



# Volunteering in the US

Brandon Bergerud

# Outline

Charity in the United States

Project + Dataset

Visualization Techniques

Demo

Future Directions

# Charity by the Numbers

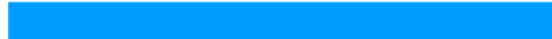








## Donations (2017)

- \$410 billion
  - Individuals (70%)
  - Foundations (16%)
  - Bequests (9%)
  - Corporations (5%)

## General decline in % giving

- 66% (2000) to 55% (2014)
- Nonprofits shifting focus towards wealthier donors

### Contributions by source, in billions:

|                           |                                                                                            | Percentage increase from 2016 |
|---------------------------|--------------------------------------------------------------------------------------------|-------------------------------|
| Religion                  |  \$127  | +2.9%                         |
| Education                 |  \$59   | +6.2%                         |
| Human services            |  \$50   | +5.1%                         |
| Foundations               |  \$46   | +15.5%                        |
| Health                    |  \$38   | +7.3%                         |
| Public society benefit    |  \$30   | +7.8%                         |
| International affairs     |  \$23 | -4.4%                         |
| Arts, culture, humanities |  \$20 | +8.7%                         |
| Environmental and animal  |  \$12 | +7.2%                         |

SOURCE Giving USA 2018: The Annual Report on Philanthropy for the Year 2017, a publication of Giving USA Foundation researched by the Indiana University Lilly Family School of Philanthropy.  
Alejandro Gonzalez/USA TODAY

# Charity by the Numbers

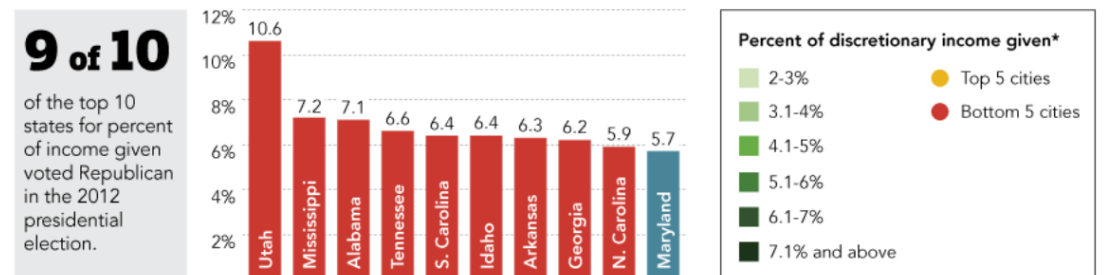
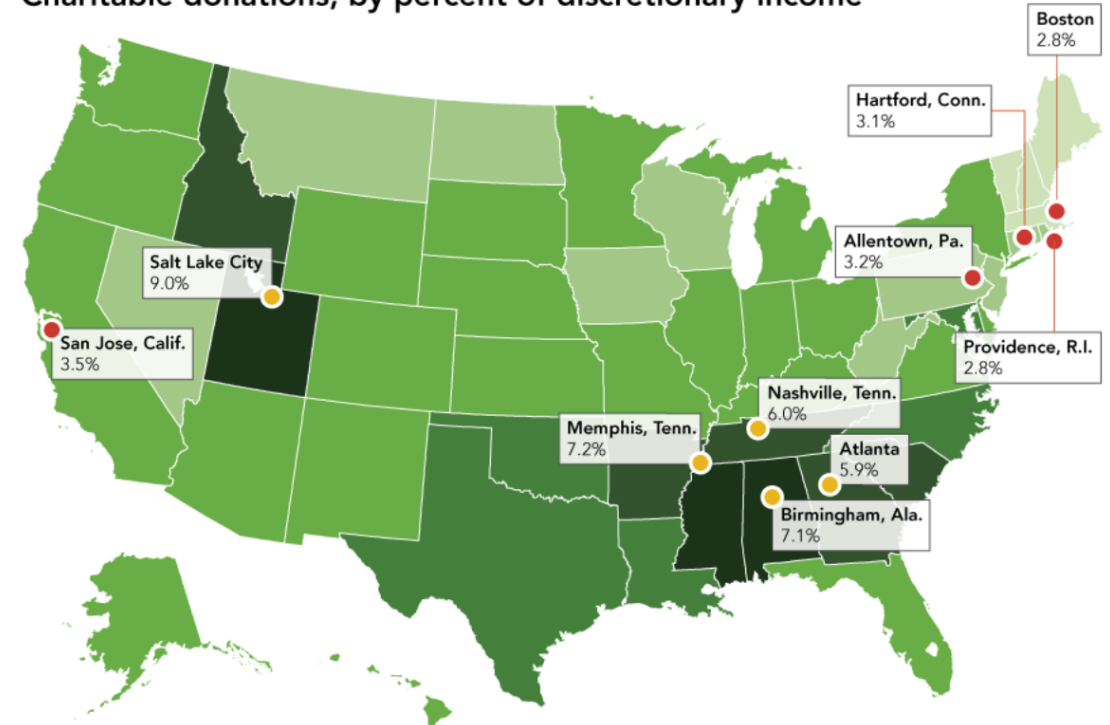
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Charitable donations, by percent of discretionary income



# Charity by the Numbers

## Volunteering (2017)

- 30% of adults
- 6.9 billion hours
  - \$167 billion

## Compared with 2015

- 25% of adults
- 7.9 billion hours
  - \$184 billion

| Demographic | Volunteer Rate (%) |
|-------------|--------------------|
| Men         | 26.5               |
| Women       | 33.8               |

| Demographic       | Volunteer Rate (%) |
|-------------------|--------------------|
| Generation Y      | 26.1               |
| Millennials       | 28.2               |
| Generation X      | 36.4               |
| Baby Boomers      | 30.7               |
| Silent Generation | 24.8               |

