DEAR FRIENDS OF CURA,

2020 is quite the year. As I write this letter, we are living through an historic pandemic that will fundamentally change our lives, our cities and our planet. 2020 is also the sesquicentennial of The Ohio State University. For both negative and positive reasons, 2020 is a time to reflect on how we move beyond the immediate crisis to a world beyond.

A global crisis like COVID-19 demands both immediate action and learning lessons for the future. The Center for Urban and Regional Analysis (CURA) and Ohio State are contributing to efforts, in Ohio and beyond, to understand the pandemic and its broader implications. We currently have several projects underway to help us understand how pandemics spread, how economies behave under stress and how public transit is enabling essential mobility. We are also working with other campus entities, including the Translational Data Analytics Institute and the Sustainability Institute, to develop better data infrastructure, both immediately for COVID-19 and longer term for other impending shocks. This will allow Ohio State researchers to respond quickly with new, problem-driven research and collaborations, both on campus and in the community.

As we close the first 150 years of Ohio State, we see progress in its evolution as an urban university, including the creation of CURA in 2001 and the simple but powerful addition of the word “urban” to its mission statement in 2016. The 21st century is the first majority urban century in humanity’s history, and we face profound challenges in creating innovative, inclusive and environmentally-friendly cities and regions that can gracefully handle shocks such as pandemics and climate change. Ohio State has a strong collaborative culture and a keen sense of social responsibility, as reflected in the university motto, “Education for Citizenship.” Our current crisis and its disruptions make apparent the unsustainable and brittle trajectories many communities were following. We can learn from this crisis to be better citizens, not just of our local communities, but of the entire world.

In this annual report, you will read about research projects and outreach activities on questions and issues facing cities and regions as we strive for a more sustainable and resilient future. We are also passionate advocates for the geospatial data and spatial analytics that enable new kinds of convergent urban science. This new science can help address the challenges of our current crisis and teach us how to be stronger as we move forward. Perhaps in the future, people will say, “The coronavirus crisis of 2020 was terrible, but we learned and it saved us.”

Regards,

HARVEY J. MILLER, PHD
DIRECTOR
CURA's graduate and undergraduate researchers are among the best GIS and urban science students in the world. Involvement in our research projects enhances their educational experience and provides exposure to a professional setting. Our students not only work on cutting-edge research projects but also participate in scientific conferences and publishing, providing local, national and international exposure. Experience gained at CURA provides students with a skillset that distinguishes them from other candidates when seeking employment.

STUDENT ENGAGEMENT
CURA’s graduate and undergraduate researchers are among the best GIS and urban science students in the world. Involvement in our research projects enhances their educational experience and provides exposure to a professional setting. Our students not only work on cutting-edge research projects but also participate in scientific conferences and publishing, providing local, national and international exposure. Experience gained at CURA provides students with a skillset that distinguishes them 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 and urban studies, as well as the general public. CURA hosts a series of speakers from academia, the private sector, government and foundations during the academic year. Our speaker series is highly engaging and dynamic, introducing students, faculty and community members to emerging topics in the fields of urban science and practice. 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 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 create sophisticated analyses and models to help understand the spatiotemporal patterns hidden in data. We also help researchers communicate their findings to their audiences more effectively using maps, charts, interactive applications and other visualization tools. We manage a high-performance computing environment that is optimized for analysis of large geospatial datasets.

TOOL AND APPLICATION DEVELOPMENT
Staff and research assistants at CURA are skilled in the development of special-purpose geospatial data science, spatial analysis, and mapping tools and applications. Our customers leverage our expertise in geocomputational 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.
CURA serves as an innovation hub that 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 possess strong technical expertise in many fields related to geospatial data science and urban science.

Our services are provided to clients on campus and in the community. In a fee-for-service model, CURA charges an hourly rate and provides a detailed project proposal that defines the scope of work, budget and timeline. CURA also participates in the development of funding proposals and projects, with CURA faculty and staff serving in varying roles.

CURA provides the following services:

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

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 help customers understand which technology, presentation and design options are ideal for their needs.

SPATIAL ANALYSIS
Recent advances in computing, GIS technologies and data availability allow for increasingly nuanced understanding of spatiotemporal patterns. Decisions today are increasingly data-driven, and spatial analysis helps us make decisions based on the results.

