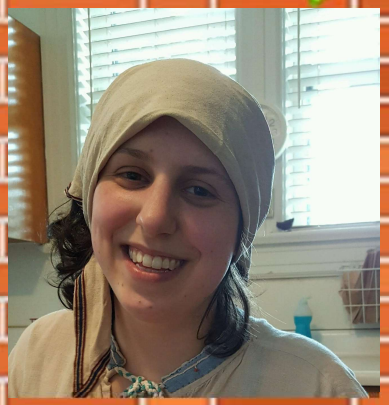
GERRYMANDERING

1 2 3

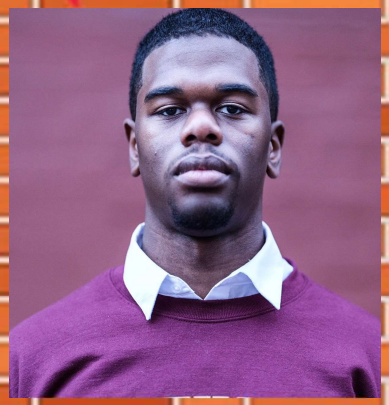
Meet the Neighbors

Andy Qui Le



Lena Duplechin Seymour

Faiz Ikramulla



Parker Boradnax

Ayomide Okuleye

Git hub
https://github.com/le-n-qui/redistricting_sesame_street/tree/main
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SESAME STREET

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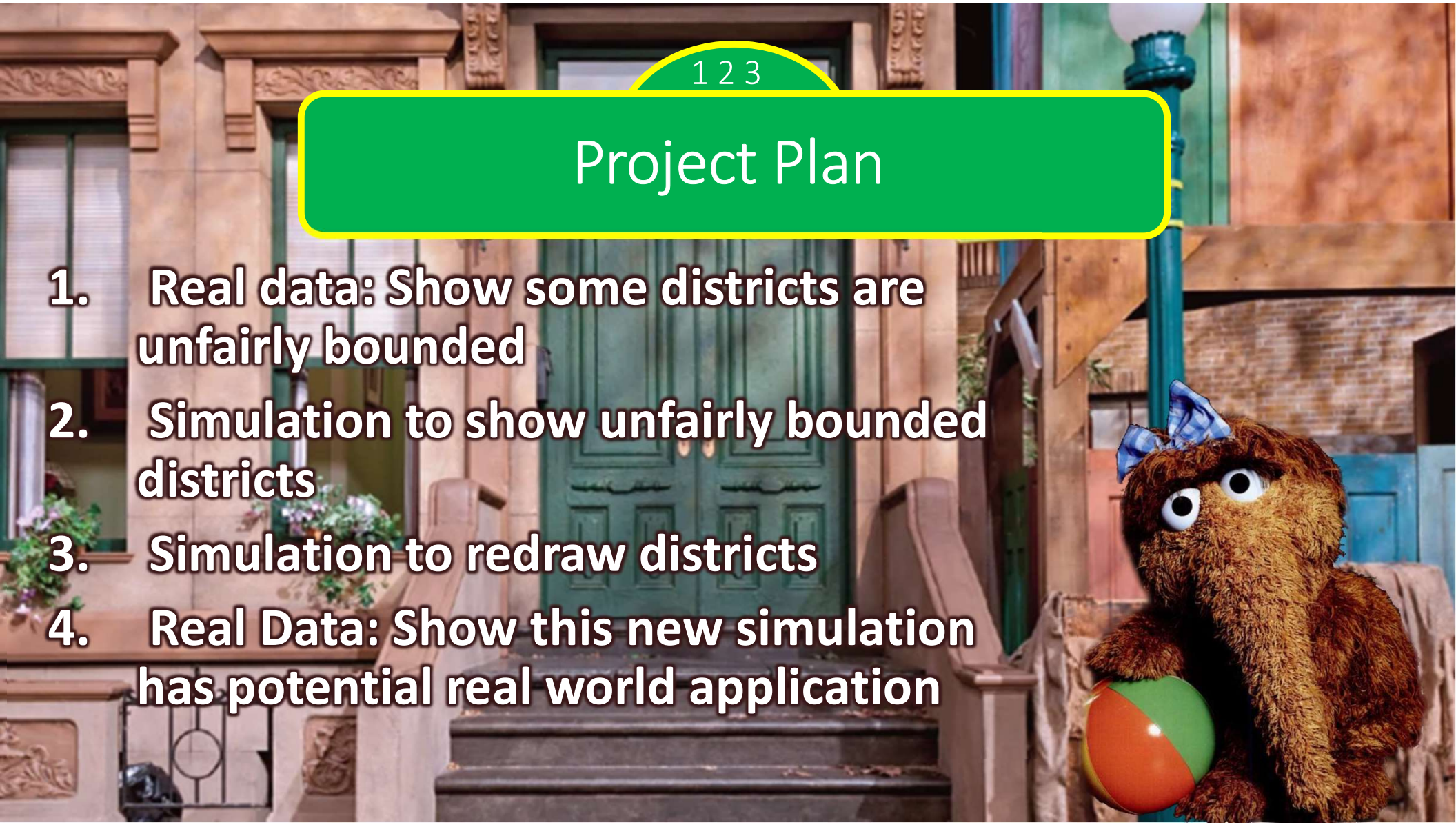
Mentor’s Pitch Scope

