University of Michigan-Flint

GEOGRAPHIC INFORMATION SYSTEMS CENTER

GIS Center Newsletter

Issue 6 September 1, 2016

Contents:

The GISC's mission is to leverage interdisciplinary collaborations in the use of geospatial technology (GIS, Remote Sensing, GPS) for research, education, and community service.

Community Partners

GIS Center Participates in the 2nd Annual White House Mapathon!

In late June, Dr. Marty Kaufman and the GIS Center (GISC) were contacted by staff from the White House Office of Management and Budget about participating and presenting at the 2nd Annual White House Mapathon. The GISC was asked to present on their work with the City of Flint in mapping the locations of lead service lines.

The White House Mapathon is a part of President Obama's Citizen Science initiative. The goal of mapathons are to crowdsource map information in areas that are sparsely

Dr. Marty Kaufman and Troy Rosencrants presenting their work with the Flint Water Crisis

mapped or not mapped at all. The use of crowdsourcing allows for data to be inputted quickly and efficiently. At the 1st Annual White House Mapathon, more than 80 mappers were able to make edits on over 400 roads and 1,000 buildings and enter information about 152 different power utilities across the United States.

The GISC was invited because the work completed in mapping the lead service lines for the City of Flint was a small-scale example of crowdsource mapping. The project consisted of 8 individuals working on the same data at the same time to enter in information as quickly and efficiently as possible. The project is an example of crowdsourcing being successful in a real-world situation that was time sensitive.

Student Melissa Hertlein and Dr. Marty Kaufman participating in the Mapathon.

The 2nd Annual White House Mapathon took place in the Eisenhouwer Executive Office Building, located next to the White House, on July 7. More than 140 mappers, including satellite locations in 3 other countries and 7 other states in the US, and an additional 1,500 people participating via live stream made more than 137,000 updates on over 8,300 buildings and 3,700 roads in 3.5 hours. Mappers included students from other universities, staff from the White House, State Department, among others.

Troy Rosecrants (GIS Center Manager), Dr. Marty Kaufman and Melissa Hertlein, student in the Department of Geography, Planning, and Environment, traveled to Washington DC to participate. Dr. Kaufman and Melissa mapped road infrastructure and buildings in Mozambique to assist with malaria prevention in the region and Troy mapped road infrastructure in northern Maine as a part of the US Census program to map remote areas of the United States.

Melissa, Marty, Troy and Courtney Clark, who led the Mapathon.

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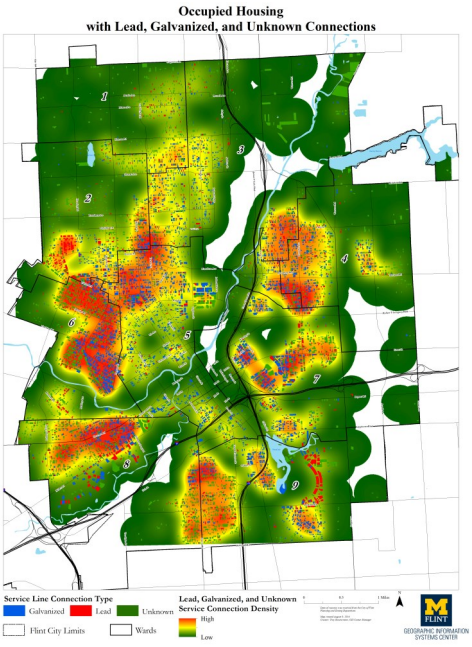
Dr. Rybarczyk Presentations and Fall 2016 Sabbatical Abroad

Dr. Greg Rybarczyk, a GIS associate professor in the Department of Geography, Planning, and Envrionment, was a speaker at the International Conference; Mobile Tartu 2016, held in Tartu, Estonia during July, 2016. The conference's theme was Big Data and social media analysis. Dr. Rybarczyk's talk was entitled: "Pathways to happiness: a comparative study linking Twitter and contextual factors." He also recently presented at the annual Association of American Geographers Conference in San Francisco this past April, 2016. The talk was based on his ongoing federally funded food access project. The title of the presentation was: "Spatiality and food access: Measuring geographic access to ethnic restaurants and grocers."

