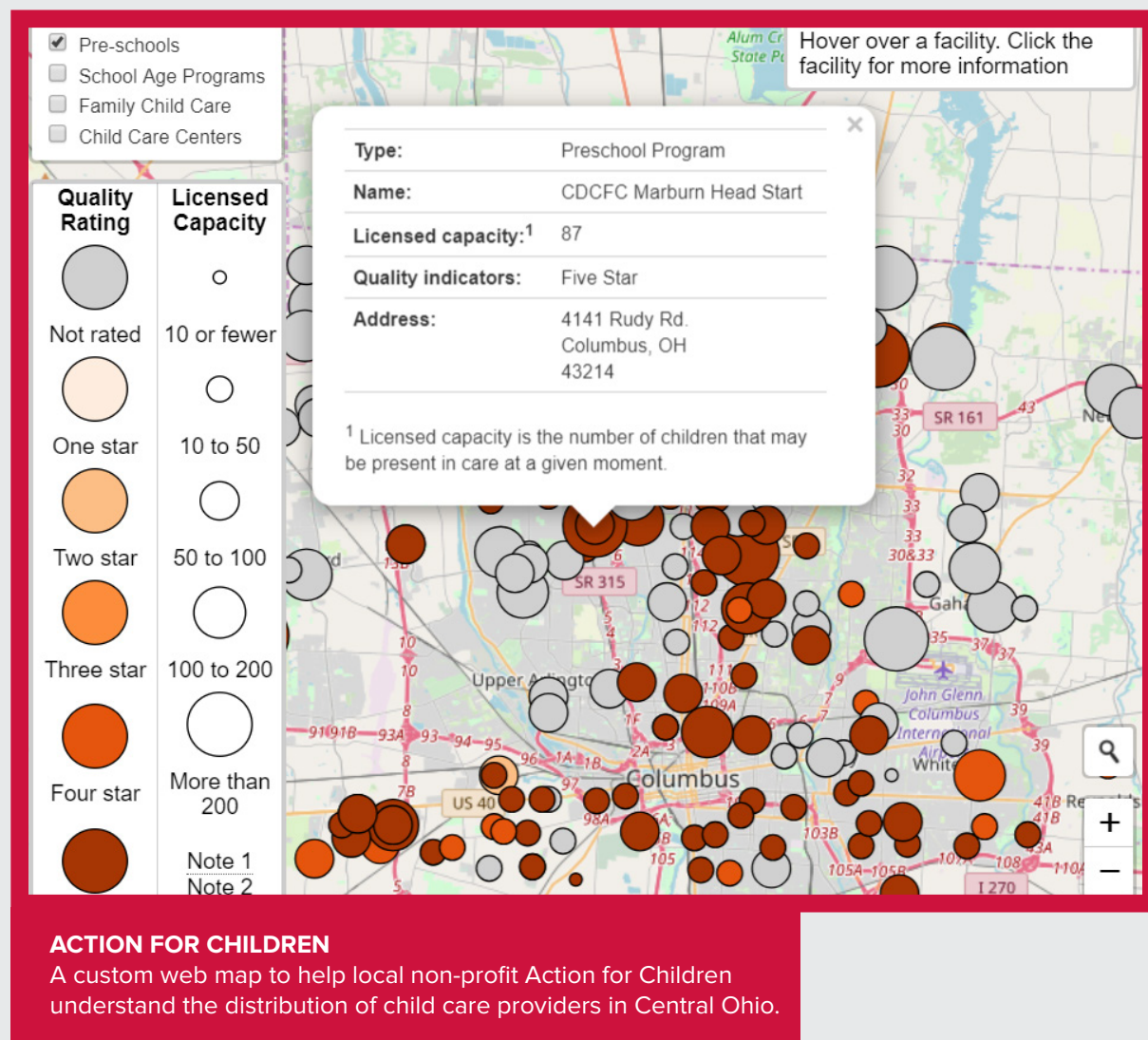
PROJECTS

CURA participates in projects that fit with our mission. Although we are receptive to projects representing a diverse range of topics, recent projects have focused on the following areas of research:

1. Public health
2. Social equity
3. Sustainability
4. Transportation

While many of our projects are long-term, spanning one year or more, we recognize our role as an authority for GIScience on campus and try to accommodate smaller-scale opportunities to support researchers as well.

2018–2019 has brought new and exciting research pathways that have allowed us to build upon existing skills. CURA is currently working on 19 different projects both at Ohio State and in the local community. CURA has also worked across many fields of academia to offer our expertise in spatial and temporal analysis, GIS based web-mapping, and tool and app development.



ARTREES

is a collaboration with the Department of Art to produce a general-interest augmented reality mobile application to help the public better appreciate the cultural, ecological and economic value of trees.