We're going to code up a simulation of voters and district

them and find the ideal. Then "gerrymander" the voting

districts to see how that affects voting.



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Project Plan

1. Real data: Show some districts are unfairly bounded
2. Simulation to show unfairly bounded districts
3. Simulation to redraw districts
4. Real Data: Show this new simulation has potential real world application

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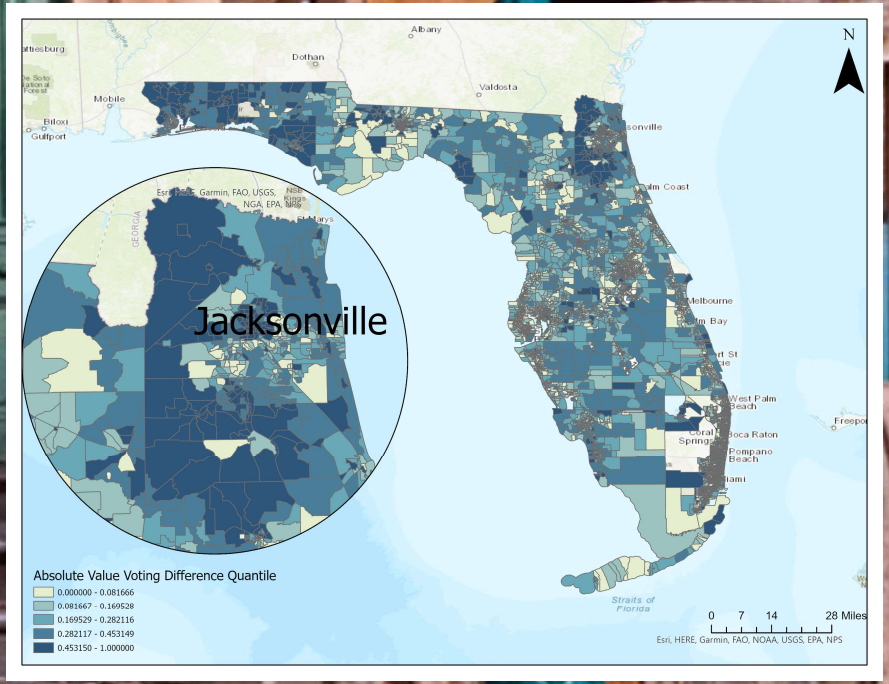
Why Florida?

Data Choices and Sources

- Open public access laws
- History of gerrymandering
- Swing state
- Data set has multiple rounds of verification from trusted sources



What We Learned

- What gerrymander is and its impacts in voting rights
- Matplotlib coordinated formatter, BigQuery, Jupyter Notebooks, GitHub, and Google Cloud usage
- Gained more familiarity with python and classes