Professor Rybarczyk will be spending his fall 2016 on sabbatical as a visiting professor at the University of Wuppertal, Center for Transport, in Germany during the fall 2016 semester. While there, his primary task will be working with faculty and graduate students from the Department of Architecture and Civil Engineering on measuring bicyclist wayfinding using simulation models and data obtained from the field. The current project is already underway and will end in a peer-reviewed publication in 2017. In addition to this exciting new research project, Professor Rybarczyk will be presenting his work on travel sentiment analysis using GIS at the Higher Institute on Territorial Systems for Innovation in Torino, Italy during his sabbatical.

Flint Water Crisis GISC Involvement Update



In January 2016, the GIS Center hired 8 assistants and created digital files of the service line connections within the City of Flint, in response to the Flint Water Crisis. By the end of February, the GIS Center had completed the work and city officials were able to use the information to determine where replacements were needed.

Since then, the GISC has continued to be involved in the discussion of areas within the city that should be replaced first. Working with General (ret) Michael McDaniel and Captain Nick Anderson of the National Guard, the GISC has performed analysis on density of service line connections, along with creating maps for determining where in the city replacements are needed. These maps have included overlays showing locations of lead, galvanized, and unknown service line connections, as well as potential future road projects. The locations of future road projects allows city officials to choose areas that won't be dug up and replaced by future projects.

Through the presentation of these maps, along with spreadsheets of addresses, city officials determined a "fast start" round of replacements, which included 30 addresses. Of those 30, just over half were the same as what the data the GISC created, with 6 of the addresses being unknown in the GISC data. The next step is a group of 250 addresses spread out over the city that will be replaced. The GISC was involved in the process, similar to the first 30 locations.

In the future, the GIS Center will continue to be of any assistance to the City of Flint and the officials in charge of making decisions in the lead service line replacements.

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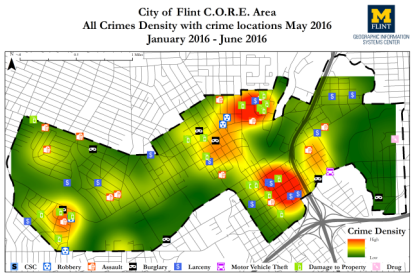
Flint Community Visualization Update

In September 2015, the GIS Center received a grant from the Charles S. Mott Foundation to build on UM-Flint's existing spatial data repository and test a prototype interactive geospatial website that will enable various community members to access, visualize, manipulate, and analyze baseline data. The data repository will allow for an inventory, organization, and storage of local and regional data, as well as data from community organizations. These datasets will then be made available to the various community stakeholders and the public for viewing, downloading, and basic spatial analysis.

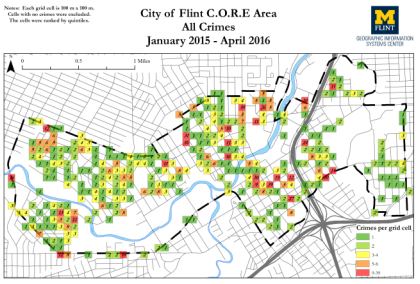
The project has been named Map Flint and is still in development. In June 2016, the GIS Center hired a web programmer, Phillip Francis, to help with the development of the site. Phillip is a computer science professor at Eastern Michigan University. His expertise includes server operations and website scripting. His knowledge will help in the development of the mapping prototype. The site will have a homepage with various mapping interfaces allowing different topics to be mapped separately. Once the prototype site is up and running, training sessions/workshops will be held for shareholders/advisory board members on how to best use the site. The end of the grant is the end of December 2016.