Public transit accessibility ?

Date: 04/18/2019

Time: 13:00

Accessible areas

- ☒ Bus schedule base
- ☒ Real-time feed base

Time budget

Maximum travel time(minutes): 60

Number of accessible stops

Export

Schedule base: 1576 stops

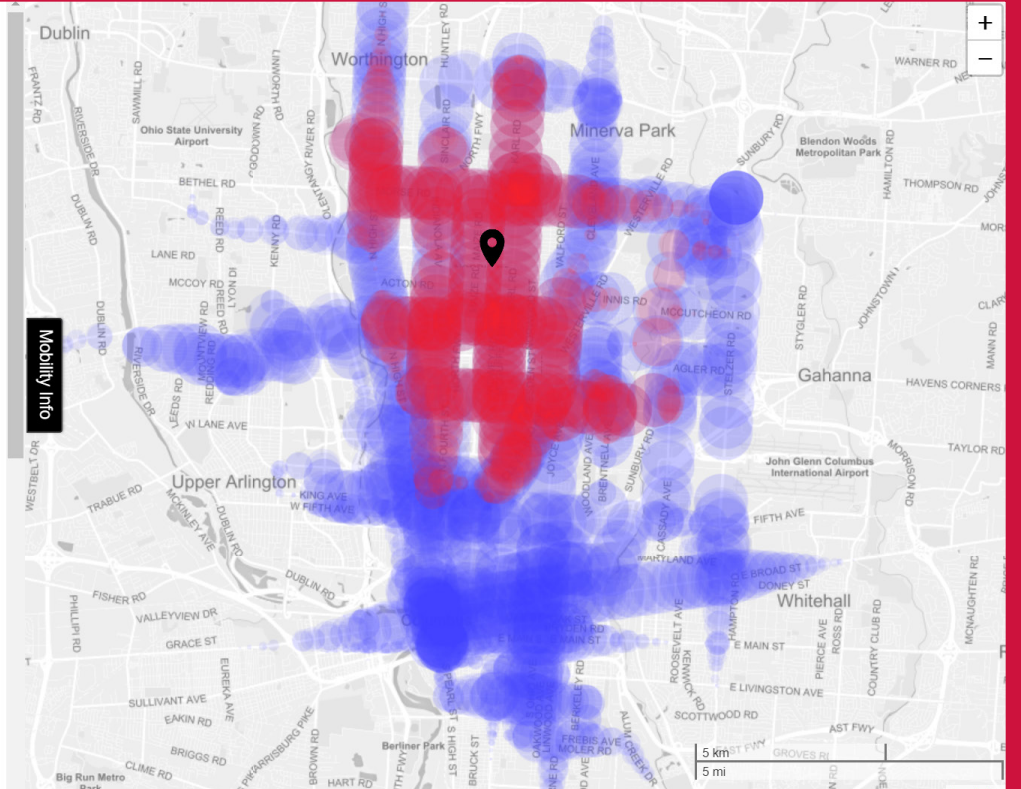
Real-time feed base: 513 stops

History of your search:

Number of accessible stops w/i 1 hour

Double click on table row to return

Origin	Time	Schedule	Real-time
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lon:-83.0795 lat:39.9515	04/18/2019 13:00	692	793