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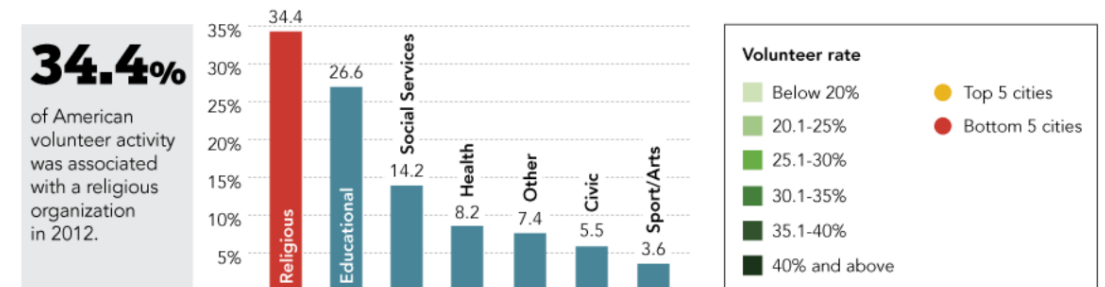
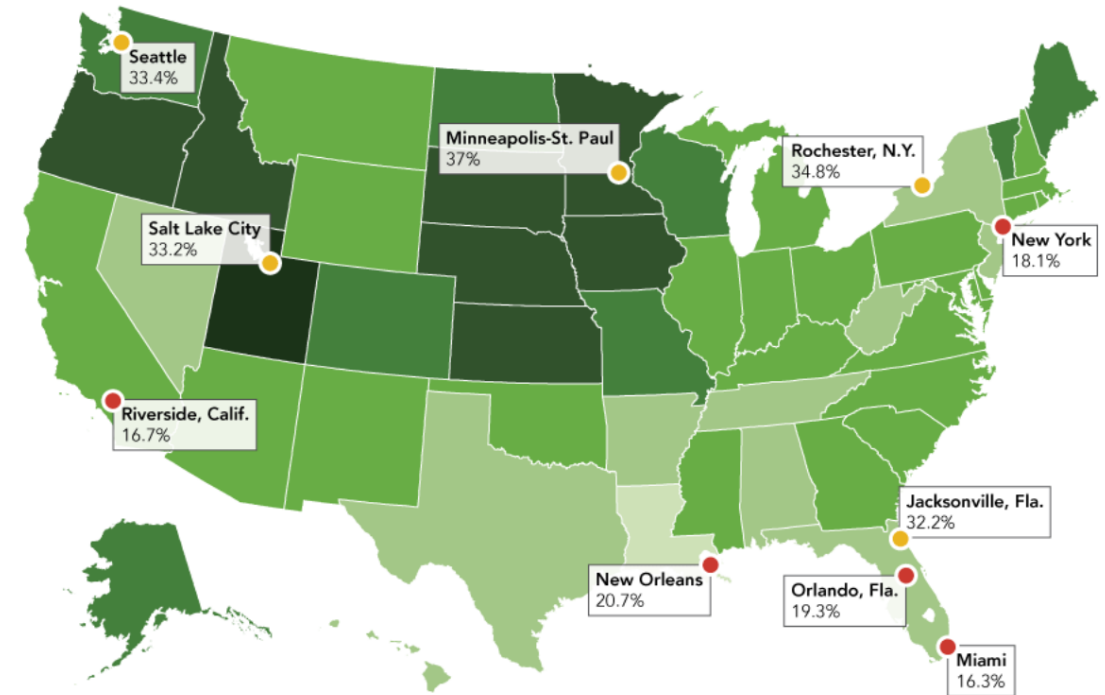
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Volunteer rate, by percent of residents who volunteered in the past year





# Project

## Volunteering

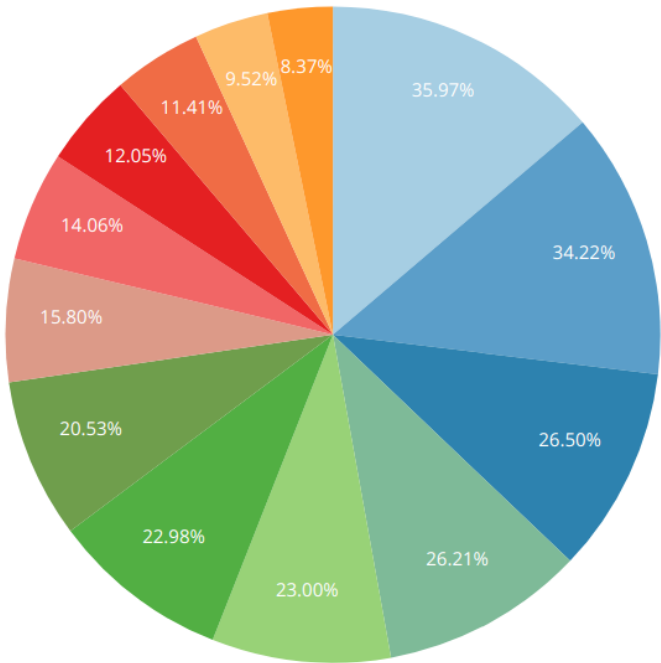
- Organizations, Activities
- Spatial Distribution
- Demographic Factors

## Dataset

- Volunteering and Civic Life in America
  - **State** / Metropolitan Statistical Area
  - 2017 Dataset
- Survey
  - ~60,000 Household / ~100,000 individuals
  - Response / Sampling Bias