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What We Accomplished

- 5 simulations of districting and voting
- 7 maps of districting Florida

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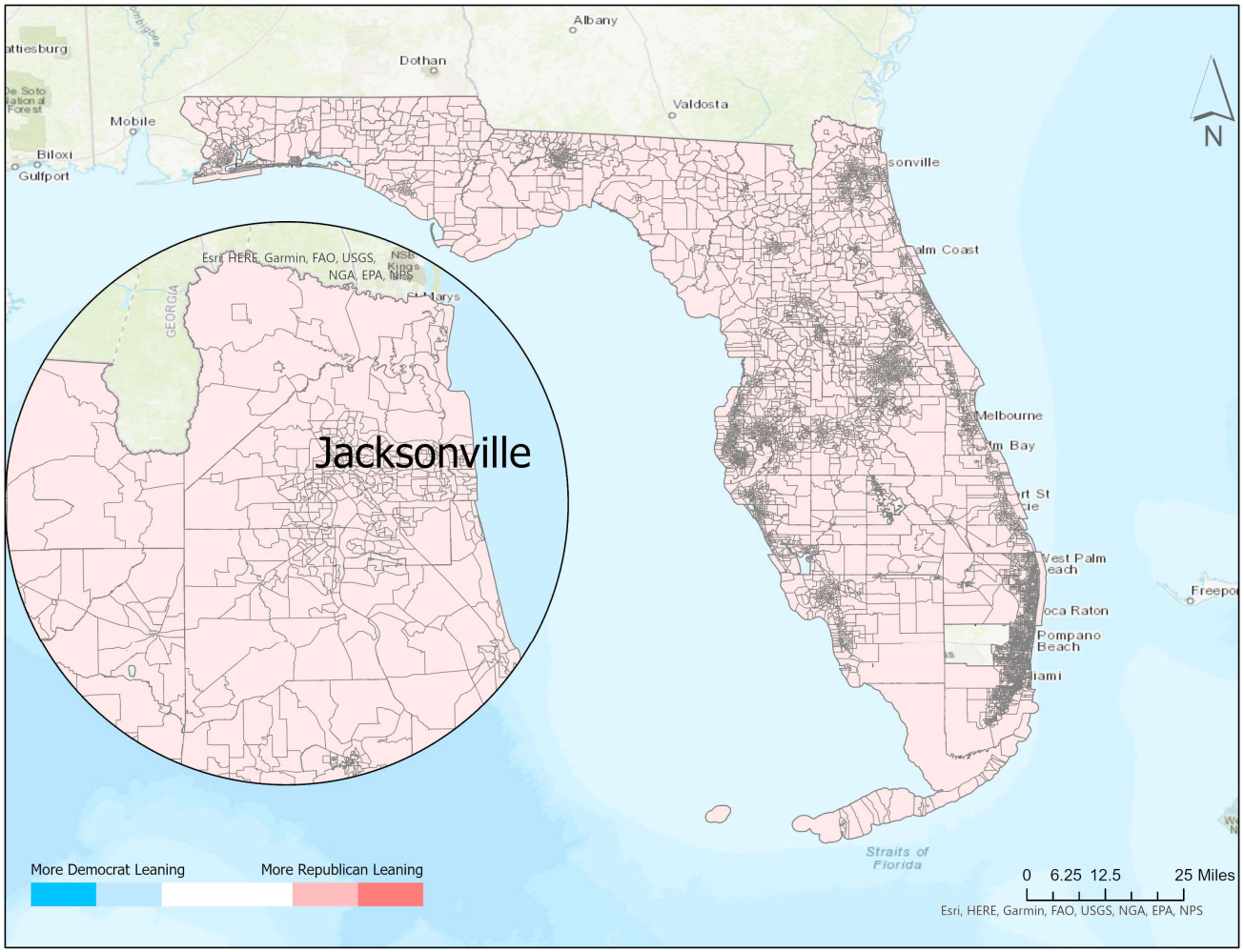
Where We didn't Succeed

- Integrating simulation into GIS due to limits of manual polygon editing
- Finding a single solution, many potential options