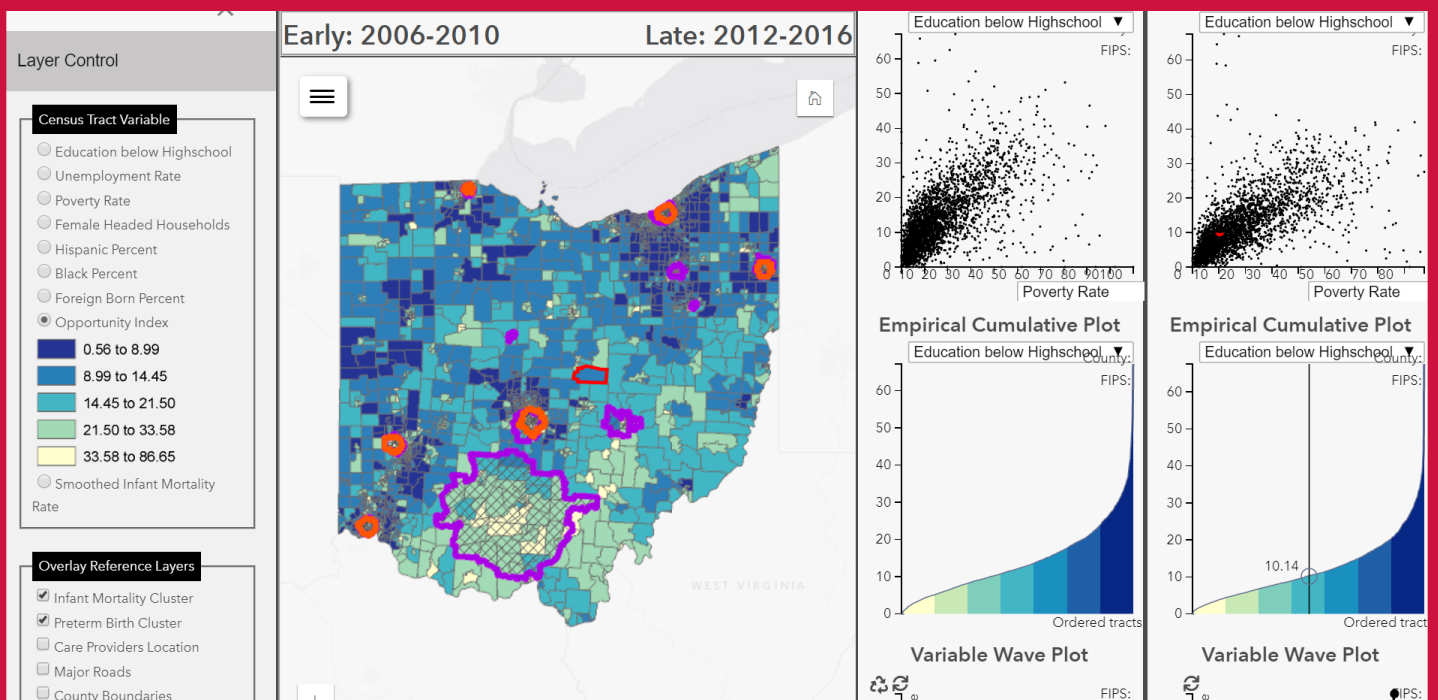
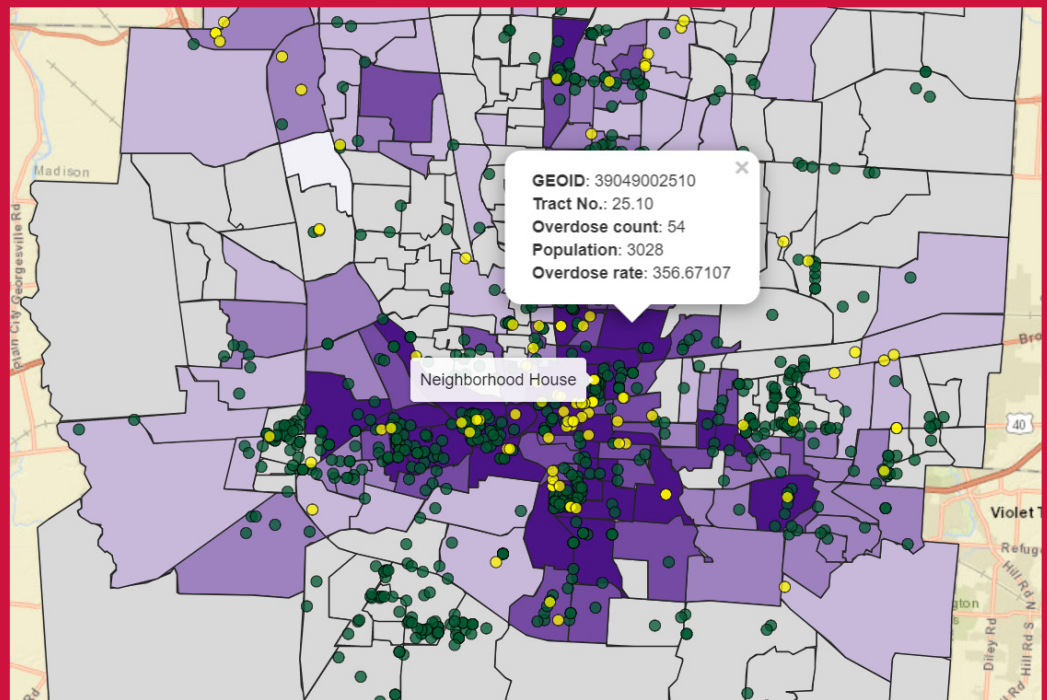


CURIO DASHBOARD

The Columbus Urban & Regional Information Observatory (CURIO) accesses and integrates linked open geographical data for Columbus, OH. Many public agencies and organizations publish their data using standard protocols via the World Wide Web. CURIO highlights the power of linked open geographic data for exploring and understanding the dynamics of a city when these data are integrated, mapped and visualized.