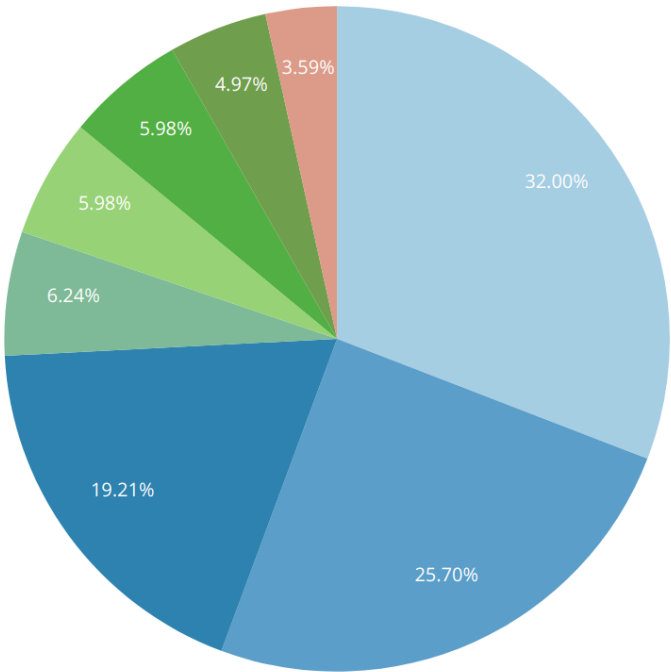


# Activities



- Fundraise or sell items to raise money?
- Collect, prepare, distribute, or serve food?
- Collect, make or distribute clothing, crafts, or goods other than food?
- Mentor youth?
- Tutor or teach?
- Engage in general labor; supply transportation for people?
- Provide professional or management assistance including serving on a board or committee?
- Usher, greeter, or minister?
- Engage in music, performance, or other artistic activities?
- Coach, referee, or supervise sports teams?
- Provide general office services?
- Provide counseling, medical care, fire/EMS, or protective services?
- (Other)

# Organizations



- Religious
- Sport, hobby, cultural or arts
- Educational or youth service
- Civic, political, professional or international
- Hospital or other health
- Public safety
- Environmental or animal care
- Other
- (Other)



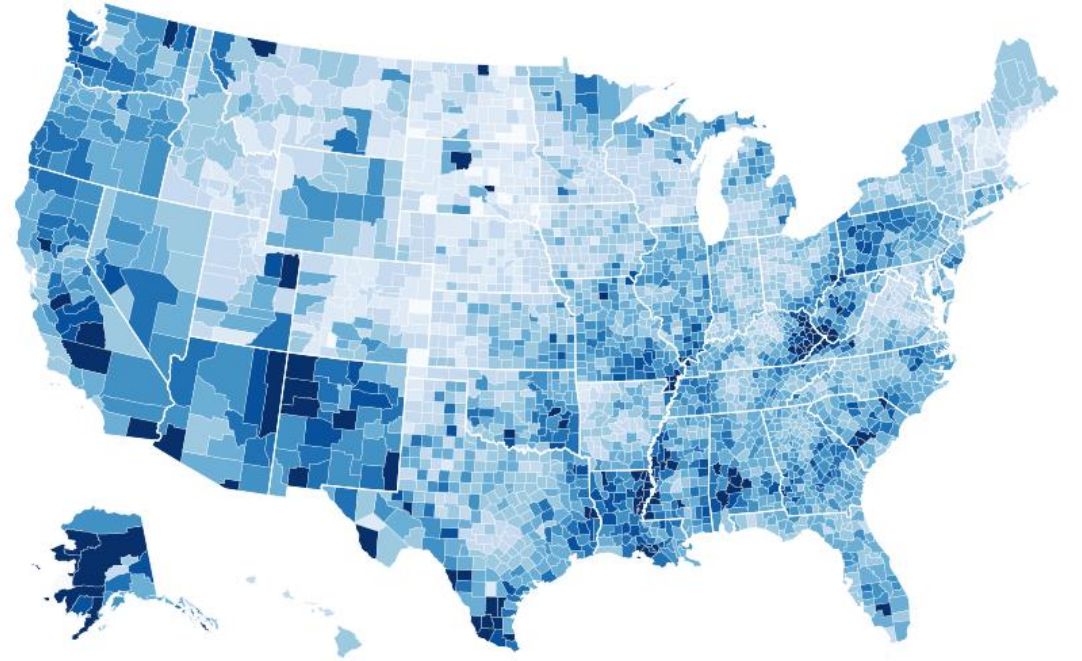
# Visualization Techniques

## Task

- Show the spatial distribution of volunteer rates across the US at the state level

## Choropleth Mapping

- Univariate
  - Volunteer Activity / Organization
- Bivariate
  - Volunteer Types
  - Demographic vs. Volunteer ✓