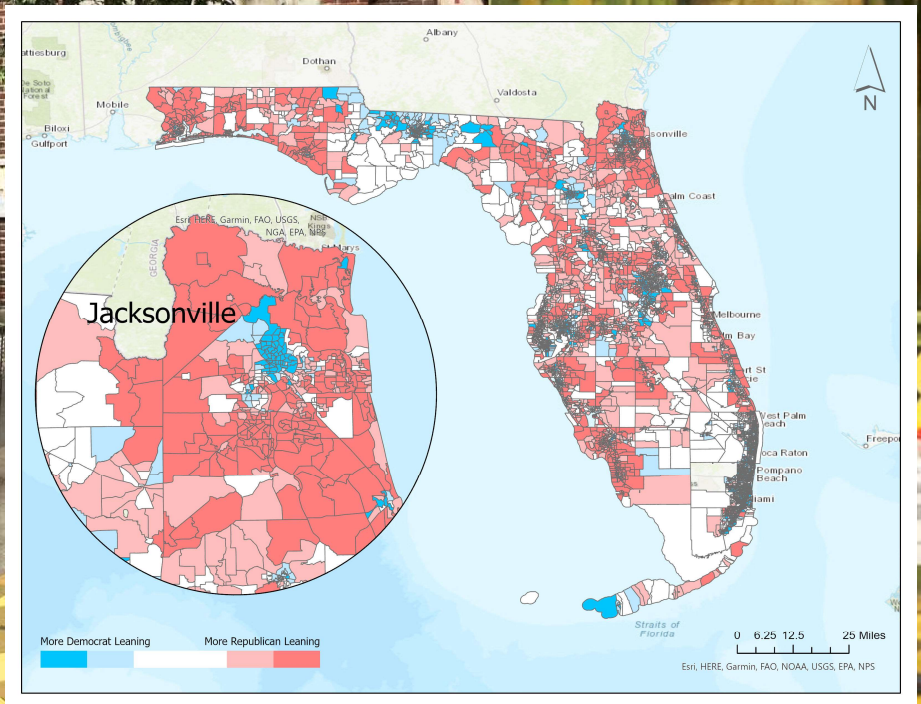
GIS Deliverables

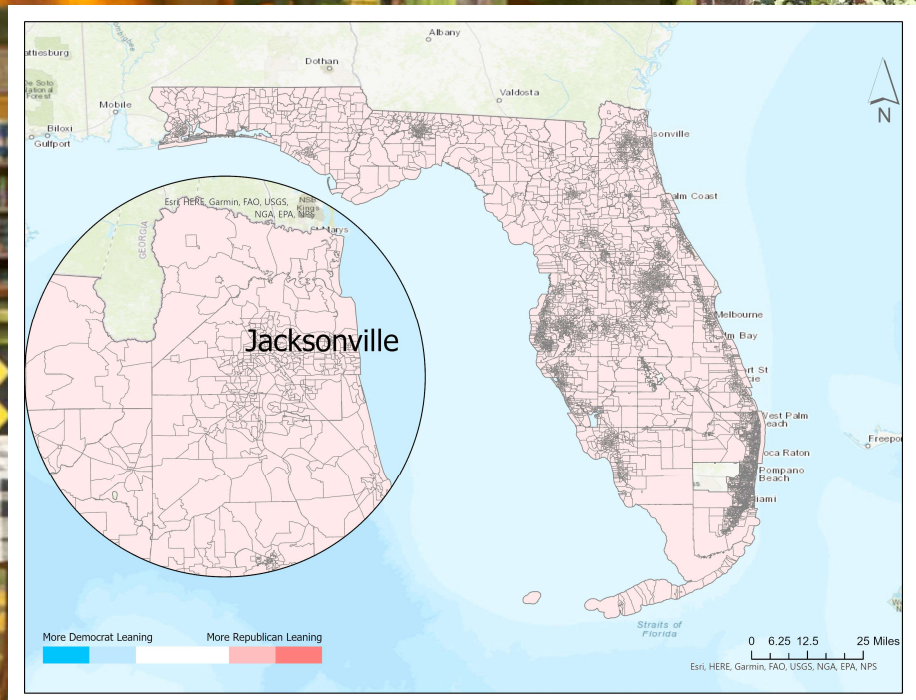
Series of 2 maps

- Real 2010 district results
- Real state wide results



GIS Deliverables Side by Side

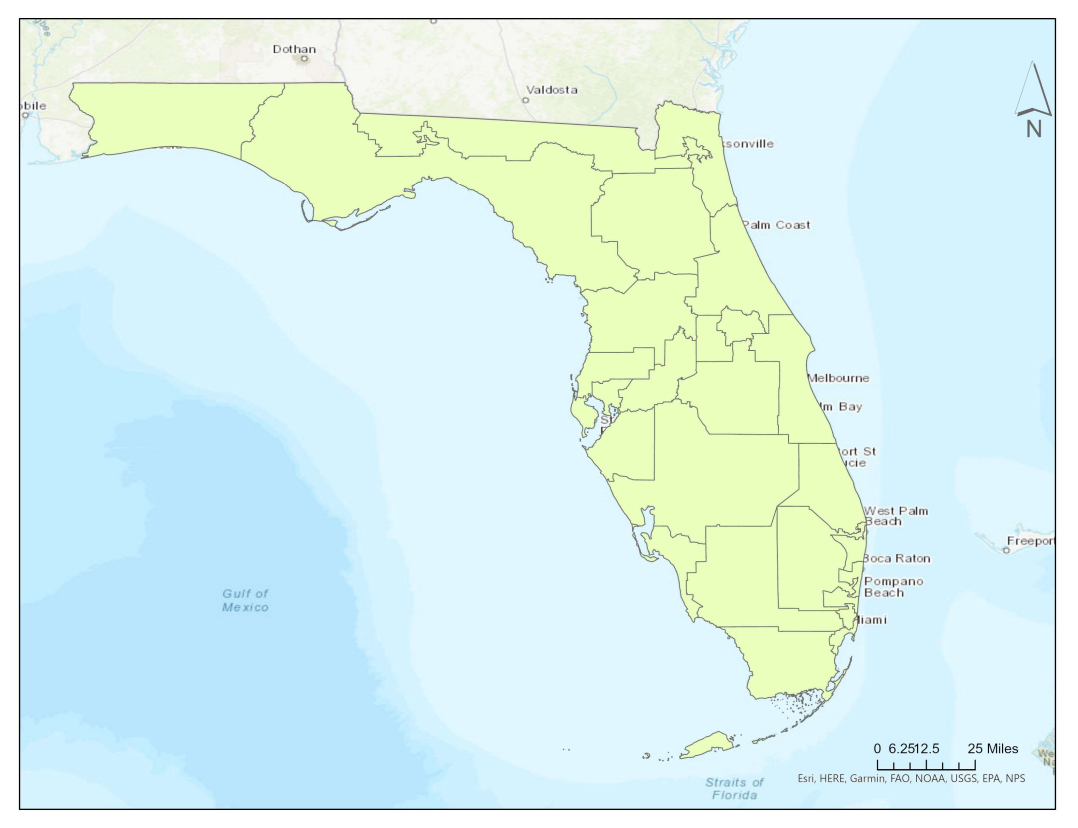