FOCAL MAP

Franklin County Opioid Crisis Activity Levels (FOCAL) Map is an interdisciplinary collaboration with researchers from across campus and stakeholders in the community to map opioid overdose incidents with high spatiotemporal resolution and visualize them in the context of relevant socioeconomic and administrative data. This project is supported by the Ohio State University Opioid Innovation Fund.



INFANT MORTALITY RESEARCH PROJECT (IMRP)

IMRP is a web-based spatiotemporal analysis application that comprises part of a larger collaboration involving the Ohio Department of Medicaid, the Government Resources Center, and several research groups on campus to study the social determinants of infant mortality. IMRP is a web-based dashboard designed to help researchers and policy makers understand the social determinants of infant mortality in Ohio. This project is supported by the Medicaid Technical Assistance Policy Program.

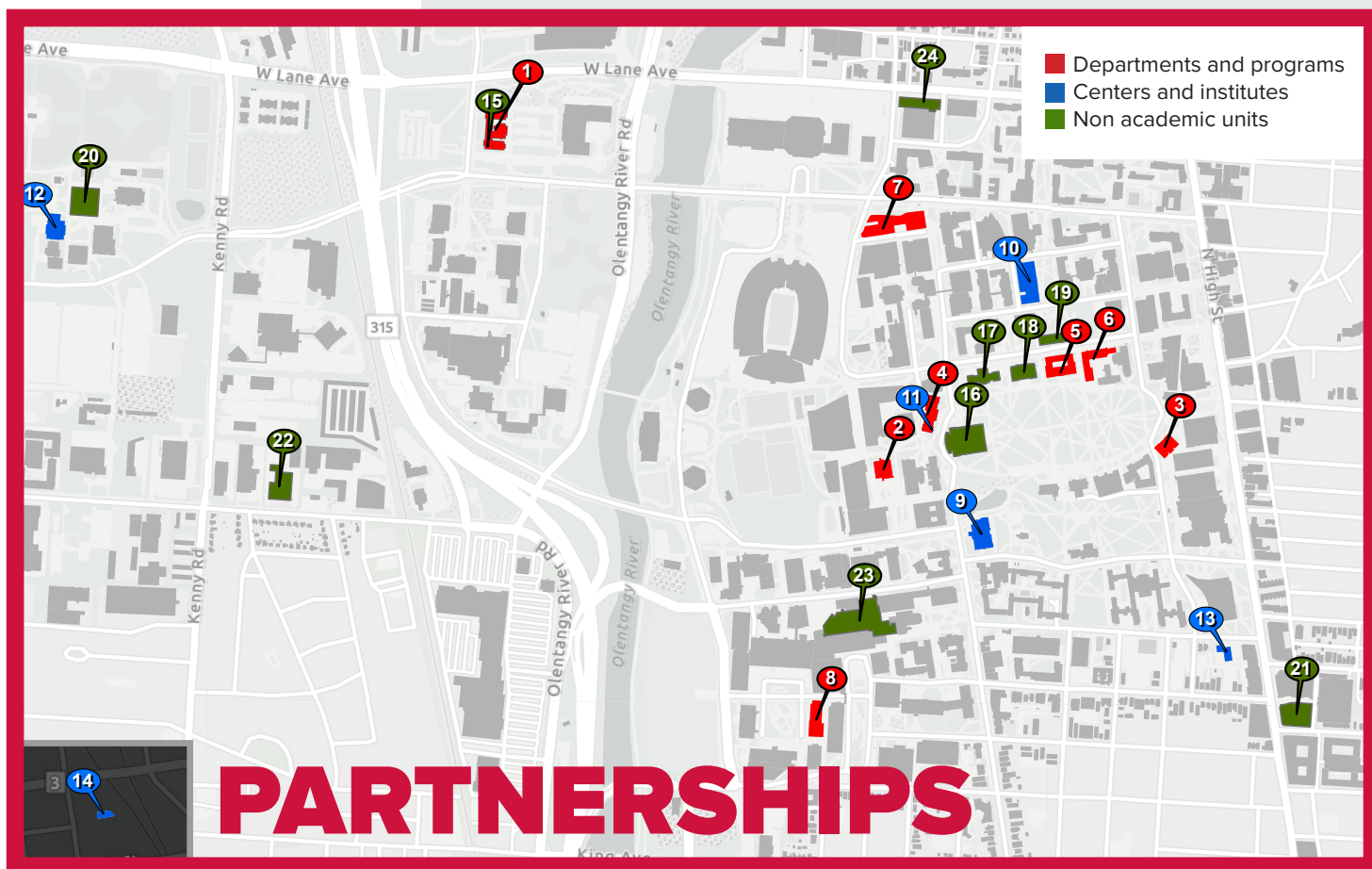
FRANKLIN COUNTY OPIOID CRISIS ACTIVITY LEVELS (FOCAL) MAP

efforts, the most relevant distinction between the existing dashboards and this project is 1) the spatial resolution, which will be much higher in the tools used, the integration of data on accessibility, 2) the addition of social determinants of health and 3) the capability for geospatial analytics, which is more informative for making decisions than visualization of data points alone.