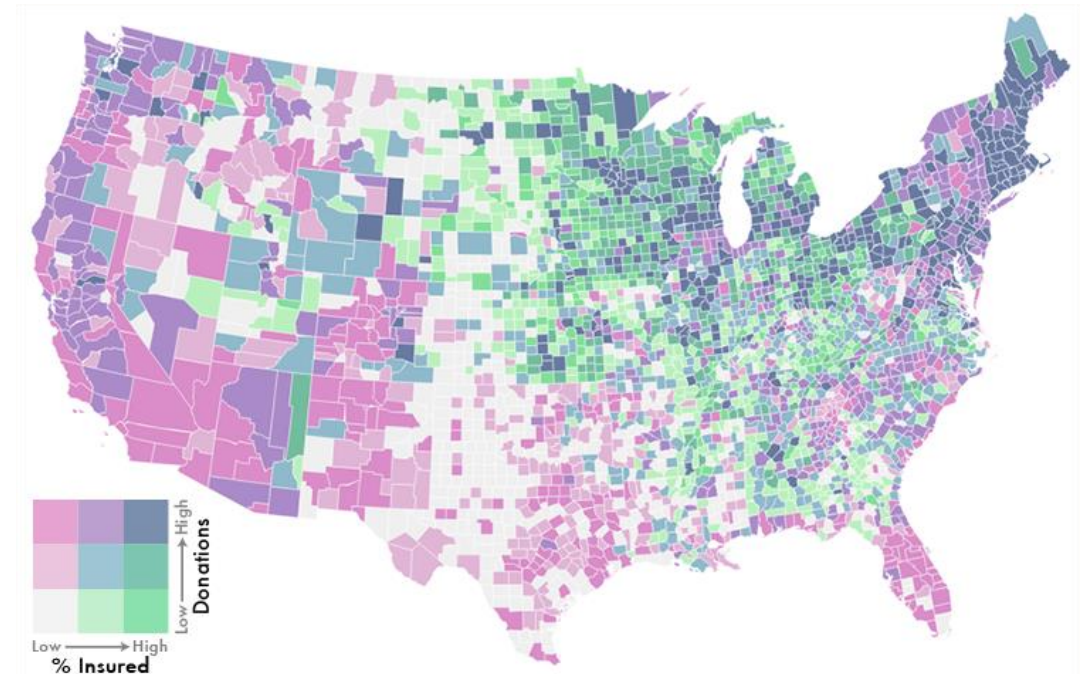
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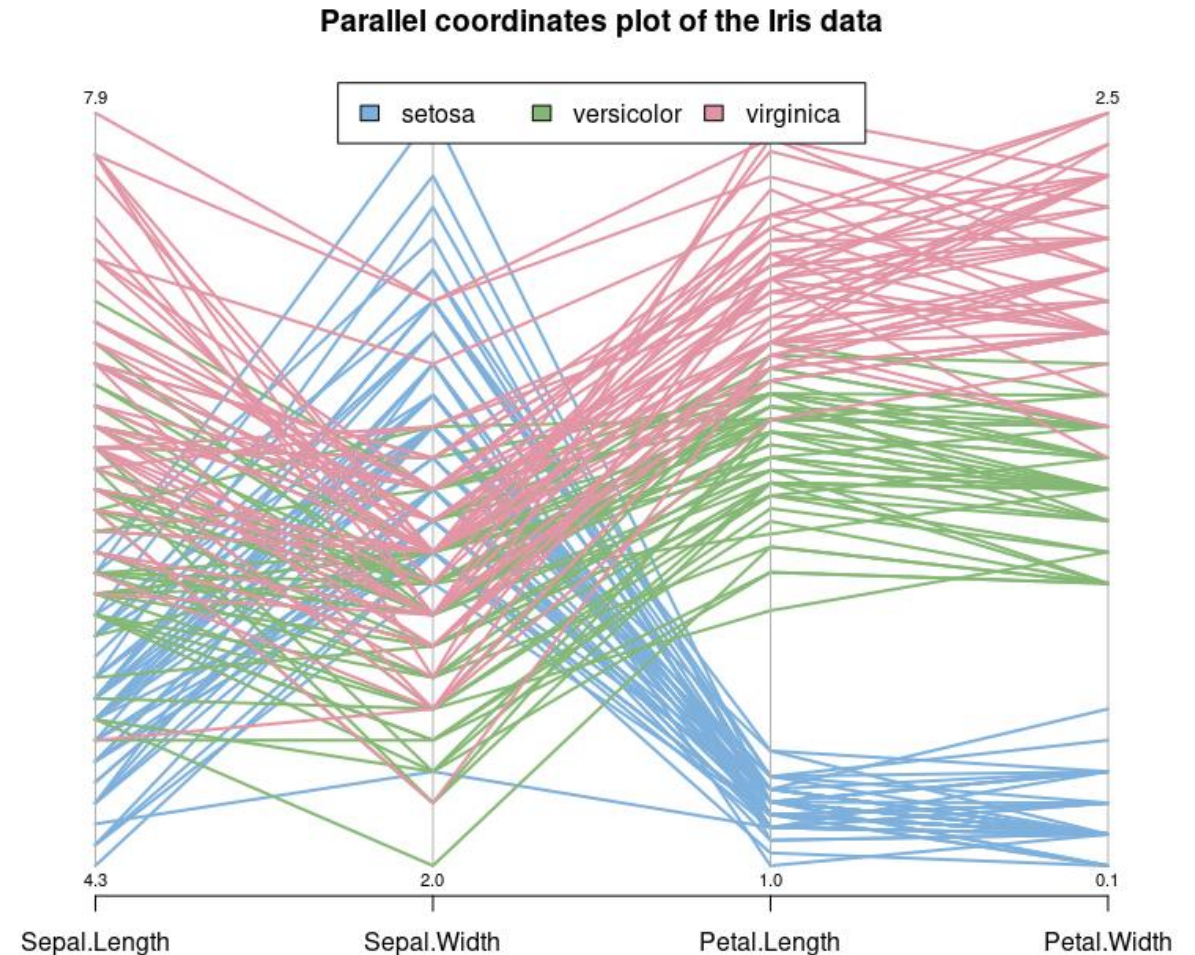
# Visualization Techniques

## Task

- Show how the volunteer rates are distributed among the different activities & organizations