GIS Deliverables

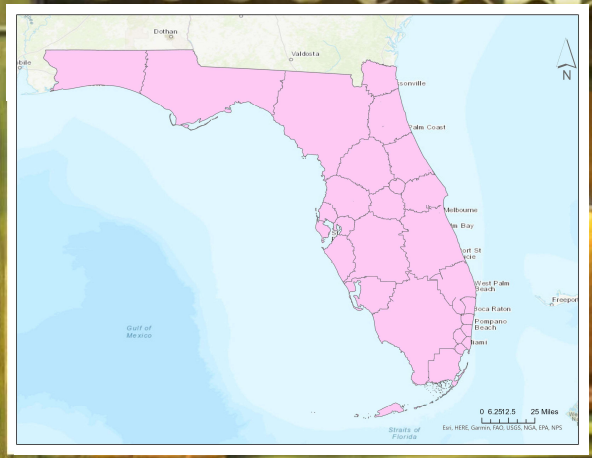
Series of 4 maps

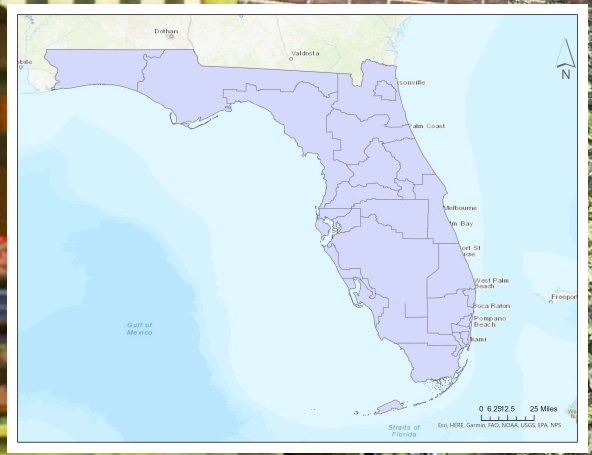
- Theoretical options with less gerrymandering
- Algorithmic Districts
- Compact Districts
- Competitive Districts
- Current Districts