The web-based application has geospatial analytics and spatiotemporal modeling capabilities for use by multiple stakeholders including EMS agencies and public health staff, treatment providers and Ohio State researchers. In related

Authors/Team members: *Harvey Miller (CURA), Ayaz Hyder (College of Public Health), Lauren Southerland, MD (Wexner Medical Center), Gretchen Clark Hammond (Mighty Crow Media) and Sherri Kovach (HIPAA Privacy/Security Officer, Central Ohio Trauma System).*





INTERNAL NETWORK:

Urban life intersects with nearly every discipline, a reality that positions CURA perfectly for collaborative projects. As the only interdisciplinary hub on campus for urban issues and mapping, the center works to bring diverse researchers together and create synergy around the study of urban and regional systems.

Departments and Programs:

- Agricultural, Environmental and Development Economics | College of Food, Agriculture and Environmental Sciences – **1**
- Art | College of Arts and Sciences – **6**
- Austin E. Knowlton School of Architecture | College of Engineering – **7**
- Environmental Health Sciences | College of Public Health – **2**
- Geography | College of Arts and Sciences – **5**
- John Glenn College of Public Affairs – **3**
- School of Health and Rehabilitation Sciences | College of Medicine – **8**
- Sociology | College of Arts and Sciences – **4**

Centers and Institutes:

- Byrd Polar & Climate Research Center – **12**
- Institute for Population Research (IPR) – **11**
- Kirwan Institute for the Study of Race & Ethnicity – **13**
- STEAM Factory – **14**
- Sustainability Institute – **10**
- Translational Data Analytics Institute – **9**

Non-Academic Units:

- Corporate Engagement Office – **24**
- Government Resources Center | College of Medicine – **20**
- Marketing and Communications | College of Arts and Sciences – **17**
- Office of Academic Affairs – **18**
- OSU Extension | College of Food, Agriculture, and Environmental Sciences – **15**
- Planning and Real Estate – **21**
- Smart Campus – **22**
- Technology Services | College of Arts and Sciences – **19**
- University Libraries – **16**
- Wexner Medical Center – **23**

EXTERNAL NETWORK:

Relationship development involves targeted networking with key CURA partners with a special emphasis on promotion of strategic partnerships with the Mid-Ohio Regional Planning Commission (MORPC), Central Ohio Transit Authority (COTA) and the City of Columbus.

- Action for Children
- Central Ohio Transit Authority (COTA)
- Central Ohio Trauma System
- City of Columbus
- Mid-Ohio Regional Planning Commission (MORPC)
- Mighty Crow Media
- Smart Columbus

OUTREACH AND ENGAGEMENT

CURA organizes multiple events each year designed to apply to a wide range of urban-related interests. From urban policy to time geography, CURA event series offer engaging and enlightening content across the full spectrum of academia. Events are open to both the Ohio State community and to the public. As the university's hub for GIS and urban data science, CURA seeks to bridge the campus community with professionals around Central Ohio and beyond. From panels to keynote speakers, our programming is designed to target a diverse audience.

During 2018, we hosted two diverse panels of academics and practitioners called "Water and Cities in Ohio" and "Mobility and Equity". The "Water and Cities in Ohio" events brought together experts and researchers in the field of environmental science, faculty in urban planning, and the real-world expertise of city officials and engineers to discuss how climate change is affecting our water. The "Mobility and Equity" events brought together experts in the field of transportation and policy makers to discuss emerging issues, affordability, public safety and health, local economic development, new technologies and how they affect transportation. These events exemplified CURA's mission to bridge academia and industry.

OUTREACH PROGRAMS



COFFEE WITH CURA

Coffee with CURA is an opportunity for students, faculty and staff to stop in and discuss their geospatial analysis with CURA staff and other interested parties. We invite researchers to stop in and discuss their ideas for projects so we can help determine how we can help. This event is designed to be a forum for researchers at all expertise and experience levels to meet with us and each other to discuss ideas in an informal setting.



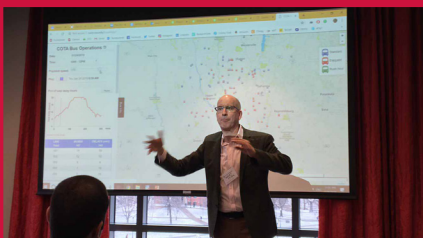
SPEAKER SERIES

CURA has a long tradition of bringing novel ideas and thoughtful discussions about urban and regional issues to Central Ohio through our semi-annual speaker series. Our guest speakers include world renowned academic researchers, top-level practitioners, local policy makers and community members, Central Ohio government officials and our very own university representatives. Typically each spring and fall we offer one panel discussion, one academic lecture and one practitioner guest speaker.