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

CURA participates in projects that help fulfill Ohio State’s urban mission. 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.

2019-2020 has brought new and exciting research pathways that have allowed us to build upon existing skills. CURA is currently working on 12 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, web-based mapping tool and app development.

CAMPUS SUSTAINABILITY MAP
A web map highlighting sustainability-related features and projects across campus, and optimized for embedding into existing websites and other web maps. This project was funded by a grant from the Sustainability Institute.
FRANKLIN COUNTY OPIOID CRISIS ACTIVITY LEVELS (FOCAL) MAP
FOCAL Map, an interdisciplinary collaboration with researchers from across campus and EMS agencies throughout the county to map opioid overdose incidents with high spatiotemporal resolution and visualize them in the context of relevant socioeconomic and administrative data. This project has been supported by The Ohio State University Provost’s Opioid Innovation Fund and an Overdose Data to Action grant funded by the Centers for Disease Control and administered by Franklin County Public Health.

POULTRY DISEASE MAP
Custom ArcGIS web map application that shows the relation of bird disease to farms in Ohio. The data displayed is simulated to show how the application works.

NEW PROJECTS TO WATCH:

GEOHAI (HOSPITAL ACQUIRED INFECTION)
A web application that uses spatial modeling to help Wexner Medical Center staff detect and mitigate outbreaks of infections.

SUSTAINABLE COLUMBUS OBSERVATORY
A long-term initiative in collaboration with a transdisciplinary group of partners across campus to create a longitudinal data warehouse, analytical web application and associated research agenda to benchmark sustainability-related indicators in central Ohio and leverage opportunities to perform natural experiments.

PROJECT PROFILE:
REGIONAL SUSTAINABILITY DASHBOARD
CURA and the Mid-Ohio Regional Planning Commission (MORPC) are launching an interactive, online dashboard that provides current and accurate information on Central Ohio’s sustainability accomplishments.

The Regional Sustainability Dashboard serves as the official status report for Central Ohio’s progress toward the Regional Sustainability Agenda, which sets the framework for communities and regional partners to work toward common goals. It was created out of the need for greater access to data and information in order to shed light on the impacts of collective sustainability efforts across the 15-county region. The dashboard is intended for use by anyone with an interest in the sustainability of the region, including planners, elected officials, researchers, the media, the public, and you!

The sustainability measures displayed on the dashboard are derived from MORPC data and authoritative third-party data and has undergone thorough quality checks. The measures are updated as often as practical, depending on the nature of the data and the release cycles of the data providers. The data and processes used to compute the measures are fully documented and are available via links provided on the dashboard.

The data is made available for display on the dashboard as soon as the automatic ingestion process is complete. Whenever new input data is available, ingestion can be triggered again manually, or it can be triggered automatically according to a schedule or some external event.

Thanks to the flexibility built in to the ingestion pipeline, we are confident that it will be able to accommodate the forthcoming updates to the MORPC Regional Sustainability Agenda, and perhaps it even can be adapted for unrelated CURA projects in the future. The dashboard can be accessed at rsd.morpc.org. It will be regularly updated as more data and information on the region’s progress becomes available.
INTERNAL NETWORK (OHIO STATE):
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 – 2
- Austin E. Knowlton School of Architecture | College of Engineering – 3
- Civil, Environmental and Geodetic Engineering | College of Engineering – 4
- College of Public Health – 5
- Computer Science | College of Engineering – 6
- Environmental Health Sciences – 7
- Geography | College of Arts and Sciences – 8
- John Glenn College of Public Affairs – 9
- School of Health and Rehabilitation Sciences | College of Medicine – 10
- Sociology | College of Arts and Sciences – 11

Centers and Institutes:
- Byrd Polar & Climate Research Center – 12
- Institute for Population Research (IPR) – 13
- Kirwan Institute for the Study of Race & Ethnicity – 14
- STEAM Factory – 15
- Sustainability Institute – 16
- Translational Data Analytics Institute – 17