## Options

- Parallel Coordinate Plot
- Pie Chart
- Radar Chart



# Visualization Techniques

## Pie Chart

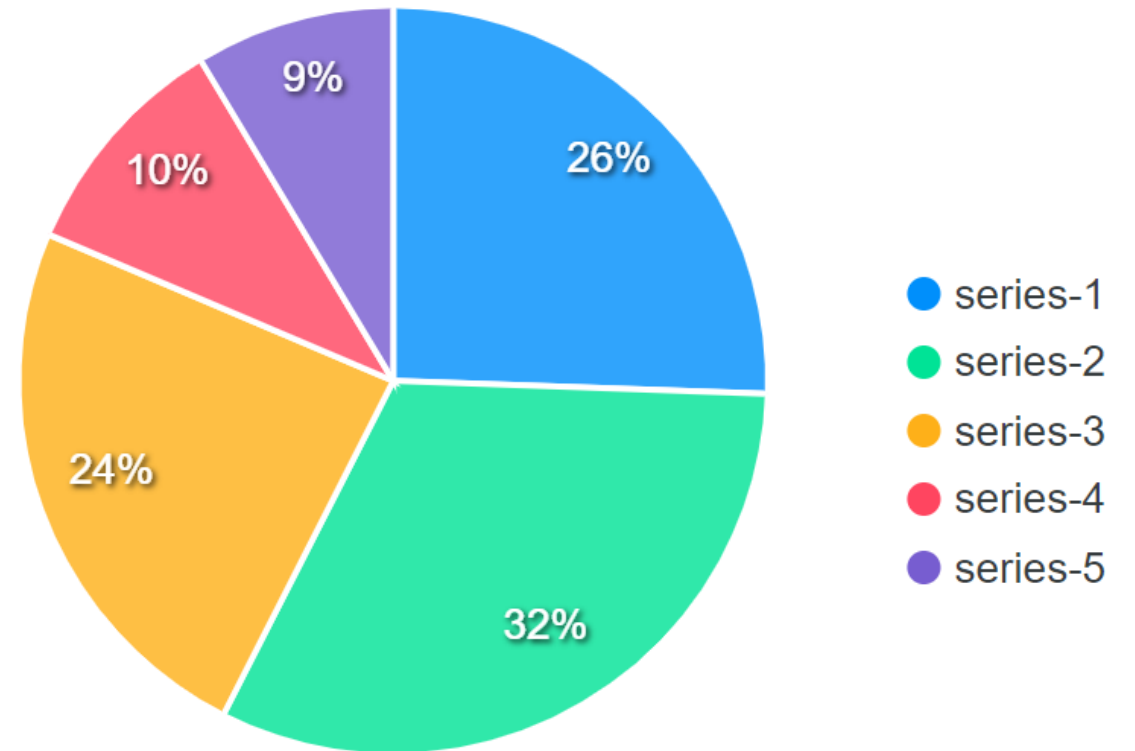
- Limited to a single state at a time
- Activities don't add up to 100%

## Parallel Coordinate Plot

- Did in lab
- Compare across states (cluttered)