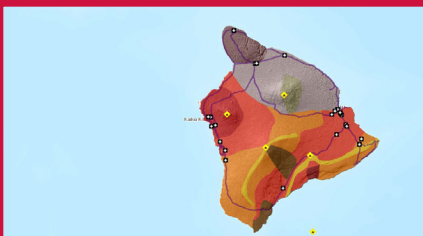
GIS DAY

GIS day at Ohio State is an annual event for students, staff, faculty, and visitors to learn more about geographic information systems (GIS) and celebrate the power of geospatial analysis and visualization in answering research questions and solving real-world problems. CURA typically partners with University Libraries and Facilities Information and Technology Services to host this annual event.



EVENTS

CURA is involved in many university events with our partnerships along side our affiliated departments, programs, collaborating centers, and institutes ranging from Westfest held every spring to Women in Data Science Summer camp held every summer. CURA also participates in tabling sessions when possible. We strive to enhance our presence on campus and in the local community through events and workshops.



WORKSHOPS

CURA partners with University Libraries to offer GIS workshops tailored toward individuals using GIS in their research but are unfamiliar with the software. Some workshops offered in the past include: GIS for the Rest of Us and Basics of Web Mapping using ArcGIS Online which are typically offered every spring and fall.

EVENTS

Coffee w/ CURA — FEBRUARY 2, 2018
A GIS discussion open to the public

FEBRUARY 16, 2018 — **Panel Discussion:** Water and Cities in Ohio, Are we Prepared for Climate Change?

CURA Speaker Series: Christopher Impellitteri, Green Infrastructure Research in EPA's Office of Research and Development — MARCH 30, 2018

APRIL 17, 2018 — **CURA Speaker Series:** William Hunt, Green Infrastructure and Ecosystem Services: The Future of Stormwater Management; **Community Roundtable Discussion** with William Hunt

Coffee w/ CURA — JUNE 1, 2018
A GIS discussion open to the public

JULY 16, 2018 — **Women in Data Science Summer Camp**

Workshop: GIS for the Rest of Us — AUGUST 9, 2018

SEPTEMBER 7, 2018 — **Coffee w/ CURA**
A GIS discussion open to the public

Panel Discussion: Mobility & Equity: Can Transportation make Columbus a more equitable community? — SEPTEMBER 14, 2018

SEPTEMBER 25, 2018 — **Ohio GIS Conference**

Workshop: Web Mapping Basics with ArcGIS Online — OCTOBER 4, 2018

OCTOBER 19, 2018 — **Coffee w/ CURA**
A GIS discussion open to the public

CURA Speaker Series: Todd Litman, Preparing for a Changing Future: Emerging Planning Issues; **Community Roundtable Discussion** with Todd Litman — NOVEMBER 9, 2018

NOVEMBER 14, 2018 — **GIS Day 2018**

Ohio State's Community Engagement Conference — JANUARY 23, 2019

Coffee w/ CURA — MARCH 7, 2019
A GIS discussion open to the public

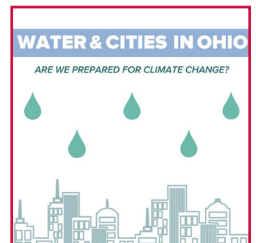
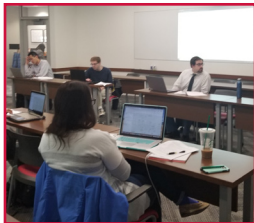
MARCH 26, 2019 — **Workshop:** Web Mapping Basics with ArcGIS Online

Coffee w/ CURA — APRIL 11, 2019
A GIS discussion open to the public

APRIL 12, 2019 — **CURA Speaker Series:** Josh Garver, Natural Resources and GIS: Applications at the Local Level

WestFest: West Campus Sustainability & Outreach Quad — MAY 18, 2019

MAY 24, 2019 — **Center for Urban and Regional Analysis – Annual Meeting**



OUTREACH HIGHLIGHT:

OUTREACH AND ENGAGEMENT CONFERENCE – SUSTAINABLE COLUMBUS OBSERVATORY *OHIO STATE'S COMMUNITY ENGAGEMENT CONFERENCE*

In February a research team from CURA and the Sustainability Institute at Ohio State presented the Sustainable Columbus Observatory (SCO) project at the 2019 Ohio State Community Engagement Conference. The Sustainable Columbus Observatory (SCO) will be an urban observatory for the purpose of benchmarking social, environmental, and economic factors related to sustainability in the central Ohio region. The Sustainable Columbus Observatory (SCO) engages community stakeholders including the Mid-Ohio Regional Planning Commission (MORPC), the Central Ohio Transit Authority (COTA), and Smart Columbus to ensure that the data and indicators reflect community sustainability goals, supporting evidence-based policy and program evaluation.