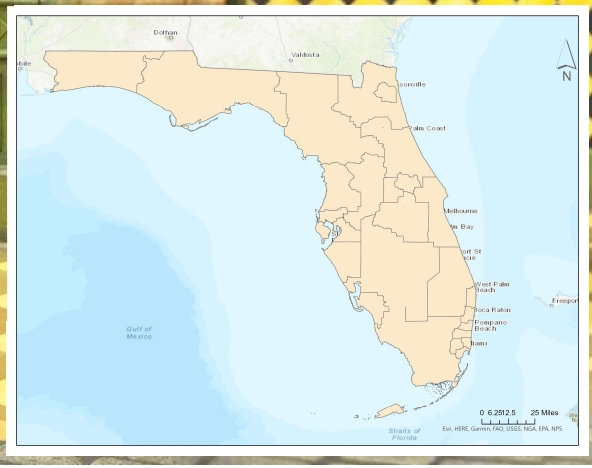


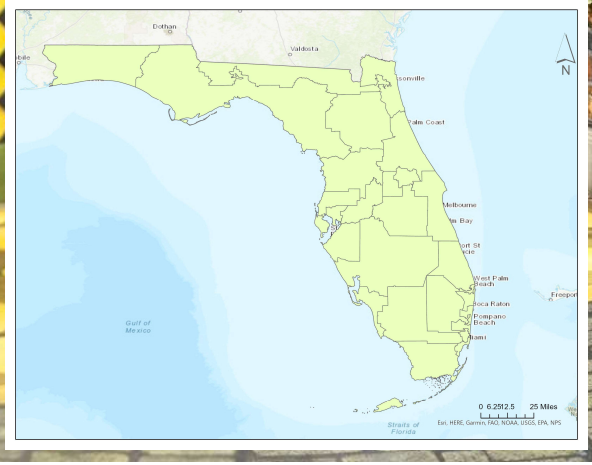
GIS Deliverables Side by Side

- Algorithm Districting
- Compact by County Districting
- Competitive Districting
- Current Districting