Non-Academic Units:
- Marketing and Communications | College of Arts and Sciences – 18
- Corporate Engagement Office – 19
- Government Resources Center | College of Medicine – 20
- Initiative for Food and Agricultural Transformation (InFACT) | Office of Academic Affairs – 21
- Office of Academic Affairs – 22
- OSU Extension | College of Food, Agriculture and Environmental Sciences – 23
- Planning, Architecture and Estate | Facilities Information Technologies Services – 24
- Smart Campus – 25
- Technology Services | College of Arts and Sciences – 26
- University Libraries – 27
- Wexner Medical Center – 28

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 – 1
- Central Ohio Transit Authority (COTA) – 2
- Central Ohio Trauma System – 3
- City of Columbus – 4
- City of Dublin – 5
- Mid-Ohio Regional Planning Commission (MORPC) – 6
- Mighty Crow Media – 7
- National Neighborhood Indicators Partnership – 8
- Smart Columbus – 9
- Ohio Urban and Regional Information Systems Association (URISA) – 10

External Partners
- Action for Children – 1
- Central Ohio Transit Authority (COTA) – 2
- Central Ohio Trauma System – 3
- City of Columbus – 4
- City of Dublin – 5
- Mid-Ohio Regional Planning Commission (MORPC) – 6
- Mighty Crow Media – 7
- National Neighborhood Indicators Partnership – 8
- Smart Columbus – 9
- Ohio Urban and Regional Information Systems Association (URISA) – 10
OUTREACH AND ENGAGEMENT

CURA organizes multiple events each semester designed to apply to a wide range of urban-related interests. From urban policy to time geography, CURA’s event series offers engaging and enlightening content across the full spectrum of academia. Events are open to the OSU community and the local community. 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 the 2019-20 academic year, we hosted two diverse panels of academics and practitioners called “Urban Air Quality: A Global Health Crisis” and “Food Security & Healthy Communities.” The air quality event brought together experts and researchers in the field of environmental science, natural resources, public health, and the real-world expertise of city and state officials to discuss how air quality affects everyone. The food security event brought experts in the field of planning and food systems to discuss the needs of food security in our communities. These events exemplified CURA’s mission to bridge academia and community.

OUTREACH PROGRAMS

COFFEE WITH CURA
Coffee with CURA is an opportunity for students, faculty and staff to stop in and discuss their geospatial analysis needs with CURA staff and other interested parties. 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. Through this forum we are often able to help researchers answer their minor questions on the spot, and discussions of larger questions often lead to projects and other avenues for collaboration.

SPEAKER SERIES
CURA has a long tradition of bringing novel ideas and thoughtful discussion about urban and regional issues to Central Ohio through our semiannual speaker series. Our guest speakers include world-renowned academic researchers, top-level practitioners, local policy makers and community members, Central Ohio government and our very own Ohio State representatives. Each spring and fall we typically 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 Ohio State’s Facilities Information Technology Services to host this annual event.

EVENTS
CURA is involved in many university events through our partnerships with affiliated departments, programs, collaborating centers and institutes ranging from Westfest, which is held annually, 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 who would like to use GIS in their research but are unfamiliar with the software. Some workshops we have offered in the past include: GIS for the Rest of Us, Basics of Web Mapping using ArcGIS Online, and GIS and Mapping at Ohio State: Is there an App for that? We usually offer these workshops every spring and fall semester. This year, due to the coronavirus, we started putting together online GIS-related workshops that you can do on your own, at your own pace. Currently we are offering the Using ArcGIS StoryMaps In Your Research and Teaching workshop totally online.
LEARNING OPPORTUNITY HIGHLIGHT

ARCGIS ONLINE CHALLENGE (LEARNING PATH)

CURA and University Libraries had big outreach plans for the summer of 2020, but these plans, like so many others, needed to change as a result of COVID-19. We were planning to host a more intensive “GIS Bootcamp” that would have built upon many of the introductory workshops we have collaboratively offered in past semesters. But with the bootcamp no longer a possibility, we decided to turn our attention to developing an asynchronous learning experience that could help Ohio State researchers and instructors get a crash course in ArcGIS Online while working remotely. The ArcGIS Online Challenge is a self-paced, asynchronous, 100% online learning path that was designed to be completed over the course of five weeks, with 2-3 hours of work per week. Each weekly module consisted of a mix of “lecture” content (i.e., blog posts or videos highlighting key concepts and use cases) and a “lab” exercise, where the participants got some hands-on experience with the methods and tools covered in each module. Each week during the challenge, participants got an email with information about that week’s topic and content, along with instructions for completing the associated activities. There was no deadline for completing these modules, and our summer challenge included approximately 120 participants.