At its core, the Sustainable Columbus Observatory (SCO) will consist of an open data portal with advanced capabilities that will differentiate it from existing data portals. Among these will be a dashboard that charts indicator values derived from the data. The set of indicators will be thoughtfully curated to provide a comprehensive measure of sustainability of the central Ohio region. Other exciting features of the Sustainable Columbus Observatory (SCO) include built-in data-processing and the ability to retrieve data manually in a variety of formats.

The main goals of the Sustainable Columbus Observatory (SCO) are:

1. Build a research database infrastructure to support data-driven urban sustainability science. The collection of data over time will be used to track the progress of Columbus toward sustainable outcomes.
2. Make the data accessible and understandable using a map-based dashboard that can support evidence-based sustainability policy and planning.

More information on the Sustainable Columbus Observatory (SCO) will become available over the next year.





HARVEY MILLER

Director

Areas of Interest:

- GIScience
- Mobility Analytics
- Sustainable Transportation

Education:

- 1991 – PhD Geography, The Ohio State University
- 1987 – MA Geography, Kent State University
- 1985 – BA, Honors Geography, Kent State University

Harvey Miller earned his PhD in geography at Ohio State in 1991, returning in 2013 as the Bob and Mary Reusche Chair in Geographic Information Science in the Department of Geography. He is also a courtesy professor in the Department of City and Regional Planning, a member of the Faculty Advisory Board of the Sustainability Institute where he co-leads the program on smart and resilient communities and an affiliated faculty of the Translational Data Analytics Institute at Ohio State. His research interests include GIS, sustainable transportation, livable cities and the relationships between human mobility, health and social equity.

Dr. Miller also chairs the Mapping Science Committee of the US National Academies, and is a member-at-large of the Data Section of the Transportation Research Board of the US National Research Council. In 2015, he received the Research Award for his scholarly contributions to GIScience from the University Consortium for Geographic Information Science. Learn more about Director Miller's personal research interests on his blog: u.osu.edu/miller.81



NINGCHUAN XIAO

Associate Director

Areas of Expertise:

- Spatial Decision Support Systems
- Cartography
- Environmental and Ecological Modeling
- Web-based GIS

Education:

- 2003 – PhD Geography, The University of Iowa
- 1999 – MS Geography, Southern Illinois University
- 1995 – MS Geography, Peking University
- 1990 – BS Geography, Hunan Normal University

Ningchuan Xiao has a broad range of research interests in geographic information science. His main research areas include spatial optimization, spatial and temporal data analysis, information visualization and cartography, GIS development and human and environmental modeling.



ADAM PORR, GIS Project Manager

Areas of Expertise:

- Geographic Information Systems (GIS)
- Project Management
- City and Regional Planning

Education:

- 2019 – MS City and Regional Planning, The Ohio State University
- 2013 – MS Electrical and Computer Engineering, The Ohio State University
- 2006 – BS Electrical and Computer Engineering, The Ohio State University

Adam has ten years of experience as an electrical engineer, manufacturing engineer, and project manager working on electromechanical systems for the defense, science, and healthcare industries. He also has significant experience in Linux systems administration and software development. More recently his efforts have been focused on geographic information science (GIS) and spatial analysis, particularly in the context of spatial multi-criteria decision models. In his role at CURA, Adam leads teams of graduate and undergraduate student workers to produce critical information, analyses and tools that help university and community partners tackle the urban and regional challenges facing Central Ohio.



KATIE PHILLIPS, Outreach Coordinator

Areas of Expertise:

- Geographic Information Systems (GIS)
- Outreach and Education
- Environmental Science and Geology

Education:

- 2013 – MS Geology, Bowling Green State University
- 2011 – BS Geology, Ashland University

While at Bowling Green State University, Katie's studies were focused on environmental science and climate change. She has five years of experience in GIS, environmental science, education and outreach and natural resources. Katie has experience building partnerships with municipal entities and other organizations. In her role as CURA's Outreach Coordinator, Katie builds relationships with students, instructors, researchers, planners, policy makers and other people interested in urban issues and data science. By investing the time to understand the problems our partners are trying to solve, Katie can offer expert recommendations on how CURA can help solve those problems. Katie also manages CURA's guest speaker series and other events and serves as the voice of CURA for our email newsletter and social media outlets.