## Radar Chart ✓

- Plot all state data
- Highlight indicated state





# Visualization Techniques

## Pie Chart

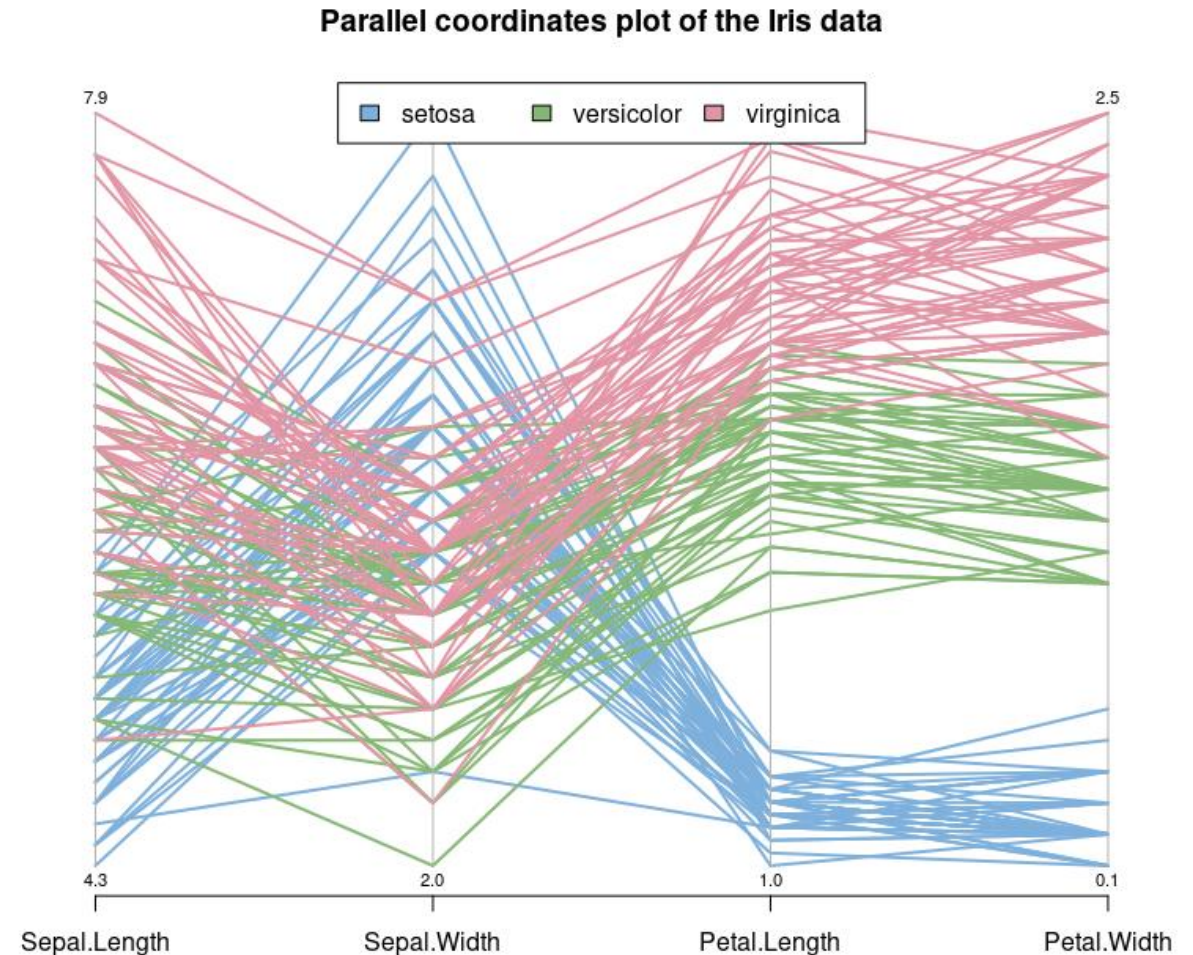
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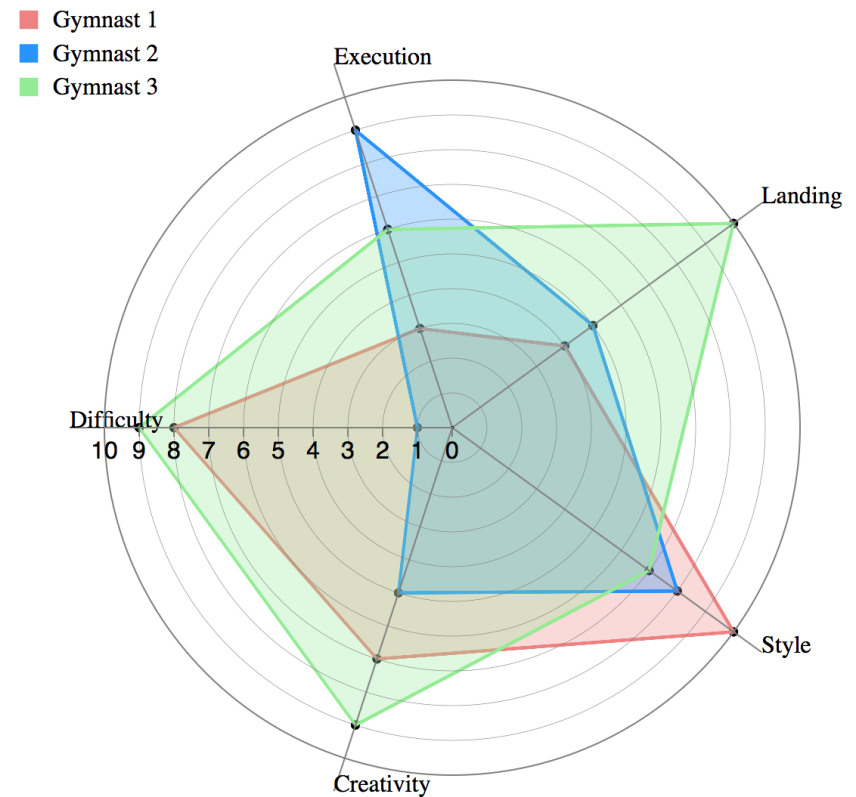
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Gymnast Scoring Radar Chart