Our goal with this learning path was to provide an introductory overview of GIS and to increase awareness of potential applications of geospatial methods and technologies among a broad audience of researchers and instructors across Ohio State. We viewed this as a first step toward learning more about GIS and toward engaging with us for more targeted support as participants sought to apply what they’d learned in the challenge to their own research and teaching.

While the ArcGIS Online Challenge website is available for use at any time, the high level of interest in our summer “cohort” offering has inspired us to offer around round in fall 2020.

Below is a description for the challenge:

Have you come across an interactive map on the web and wondered “how did they make that?” Have you heard about GIS (geographic information system) and wished you could learn more about how it might be useful for your own research and/or teaching? If you answered “yes” to either of these questions, then the Autumn ArcGIS Online Challenge is for you! Through completing this challenge, you will:

- Describe the potential of GIS beyond “dots on a map” and for cross-disciplinary applications;
- Use ArcGIS Online apps individually and in conjunction with one another for common tasks in geospatial projects;
- Develop an outline for using GIS in a research project or teaching assignment relevant to your own work.

This online learning path is offered through a collaboration between the Center for Urban and Regional Analysis and the University Libraries and was created by Josh Sadvari, Geospatial Information Librarian and Katie Phillips, Outreach Coordinator.

To view or take this challenge go to: go.osu.edu/agol-challenge.

JULY 15-17, 2019 — New Mobility and Cities Workshop – NSF funded CURA, STEAM Factory, Sustainability Institute

AUGUST 2, 2019 — Tabling at the Ohio State Fair CURA

SEPTEMBER 5, 2019 — Coffee w/ CURA: A GIS discussion open to the public CURA

SEPTEMBER 6, 2019 — Panel Discussion: Urban Air Quality CURA

SEPTEMBER 9, 2019 — Class Presentation: Anthropology GIS CURA, University Libraries

SEPTEMBER 23-25, 2019 — Ohio GIS Conference OGRAF, County Engineers Association of Ohio, URSIA Ohio Chapter, CURA presented

OCTOBER 4, 2019 — CURA Speaker Series: Dr. Michelle Bell, Air Pollution and Human Health Future: Emerging Planning Issues CURA

OCTOBER 8, 2019 — Workshop: Web Mapping Basics with ArcGIS Online CURA, University Libraries

OCTOBER 10, 2019 — Coffee w/CURA A GIS discussion open to the public CURA

NOVEMBER 5, 2019 — Workshop: GIS and Spatial Analysis at Ohio State: Is there an App for That? CURA, University Libraries

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

NOVEMBER 13, 2019 — GIS Day 2019 CURA, Geography Department, Enterprise GIS, University Libraries

EVENTS CONTINUED ON NEXT PAGE
COLLABORATION AND NETWORKING HIGHLIGHT
NEW MOBILITY AND CITIES WORKSHOP

Last summer, CURA along with the STEAM Factory, the Sustainability Institute and Portland State University hosted a National Science Foundation-sponsored workshop on New Mobility Technologies, Cities and Data at the STEAM Factory space in Franklinton, a neighborhood in Columbus, OH. The two-day workshop focused on exploring a research network of urban sustainability observatories through data-enabled university-community partnership.

Workshop participants explored how to leverage data from smart city and other technologies to create urban data observatories that can track community progress toward environmental sustainability and social equity and cultivate an innovative ecosystem for new mobility technologies that foster these goals. Participants also discussed how to use urban observatories to enable new forms of sustainable urban system science and policy that involves universities, community stakeholders and citizens as partners.

More than 60 people participated, including Ohio State and Portland State faculty and staff as well as community stakeholders from the public and private sectors in both cities. Local participants include the Mid-Ohio Regional Planning Commission, Smart Columbus, Central Ohio Transit Authority, the Columbus Foundation, EmpowerBus and Honda. Portland participants included members of the city’s Department of Transportation, Portland TriMet and SmartPDX. Also represented were speakers and participants from the University of Minnesota, Rutgers University, the U.S. Forest Service and the Urban Sustainability Directors Network. Columbus City Council President Shannon Hardin inspired the participants with opening remarks about the city’s mission to improve social equity using innovative mobility.