Renew The Avenue Update:
Public Safety Project along the University Corridor

In late 2014, the GIS Center became part of a team that was awarded a 3-year, $1 million grant from the Department of Justice Byrne Criminal Justice Innovation (BCJI) Program. The GIS Center is the lead GIS analysts on a team with researchers from the University of Michigan-Ann Arbor, Michigan State University, and Kettering University, along with area community organizations. The overarching goal of this project is to reduce blight and crime in the University Avenue Corridor within the City of Flint.



Currently, the grant is in the implementation phase. During this phase, actions are being tested in the hot spots that were identified within the planning phase of the grant. One hot spot testing has been completed, with some success of reducing crime in the area in the past 3-6 months. Now, another hot spot has been chosen and crime reduction strategies will be



implemented to test the effect those activities may have on crime.

In addition to that, the GIS Center and other researchers on the grant have been brought in with the C.O.R.E. Security area of Flint, which includes the study area of the grant, downtown Flint, and the Mott Community College/Flint Cultural Center area. With this group, a Community Compstat program has started. The GIS Center provides monthly updates in the form of density and fishnet maps of the previous 6 months, to help show recent trends in the CORE Security area.

With the Community Compstat group, various business, university, and police personnel meet once a month and discuss the previous months crime trends. This discussion includes review of the crime statistics, discussion of particular crimes, and notification of activities occurring in the area. During the discussion of particular crimes, suspects (if known), descriptions, or arrested individuals are discussed to give all in attendance an update. This information helps area personnel have an idea of the types of crime being committed in their area and if the crimes have been resolved or not.

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GIS Faculty User Spotlight:

Thomas Henthorn
- Professor, History

Brief Bio: Thomas Henthorn is an Associate Professor in the Department of History. His research focuses on the ways historians practice their craft outside the academy. His current research focuses on the intersections of public history, with an emphasis on historic preservation and urban history. Professor Henthorn has a particular interest in the ways historical data can be disseminated to public audiences. The use of GIS is a perfect example of ways historians can present their work in novel ways to a variety of users.

How do you use GIS within your research?
We use GIS to better understand how to research and preserve the built environment. We are currently trying to create an inventory of nineteenth century residential structures in the city of Flint. The highest concentration of these historic homes is in the Carriage Town district which is threatened by development plans from Kettering University and Hurley Medical Center. Our current project compares the inventory of structures over time and demonstrates the loss of historic assets in the neighborhood over the last two decades.

Do you have any plans on using GIS in future research?
Future research projects include mapping assets in Flint's other historic district, Civic Park. We hope to demonstrate the loss of historic assets in the neighborhood. For the past four years, the Genesee County Landbank has utilized Hardest Hit Funds to demolish dozens of historic homes in the neighborhood created in 1919 by the General Motors Housing Corporation. Another project includes using GIS to map Old Calvary Cemetery, one of flint oldest cemeteries established in 1847. This project will coincide with a preservation project on the site.

Do you use GIS while you are teaching? If so, how? We use GIS to expose students in history courses of the interdisciplinary mature of public history – especially historic preservation. Students use GIS in historic preservation courses to learn about ways spatial data can advocate for the preservation of the built environment.

What is your favorite aspect of using GIS? The aspect I appreciate most about GIS is the ways we can repackage historical data and present it to users in a way that enhances the narrative of our topic. In the case of historic preservation, for example, the spatial representation of historic assets disappearing from the landscape is a powerful and persuasive tool that enriches our story about Flint's built heritage.

GIS Certificate Student Spotlight:

Melissa Hertlein—Senior

What is your major? Environmental science and planning, as well as, energy and sustainable systems in the Geography, Planning, and Environment Department at the University of Michigan-Flint. I am getting a minor in City and regional planning, as well as, physical geography.

What attracted you to the department? I thought that the department offered multiple majors that worked well with my interests and pursuits at the university. The department offered both small class sizes, as well as, applicable real world knowledge that can be used in conjunction with multiple fields and careers.

What made you interested in GIS? I was initially interested in GIS because of my future career goals. GIS is a desired technique in my chosen career path and can be an excellent tool for multiple professions.

