

# LIZ ROTEN

I am a highly motivated data scientist and cartographer with a passion for data visualization. I make complex topics easy to understand using compelling visual design. My static and interactive visualizations are attractive and powerful tools for decision making.



## EDUCATION

2018  
|  
2014

**B.A., Geography, (Data Science, Community and Global Health)**  
Macalester College

📍 St. Paul, MN



## EXPERIENCE

current  
|  
2018

**Associate Data Scientist**  
Metropolitan Council

📍 St. Paul, MN

- Data scientist in community development research and travel research and modeling.
- Duties include data visualization, research methods and statistical model development, and R package development and maintenance.

2018  
|  
2018

**Research Intern**  
Metropolitan Council

📍 St. Paul, MN

- Developed innovative method for using aggregated and anonymized location-based services (LBS)/ cell phone location data to analyze regional parks traffic patterns across multiple seasons and years.
- Independently created an interactive, online data visualization using open-source tools, such as R Shiny, and a git-based workflow.
- Successfully presented findings to stakeholders and provided complete documentation.

2018  
|  
2016

**Every Penny Counts Emergency Financial Assistance Program Assistant**  
JustUs Health

📍 St. Paul, MN

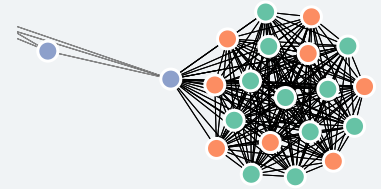
- Completed tasks such as check requests, posting, data management, record keeping, and program development.

2017  
|  
2015

**Submissions Manager**  
Persephone's Daughters

📍 Remote

- Helped produce a high quality literary magazine that fulfills the mission of empowering women who have experienced various forms of abuse and degradation.
- Organized all prose, poetry, and art submissions and direct an international staff via internet communication.



## CONTACT

✉ [roten.elizabeth@gmail.com](mailto:roten.elizabeth@gmail.com)

🐦 [LizRoten](#)

🔗 [github.com/eroten](https://github.com/eroten)

🌐 [lizroten.com](http://lizroten.com)

in [linkedin.com/in/eroten](https://www.linkedin.com/in/eroten)

View this CV online with links at [lizroten.com](http://lizroten.com)

## TECHNICAL SKILLS

R  
R Shiny  
HTML/CSS  
Tableau  
Adobe Illustrator  
VS Code  
JavaScript  
Git/GitHub  
ESRI Products

## OPEN SOURCE CONTRIBUTIONS

`tc.sensors`: R package for pulling data from thousands of traffic sensors across the metro.  
`councilR`: Organization specific package for consistent style and data practices.

2017  
|  
2015

### Teaching Fellow

Breakthrough Twin Cities

📍 St. Paul, MN

- Taught 7th and 9th grade students in Summers 2015 and 2016 with independently developed math and epidemiology curricula
- Planned and executed a leadership retreat for about 40 ninth grade students.
- Planned and executed a two hour show displaying our students' hard work to an audience of at most 650 people, as well as a display hallway, potluck, t-shirt, and planning necessary for each.



## SELECTED PROJECTS AND TALKS

### Regional Parks and the American Community Survey<sup>1</sup>

Metropolitan Council

📍 St. Paul, MN

- Interactive visualization displaying regional parks and trails in context with American Community Survey (ACS) demographic data

### Twin Cities Rent Trends<sup>2</sup>

Metropolitan Council

📍 St. Paul, MN

- Interactive dashboard for analyzing rental housing market trends in the seven-county Twin Cities region
- Users can compare metrics by data source and visualize the relationship between rent and vacancy rates

### Monitoring public adherence to social distancing guidelines with traffic data<sup>3</sup>

2020 AMPO Virtual Conference

📍 Remote

- To estimate public adherence to social distancing guidelines during the Coronavirus outbreak, we analyzed departures from typical traffic volumes on the metro freeway system of the Twin Cities region. A robust modeling approach, open-source code repository, and web-based dashboard for interacting with the data are assisting decision makers in Minnesota as they update social distancing guidelines and monitor economic recovery.

### Using Location Based Services Data for Calculating the Greenhouse Emissions of Communities in Minnesota's Metropolitan Region<sup>4</sup>

2020 AMPO Virtual Conference

📍 Remote

- To address the scarcity of transportation emissions data in Minnesota, the Metropolitan Council of the Twin Cities has developed greenhouse gas emission estimates for transportation and land for cities, townships, and counties of the Twin Cities Metropolitan Region. This session will demonstrate how to leverage big data to centralize this type of research, save public funding, and enable communities to focus their efforts on implementing strategies to become more sustainable.