EVENTS CONTINUED...

NOVEMBER 15, 2019 — CURA Speaker Series: Dr. Noreen McDonald, Healthcare Transportation Services

JANUARY 24, 2020 — Panel Discussion: Food Security and Healthy Communities

JANUARY 28, 2020 — Think Beyond Summit – Urban Universities + Thriving Communities

JANUARY 30, 2020 — Workshop: Introduction to Web Mapping with ArcGIS Online

FEBRUARY 7, 2020 — Food Security and Healthy Communities Speaker Series: Dr. Samina Raja, University at Buffalo

FEBRUARY 13, 2020 — Coffee w/ CURA: A GIS discussion open to the public

FEBRUARY 26, 2020 — Presentation: GIS and Mapping at Ohio State: Is There an App for That?

MARCH 6, 2020 — Food Security and Healthy Communities: What’s Happening in Ohio

MARCH 31, 2020 — Workshop: Using ArcGIS StoryMaps in Your Research and Teaching

MAY 8, 2020 — Panel Discussion Webinar: The 2020 Census and COVID-19: Implications for Communities

JUNE 1, 2020 — Asynchronous Workshop: ArcGIS Online Challenge (Learning Path)

JUNE 12, 2020 — Panel Discussion Webinar: Economic Impact of COVID-19 on Communities

JULY 31, 2020 — Panel Discussion Webinar: Social Equity Impact of COVID-19 on Communities

AUGUST 14, 2020 — Panel Discussion Webinar: Impact of COVID-19 on Mobility in Central Ohio

MERCHANDISE AVAILABLE:

- T-shirts
- Mugs
- Pencils
- Buttons
- Stickers

All proceeds from merchandise sales benefit the Center for Urban Renovation/Enhancement (CURA).

CURA stands for the Center for Urban Renovation/Enhancement, a university-research institute at The Ohio State University that conducts community-focused research on urban sustainability, community engagement and economic development in Columbus, Ohio. CURA’s mission is to help cities become more sustainable and equitable through interdisciplinary research and outreach.

For more information, visit www.cura.osu.edu.
FOOD SECURITY AND HEALTHY COMMUNITIES: WHAT’S HAPPENING IN OHIO PANEL DISCUSSION

During the 2020 spring academic semester, CURA focused its events around the theme of Food Security & Healthy Communities. Nearly 1% of the world’s population is food insecure or malnourished, and it may get worse: By 2050 farmers will need to produce almost 60% more food than currently. In Franklin County, Ohio, food insecurity is affecting Columbus neighborhoods disproportionately. The type of food that is available to residents in these neighborhoods also plays into food insecurity. People who live in areas that do not have easy access to supermarkets tend to rely on stores that sell nutritionally-deficient or more expensive food. Transportation services, sidewalks and the availability of crosswalks are also variables in residents’ access to healthy food options.

CURA hosted panel discussions with local community members from Central Ohio, Dr. Somina Raja of University of Ohio. CURA also hosted experts from Cleveland, Dayton and Cincinnati areas who made up our What’s Happening in Ohio panel discussion. These experts included:

Marc White, one of the co-founders and farm operations manager from Rid-All Green Partnership, a local non-profit from the Kinsman neighborhood of Cleveland. Rid-All Green Partnership is an urban farm that educates people from the Kinsman neighborhood of Cleveland. Rid-All Green Partnership brings urban farming education and training to the Kinsman community. They have several greenhouses, hoop houses and an aquaponics fishery on site.

Michaela Oldfield, Director of the Greater Cincinnati Regional Food Policy Council, which is part of the Green Umbrella Regional Sustainability Alliance (GURSA). GURSA serves as the backbone organization for collective and collaborative impact on creating resilient, sustainable region solutions for all. Oldfield’s work at GURSA is within a 10-county area, and its goal is to be the convener of collaboration on food policy and environmental change. Their current projects include healthy soils, farm to school, healthy eating and healthcare and zero food to landfills.