What is your favorite aspect of GIS?
My favorite aspect of GIS is the potential to help people worldwide even from home. I have mapped for malaria prevention in Mozambique with countless others on a crowd sourced GIS project in Washington D.C. This was an extremely rewarding experience made possible through GIS. I believe GIS can help the world for the greater good.

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GIS News

⇒ ArcGIS 10.4.1 has been released by ESRI. To find out about the new features for ArcMap, ArcPro, ArcGIS for Server and more, go to http://www.esri.com/software/arcgis/new.

⇒ In July 2016, ESRI and the State of Michigan Center for Shared Solutions announced a partnership, in which ESRI will house and manage 25 TB of orthoimagery data for the state.

GIS Job Boards

⇒ URISA (http://www.urisa.org/index.php?src=jobs)
⇒ AAG Job Board (jobs.aag.org)
⇒ www.gjc.org
⇒ www.mygisjobs.com
⇒ www.gisjobs.com

Current/Recent Activities in the GIS Center

Presentations

- Troy Rosencrants presented at the IMAGIN Annual Conference in Traverse City on May 15, 2016 about the work the GIS Center completed to help the City of Flint during the Flint Water Crisis, titled "Where is the Lead: The Case of Flint, MI."
- Greg Rybarczyk presented a talk titled "Spatiality and food access: Measuring geographic access to ethnic restaurants and grocers" at the Annual AAG meeting in San Francisco, March 29-April 2, 2016.
- Greg Rybarczyk presented "Pathways to happiness: a comparative study linking Twitter and contextual factors" at Mobile Tartu, 2016—Mobile Data at the University of Tartu in Estonia, June 29-July 7, 2016.
- Troy Rosencrants will be presenting at the 21st Annual MiCAMP conference at Boyne Mountain Resort on September 9, 2016. The presentation will be discussing the GISC's work with the City of Flint on the Flint Water Crisis.

Projects

Research

- The GIS Center has helped geocode addresses of survey respondents for her research dealing with the Flint Water Crisis.
- The GIS Center helped on create a dataset for a grant on Flint infrastructure with researchers out of the University of Michigan-Ann Arbor.

Consulting

- Troy Rosencrants has assisted Jennifer Wray, adjunct faculty in the Sociology Department, with her GIS work in her research.

Outreach

- Troy Rosencrants participated on the City of Flint's hiring committee of a GIS Technician at the end of August.

GIS Center and GPE Department Recent Publications

- **Victoria C. Morckel** (2016): Using suitability analysis to prioritize demolitions in a legacy city, *Urban Geography,* DOI: 10.1080/02723638.2016.1147756
- Hwang Jae-Hoon, Church Jared, **Lee Seung-Jin**, Park Jungsu, and Lee Woo Hyoung (2016). Use of Microalgae for Advanced Wastewater Treatment and Sustainable Bioenergy Generation. *Environmental Engineering Science.* Doi: 10.1089/ees.2016.0132

Upcoming Conferences

– MiCAMP Annual Conference
The 21st Annual MiCAMP conference will be at Boyne Mountain Resort, Sept 7-9,2016. For more information, please visit http://micamp.org/conference/.

– AAG Annual Meeting
The AAG Annual Meeting will be in Boston, MA on April 5-9, 2017. More information at www.aag.org/cs/annualmeeting.

– *ESRI* User Conference
The annual User conference by *ESRI* will be held at the San Diego Convention Center July 10-14, 2017. More information is at http://www.esri.com/events/user-conference.

National Geography Awareness Week!

The GISC is planning on holding events this fall and during National Geography Awareness Week, which is November 13-19, 2016. Keep an eye on www.umflint.edu/gis to find out more.

U of M Faculty, Staff and Students Have Free Access to Virtual GIS Courses

All University of Michigan faculty, staff, and students have access to **free** *ESRI* Virtual Campus GIS courses. No matter your expertise there is a course for you. For more information please visit http://guides.lib.umich.edu/content.php?pid=161311&sid=1363686 and follow the instructions listed under ESRI Virtual Campus Courses.