SUZANNE MIKOS, Fiscal and HR Manager

Areas of Expertise:

- Budget Forecasting/Finance Management
- Operations Management
- Strategic Planning

Education:

- 2014 – MPA Public Administration and Finance, The Ohio State University
- 2007 – BA Political Science, The Ohio State University
- 2001 – BA Criminology, International Studies, and Russian, The Ohio State University

As the Department Manager for Geography, Suzanne also works closely with the CURA Director to establish the organization's budget and conduct hiring for the center. She also supports the Outreach Coordinator with purchasing and organizational development.



LUYU LIU

MS student
Geography, College of Arts
and Sciences



YOUNG JAE GAL

PhD student
Geography, College of Arts
and Sciences



SARAVANA KUMAR

MS student
Computer Science & Engineering,
College of Engineering



JINHYUNG LEE

PhD student
Geography, College of Arts
and Sciences



YUCHEN LI

PhD student
Geography, College of Arts
and Sciences

GRADUATE STUDENT PROFILE HIGHLIGHT

SARAVANA KUMAR SHANMUGAM SAKTHIVADIVEL

Education:

- Guindy Anna University, BS Engineering in Computer Science
- The Ohio State University, MS Computer Science and Engineering

Research Interests :

I work with Dr. Srinivasan Parthasarathy in the Department of Computer Science and Engineering. My research spans machine learning, network sciences and high performance computing. Over the course of pursuing a master's degree, I've been working on applying high performance computing techniques to speed up the NetMF algorithm which helps find alternative representation for nodes in a network that are more conducive to machine learning applications. At CURA, I'm a part of the FOCAL Map project in collaboration with Dr. Ayaz Hyder from The College of Public Health. The objective is to develop a web map for Franklin County that can help patients struggling with opioid addiction find treatment centers close to them. We are also designing the tool so that researchers and policy makers can use it to identify geographic regions where cases of opioid overdose is rampant.

"I like working for CURA because I've never worked with GIS systems before and this has been an incredible learning opportunity. I have also had the good fortune to work with some really nice people."

GRADUATE STUDENT PROFILE HIGHLIGHT

LUYU LIU

Education:

- Peking University, 2017, BS Environmental Science, BS Mathematics
- The Ohio State University, 2019, MS Geography

Research Interests:

During my past one and half year studying at Ohio State's Department of Geography, I developed a thesis entitled "Measuring public transit transfer risk using high-resolution schedule and real-time bus location data". Public transit is a highlighted topic in the regional planning and geographic information science, also a very pragmatic issue. The expansion of city footprints renders direct long trips more difficult and costlier, making transfers between scheduled public transit lines more significant. Meanwhile, as a loyal public transit user in Columbus, I care for the quality of public transit service, especially for underprivileged populations. Based on these motivations, we developed an index to measure the transfer risk and designed a holistic information system for computation and visualization using high-resolution bus data. Encouraged by Dr. Miller, I finished a formal academic paper and submitted it to Transportation Research Part C: Emerging Technologies and gave a presentation at AAG annual meeting 2019. Moreover, we simulated the impact of dedicated line on the transfer performance in Columbus, Ohio. Using the results, we are collaborating with Central Ohio Transit Agency (COTA) and Transit Columbus to move forward on dedicated bus lanes in Columbus. Right now, I am also working on several other papers like measuring real-time transit application's impact on users, and e-bikes and scooters' accessibility in Columbus.

"As for my motivation to stay in CURA, first thing that comes into my mind is a good environment. CURA's staff are fantastic. Thanks to Harvey, Ningchuan, Adam, Katie, Jin, Young, Yuchen, our undergraduate research assistants, and our old friends: Jerry, Rebekah and Shaun, CURA has taught me so much during the past two years. CURA has its rich history and it is well-known for its outstanding alumni. CURA's office has so many legacies that will surprise you. Also due to its history, it is hard to imagine how many fantastic people worked in Derby 0126. CURA also has a wide vision and broad social connections, in a good sense. Working as CURA's RA is an interesting and precious experience."

ADVISORY BOARD

Janet M. Box-Steffensmeier – College of Arts and Sciences, Interim Executive Dean and Vice Provost

Morton O'Kelly – Social and Behavioral Sciences, Professor and Divisional Dean

Elena Irwin – The Sustainability Institute, Faculty Director

Joshua Sadvari – University Libraries, Geospatial Information Librarian

Robert Greenbaum – John Glenn College of Public Affairs, Professor and Associate Deal for Curriculum

Gulsah Akar – Knowlton School of Architecture, City and Regional Planning, Associate Professor and PhD Program Chair and Graduate Studies Chair

Darrick Hamilton – Kirwan Institute for Study of Race and Ethnicity, Director and John Glenn College of Public Affairs, Professor

Shoreh Elhami – The City of Columbus, Enterprise Data Architect & Citywide GIS Manager

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