Nicole Wasmuth, AmerCorps VISTA and registered nurse of Hall Hunger Initiative in Dayton. Hall Hunger Initiative works with the Dayton community partners to create a sustainable and just food system in the Miami Valley area of Ohio.

Alan Wight, a faculty member at Christ College of Nursing and Health Sciences and the University of Cincinnati. Wight’s presentation was about how Rid-All Green Partnership brings urban farming education and training to the Kinsman community. They have several greenhouses, hoop houses and an aquaponics fishery on site.

Nicole’s presentation showed the link between the health system and food system in America and ways to improve upon it.

Alan gave a presentation on the food mapping efforts they are involved in in the Cincinnati community. The maps integrate the beauty of art with the sophistication of geographic science to help people in the Cincinnati community understand where they can find local urban farms and edible food.

Harvey Miller earned his PhD in geography at Ohio State in 1991, returning in 2003 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 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.

Miller also chairs the Mapping Science Committee of the U.S. National Academies. 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, Consultation Manager

Areas of Expertise:
• Geographic Information Systems (GIS)
• Project Management
• City and Regional Planning

Education:
• 2019 – Master of City and Regional Planning
• 2013 – MS Electrical and Computer Engineering, The Ohio State University
• 2006 – BS Electrical and Computer Engineering, The Ohio State University

Adam has 10 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:
• MPAL, Public Administration and Leadership, The Ohio State University
• 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, Department 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.

YULU CHEN
PhD student
Civil, Environmental and Geodetic Engineering, College of Engineering

VARUN RANGANATHAN DHANVANTH
MS student
Computer Science, College of Engineering

JINHYUNG LEE
PhD student
Geography, College of Arts and Sciences

JIALIN LI
PhD student
Geography, College of Arts and Sciences

YONGKANG JING
Chunyu Liu
Nicole Stephan
Ruiyu Tan

GRADUATE STUDENTS

YUCHEN LI
PhD student
Geography, College of Arts and Sciences

LUYU LIU
PhD student
Geography, College of Arts and Sciences

KAUSHIK MANI
MS student
Computer Science, College of Engineering

SIDDHARTH MATHIAZHAGAN
MS student
Computer Science, College of Engineering

UNDERGRADUATE STUDENTS
GRADUATE STUDENT PROFILE HIGHLIGHT

JIALIN LI

Education:
• PhD Student, Geography

Research Interests:
Jialin’s research is on the application of AI and machine learning techniques to understand and generate map images. For map understanding, he applies deep learning methods to detecting map elements (e.g., map title and legend) of choropleth maps and extract information from map elements. For example, if a choropleth map about obesity rate of the United States is given, we can know the map is about obesity rate in the U.S. from its title or legend heading, and the obesity rate value and corresponding representing color can be found for each category in the legend. Besides understanding maps, machine learning methods will also be used to generate map images in his research. In CURA, he is working on the sustainability dashboard project for MORPC (Mid-Ohio Regional Planning Commission). The dashboard aims to present the progress of regional sustainability in Mid-Ohio. He is mainly responsible for the frontend of the dashboard web application.

“Working in CURA is definitely an exciting experience. First, the projects at CURA are very practical. We would like to solve the real problems together with local organizations. I feel very satisfied when I know that our outcomes are useful and helpful for the local people. Second, throughout the projects, we also conduct related researches, e.g., in cartography, geovisualization and urban study. Last but not the least, our team members are very nice to work with. As a graduate student, sometimes I have urgent academic study tasks and cannot finish my work on time. In those cases, our project manager and outreach coordinator will help me with the issues and give me lots of flexibility on the work.”

GRADUATE STUDENT PROFILE HIGHLIGHT

SIDDHARTH MATHIAZHAGAN

Education:
• MS Student, Computer Science

Research Interests:
I came to Ohio State in August 2018 from India to pursue my Masters in Computer Science. It has been a wonderful experience having had the opportunity to meet and learn from some of the best at Ohio State. At CURA, I have worked along with Yongkang in the development of the Campus Sustainability Map and worked on the development of an upload tool for the FOCAL map application to facilitate easier upload and validation of data.

“The team at CURA is always encouraging and gives us the flexibility to work the way we like. This helps in bringing out the productivity and also coming up with innovative solutions to the challenging projects.”