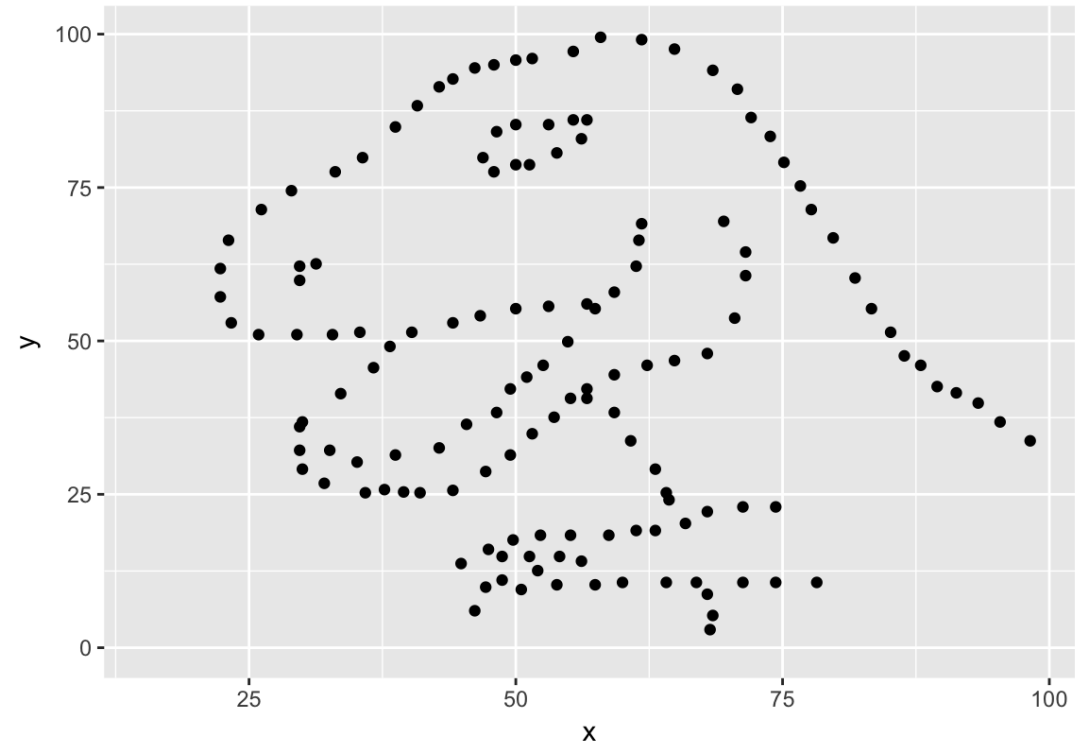
# Visualization Techniques

## Task

- Show the relationship between the demographic variable and the volunteer rate

## Scatterplot

- $x$  = Demographic Variable
- $y$  = Volunteer Rate



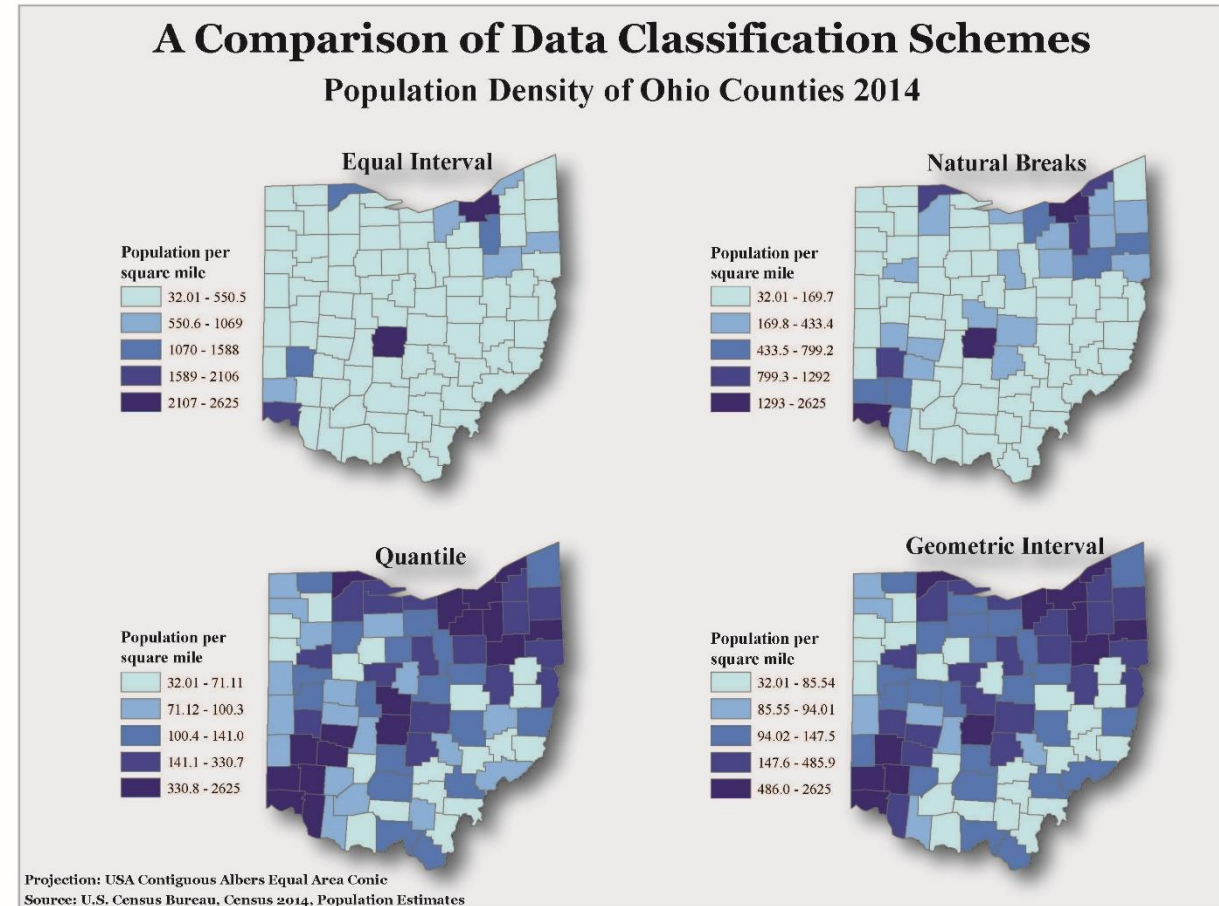


# Future Directions

## Choropleth Maps

Option to choose breaks, e.g.