### councilR<sup>5</sup>

Metropolitan Council

📍 St. Paul, MN

- Created and maintained an organization specific R package
- Package includes templates, color palettes, and standard data processing functions

### ● **Greenhouse Gas Emissions from Passenger and Commercial Transportation<sup>6</sup>**

Metropolitan Council

📍 St. Paul, MN

- Independently developed technique for estimating greenhouse gas emissions from commercial and passenger vehicles
- Collaborated with colleagues to include data in comprehensive greenhouse gas emissions inventory

### ● **Minimum distance to COVID-19 testing facilities<sup>7</sup>**

Metropolitan Council

📍 St. Paul, MN

- A map series analyzing how COVID-19 testing centers are distributed across Minnesota

### ● **A brief introduction to R packages and package development<sup>8</sup>**

Metropolitan Council

📍 St. Paul, MN

- Introduction to the R package I wrote for the Metropolitan Council
- I review the anatomy of an R package, highlight a few package features, and provide an overview of how to use GitHub for collaboration at the Council.

### ● **Who is a local? Using aggregated cell phone location data to research regional parks visitors<sup>9</sup>**

Metropolitan Council

📍 St. Paul, MN

- Talk and workshop for students on using aggregated location-based services (LBS) data to gain insights on regional parks visitors

### ● **Como Regional Park Hex Grid StreetLight Analysis<sup>10</sup>**

Metropolitan Council

📍 St. Paul, MN

- Visualize high activity areas within Como Regional Park and seasonal trends

### ● **Chuck Green Civic Engagement Fellowship**

JustUs Health

📍 St. Paul, MN

- Competitive civic engagement fellowship focused on analyzing and addressing community-based issues. Partnered with JustUs Health
- Independently researched mental health disparities through large-scale client survey and literature review
- Gathered comprehensive feedback from JustUs staff through focus groups and interviews



## SELECTED DATA SCIENCE WRITING

### ● **Maps with {edgebundle}<sup>12</sup>**

lizroten.com

- Mapping US flight networks

I blog about data science and visualization on my website [lizroten.com](https://lizroten.com).<sup>11</sup>

- **Converting Peloton resistance to Bowflex C6 resistance<sup>3</sup>**  
lizroten.com
  - Visualizing spin bike difficulty
- **Finding the perfect sock pattern with ravelRy<sup>4</sup>**  
lizroten.com
  - Using the Ravelry API to find just the right sock pattern
- **Housing Density in US Cities<sup>5</sup>**  
lizroten.com
  - Examining residential zoning in Pittsburgh, Austin, and Boston
- **Fisk's 'Mississippi Meander' in R<sup>6</sup>**  
lizroten.com
  - A few maps inspired by Harold Fisk's 1944 geological investigation
- **Visualizing mental health data with ggplot2<sup>7</sup>**  
lizroten.com
  - Visualization project using my own daily mental health data
  - Designed both static infographic and animated plots
- **3 Years of Mental Health: A quantified-self story<sup>8</sup>**  
lizroten.com
  - Mapping my travel patterns and mental health from 2015-2017
- **HIV and African American Populations in the US<sup>9</sup>**  
lizroten.com
  - A value-by-alpha map showing the intersection of African American populations and HIV prevalence



## LINKS

- 1• [https://metrotransitm.shinyapps.io/regional-parks-acs/](https://metrotransitm.shinyapps.io/regional-parks-ac/)
- 2• <https://metrotransitm.shinyapps.io/twin-cities-rent-trends/>
- 3• <https://www.lizroten.com/talk/ampo-covid-traffic/>
- 4• <https://www.lizroten.com/talk/ampo-streetlight-ghg/>
- 5• <https://github.com/Metropolitan-Council/councilR>
- 6• [https://rpubs.com/lizroten/metroclimate\\_method\\_on\\_road](https://rpubs.com/lizroten/metroclimate_method_on_road)
- 7• <https://www.lizroten.com/project/mdh-covid-maps/>
- 8• [https://lizroten.info/talks/councilr/inst/presentations/a\\_brief\\_introduction/a\\_brief\\_introduction#1](https://lizroten.info/talks/councilr/inst/presentations/a_brief_introduction/a_brief_introduction#1)
- 9• [https://lizroten.info/talks/streetlight\\_locality\\_workshop/streetlight\\_locality\\_workshop.html](https://lizroten.info/talks/streetlight_locality_workshop/streetlight_locality_workshop.html)
- 10• <https://www.lizroten.com/project/como-hex-streetlight-parks/>
- 11• <https://www.lizroten.com/post/>
- 12• <https://www.lizroten.com/blog/maps-with-edgebundle/>
- 13• <https://www.lizroten.com/blog/bowflex-c6-to-peloton-resistance-conversion-plots/>

- 14• <https://www.lizroten.com/blog/finding-the-perfect-sock-pattern-with-ravelry/>
- 15• <https://www.lizroten.com/blog/housing-density-in-us-cities/>
- 16• <https://www.lizroten.com/blog/fisk-s-mississippi-river-meander-in-r/>
- 17• <https://lizroten.info/blog/posts/2019-08-31-emoos/>
- 18• <https://www.lizroten.com/blog/3-years-of-mental-health-a-quantified-self-story/>
- 19• <https://www.lizroten.com/blog/hiv-and-african-american-populations-in-the-us/>