PUBLICATIONS AND RESEARCH

Publications by CURA’s faculty, staff and students during 2019-2020.


The COVID-19 pandemic is an unprecedented event in recent human history. It is almost exactly a century since the world has seen a global pandemic at this scale. Many locales in the United States mandated “shelter in place” orders, with exceptions for essential businesses, such as healthcare, public health, and public safety. This has dramatically altered the dynamics of our cities and regions.

CURA researchers are studying the impacts of COVID-19 on mobility to understand urban dynamics and help plan for more resilient urban systems. For example, CURA researchers compared traffic data for March-April 2019 versus the same period in 2020 in Ohio’s three major cities (Cleveland, Columbus, and Cincinnati). They found that lower traffic during the pandemic has led to more extreme speeding. This research, published in the journal Transportation Findings, was covered by local, state, national and international news media. CURA researchers are also studying the decline in public transit demands at a national scale, discovering dramatic changes that reflect the social and economic dimensions of transit dependency in US communities. A third project examines the changes in travel flows in Columbus, showing how urban mobility changes and localizes during a pandemic.

Ohio drivers encountering fewer vehicles on the roads during the COVID-19 pandemic are responding by driving faster, a new Ohio State University analysis finds.

Researchers at Ohio State’s Center for Urban and Regional Analysis (CURA) compared traffic data in Columbus, Cleveland and Cincinnati from March 28 to April 19 last year with the same time period this year, when people were staying home because of the pandemic. Ohio’s stay-at-home order went into effect on March 23.

Results showed that in all three cities, the average level of speeding was up slightly, but “the levels of extreme speeding have increased dramatically,” said Harvey Miller, professor of geography at Ohio State and director of CURA.

“The lack of traffic has really released the desire that some people feel to drive fast.”

Miller and his colleagues used information from INRIX, a private transportation data company, showing speeds on various segments of major roads and highways in the three cities.

For each road segment, INRIX calculates a reference speed, which is the average speed for that segment when there is no major traffic. It is normally close to the speed limit.

Comparing 2020 to pre-pandemic 2019, the number of road segments showing speeding by drivers has more than tripled in Columbus (from 18 percent to 57 percent) and more than doubled in Cleveland (20 percent to 54 percent) and Cincinnati (18 percent to 48 percent).

In all three cities, the average level of speeding above the reference speed since the pandemic began is between 2.1 mph and 2.6 mph, compared to a year ago when the average was 0.8 mph to 1 mph.

But some areas are much higher. Miller points to a section of I-270 on the west side of Columbus, where speeding has averaged 7 to 28 mph above the reference speed during the pandemic. Similar areas exist in Cleveland and Cincinnati.

“Increased speeding during the COVID-19 pandemic has led to more dangerous driving in Ohio,” Miller said. “Compared to last year, far more drivers are exceeding the speed limit by a dangerous margin.”

The threats posed by speeding don’t apply just to pandemic times, he said.

“If there is one thing I would do to improve safety in our communities, it would be to reduce speed on our highways, roads and streets. Speed kills.”

Co-authors with Miller on the analysis were Jinhyung Lee, a doctoral student in geography at Ohio State, and Adam Porr, GIS project manager for CURA.

Overall, in 2019, nearly all the road segments that showed speeding were recording speeds at only a few miles per hour above normal. But in 2020, many more road segments showed much higher levels of speeding, the analysis showed.

“There are stretches of road where people are really opening up,” he said. “The average level of speeding is not very high. But the extremes have gone up quite a bit.”

These findings in Ohio mirror reports from other areas, Miller said. For example, speeding tickets in New York City have doubled, even as traffic is down. In Minnesota, traffic deaths have actually increased, despite the lower vehicle volume.

“The message is that less traffic doesn’t necessarily mean our streets are safer. In some ways, they may be more hazardous because we’re seeing more dangerous speeding,” Miller said.

For some people, this is a chance to live some kind of sports car fantasy or live some kind of racing fantasy. It’s not a fantasy people should be living. It’s very dangerous. Speeding kills, literally.”

- HARVEY MILLER -

Miller was also featured on the Cleveland news for the speeding analysis research. To view the segment, visit go.osu.edu/news5-speeding.
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