- Equal Interval
- Quantile
- Natural
- Manual



# Future Directions

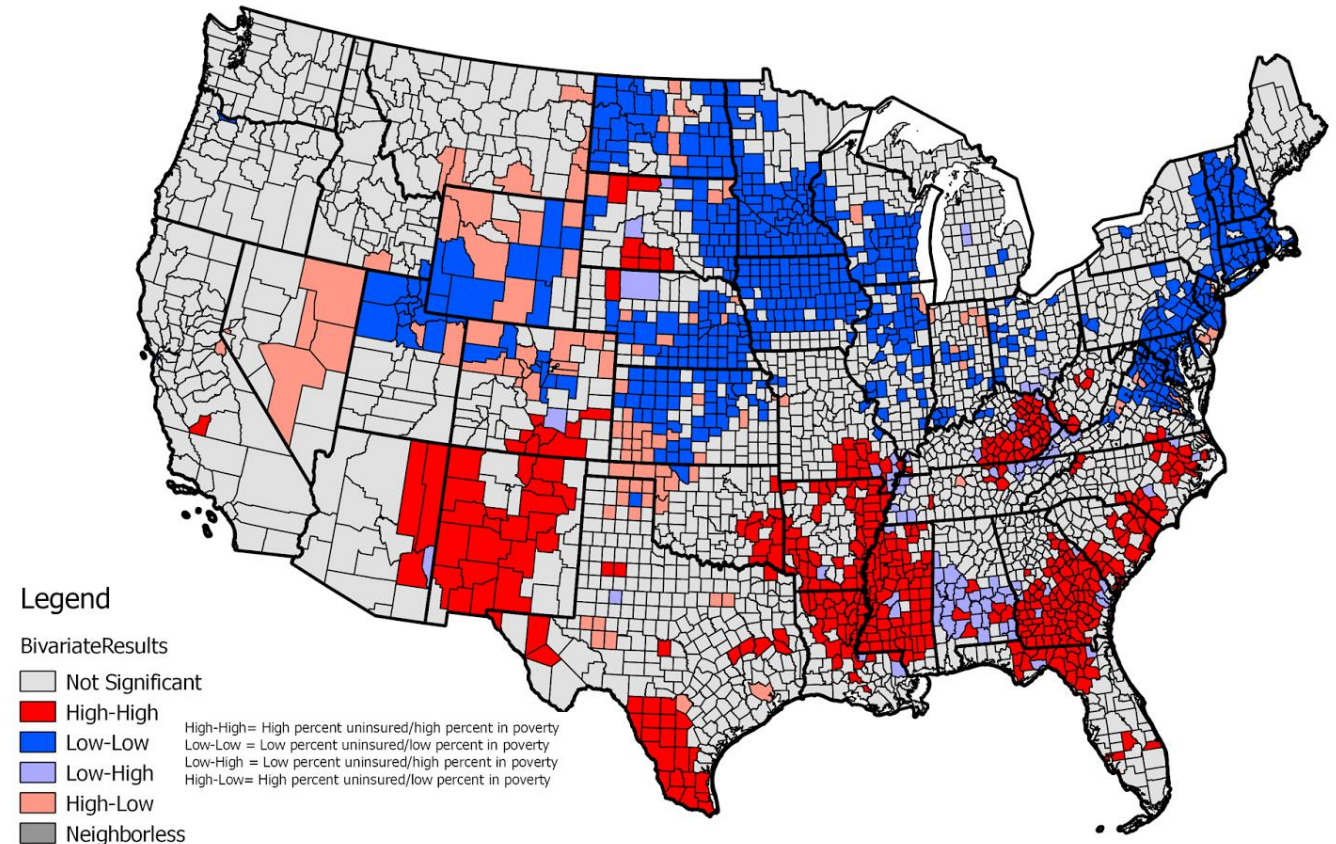
## Local Moran's I

Identifies spatial outliers

## Issues

- Tedious in ArcMap
  - Map for each activity / organization
  - Join state names
  - Python scripting?

**Bivariate Local Moran's I: Percent Uninsured under Age 65 and Percent of People of All Ages in Poverty**



## Future Directions

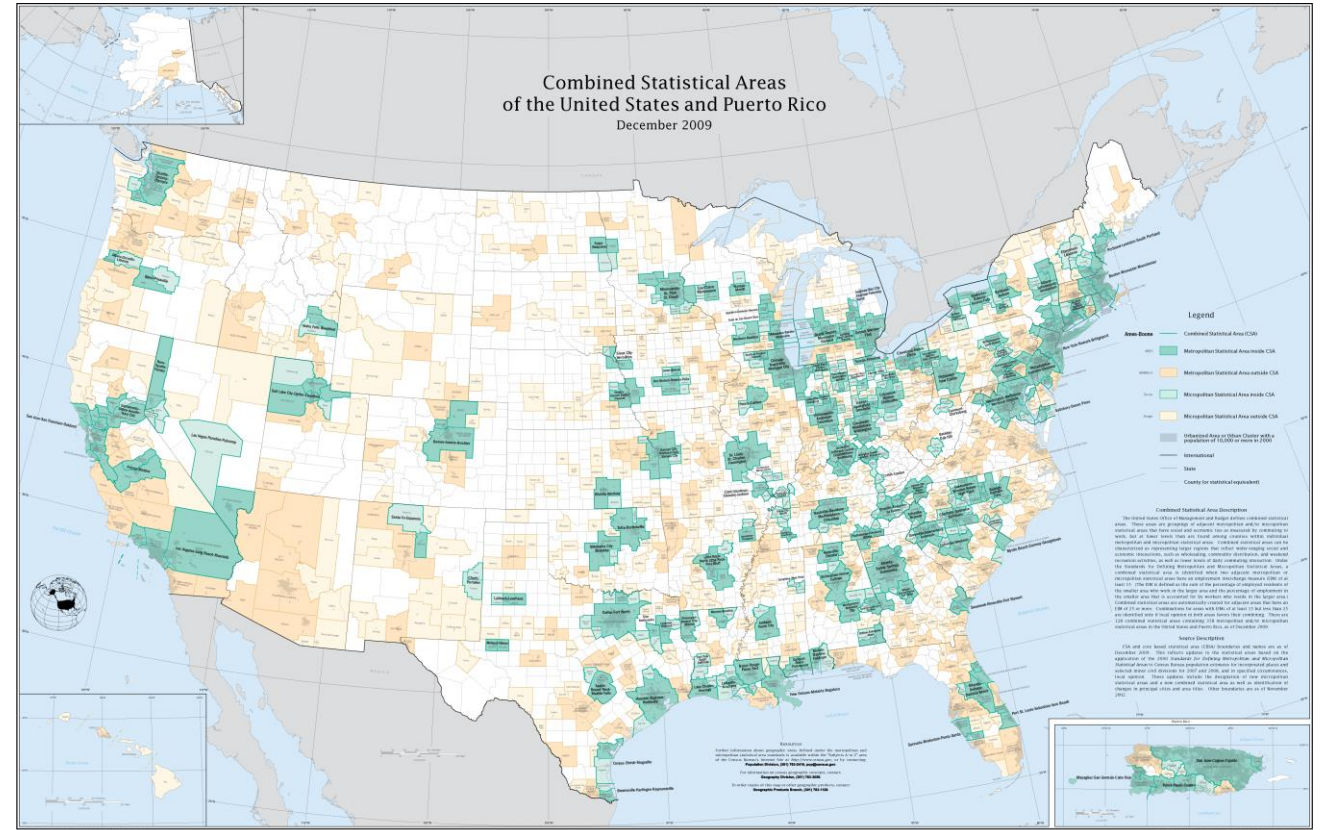
# Metropolitan Statistical Areas

## Advantages

- Smaller Units
- Less loss of information

## Disadvantages

- Longer rendering time (simplify polygons?)
- Less border sharing (Moran's I)





# Future Directions

## Explore Additional Data

### Demographic

- Age / Sex
- Survey responses

### Charity

- Donations
- Changes over time