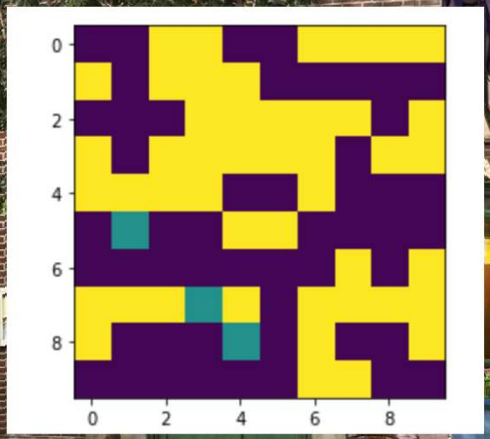


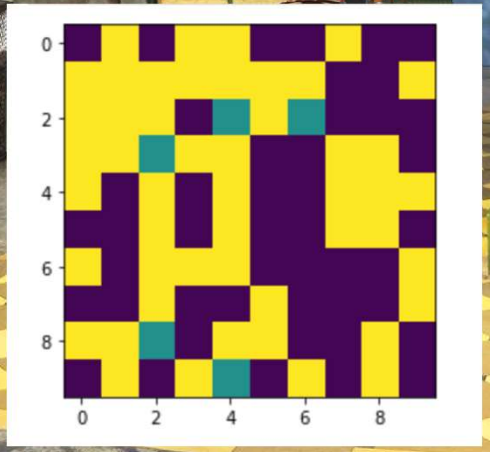






Graph Deliverables



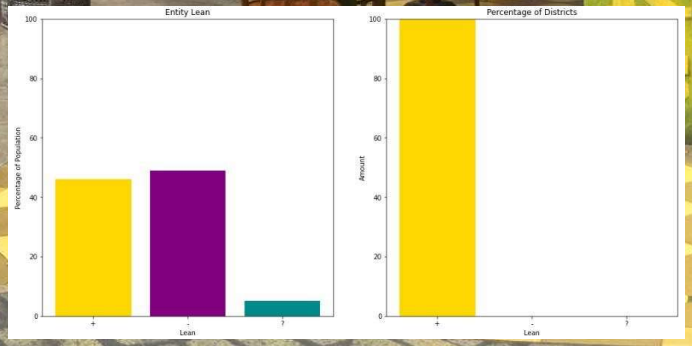


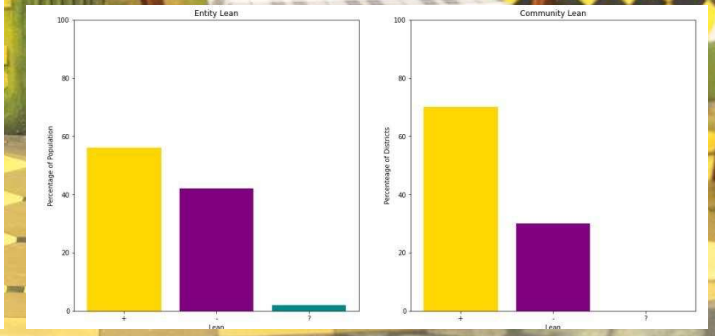
- 2D representation of communities in a single simulation using sequential split
- 2D representation of communities in a single simulation using step split method

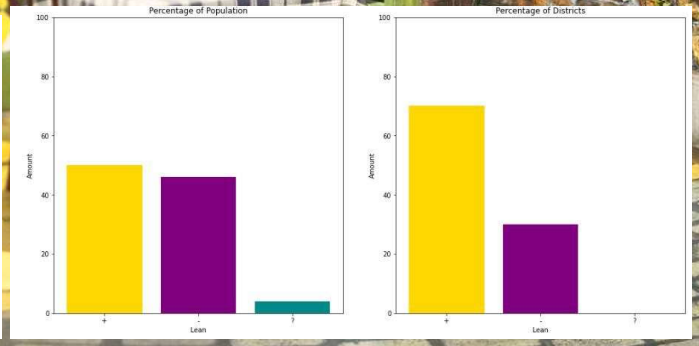
Graph Deliverables

Percentage of population compared to percentage of district leaning

- Skewed districting plan
- Fixed boundary districting plan
- Random grouping districting plan







Future Work

- Python script (Arc.py) to redraw polygon shape files in GIS
- Web site and app that shows data visualization including interactive features
- Change code to be 3D instead of 2D
- Interactive map with hover facts

Demo
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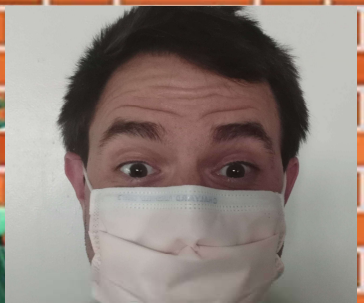
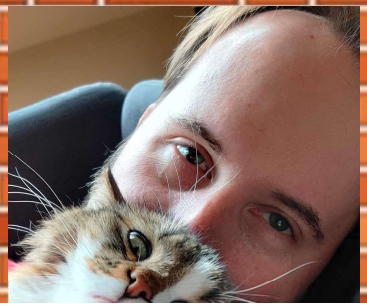
Thank you





Thank you

intel
XSEDE
Extreme Science and Engineering Discovery Environment
ArcGIS Pro
NSF
DESIGNSAFE-CI
NHERI: NATURAL HAZARDS ENGINEERING RESEARCH INFRASTRUCTURE
matplotlib
GitHub
R
jupyter
w3 schools
TACC
HACKHPC.ORG
PEARC21
NSF
PE
omnibond
Google Cloud Platform
pandas
SGCI
Science Gateways
PEARC21
Google colab
Office
Sublime Text
QGIS

Data and Coding Help Sources

- Harvard Election Data Archive
  http://dataverse.harvard.edu/dataset.xhtml?persistentId=hdl:1902.1/1679
- Coding Help Sources
  https://docs.python.org/3/library/random.html?highlight=random#module-random
- Programming project: Redistricting
  https://pages.tacc.utexas.edu/~eijkhout/resources/nifty/EijkhoutISPproject-gerry.pdf
- Berkley doc
  https://people.eecs.berkeley.edu/~landau/papers/redistrictingfinalpreprint.pdf
- Gerrymandering by Jory Fleming
  https://www.arcgis.com/apps/Cascade/index.html?appid=53fdc467fbb74790bb6bfcf1375cfa1f
- Cornell Policy Review: Rigging Elections
  http://www.cornellpolicyreview.com/rigging-elections-spatial-statistics-analysis-political-unintentional-gerrymandering/
- The Atlas of Redistricting
  https://projects.fivethirtyeight.com/redistricting-maps/#algorithmic-compact
- 538 Redistricting Atlas Data
  https://github.com/fivethirtyeight/redistricting-atlas-data

Git hub
https://github.com/le-n-qui/redistricting_sesame_street/tree/main
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