Linking Climate Opinions to US Census Data

CSE 583
Robin, Yakelyn, Hamid,
Rebeca

Background

What demographic and social factors help predict climate change opinions?

Are climate opinions predictors of behaviors that impact emissions (for example transportation behaviors)?

In this project, we have created a tool to help **visually explore statistical relationships** between demographic variables and opinions on climate change.

Data sources

We used three publicly available sources of data, using values at the **county level**

Yale Climate Opinions 2018 (+ metadata)

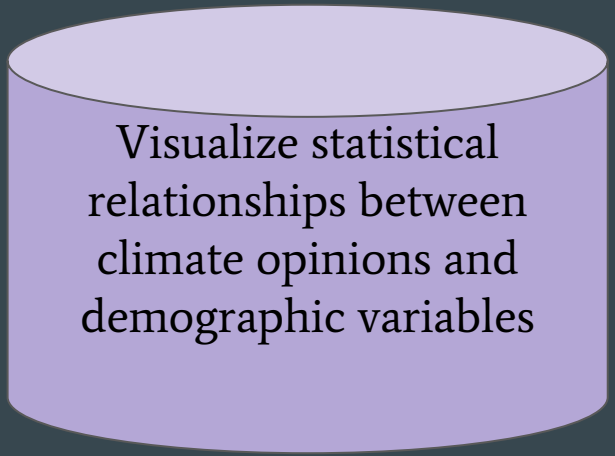
County land area data (Census)

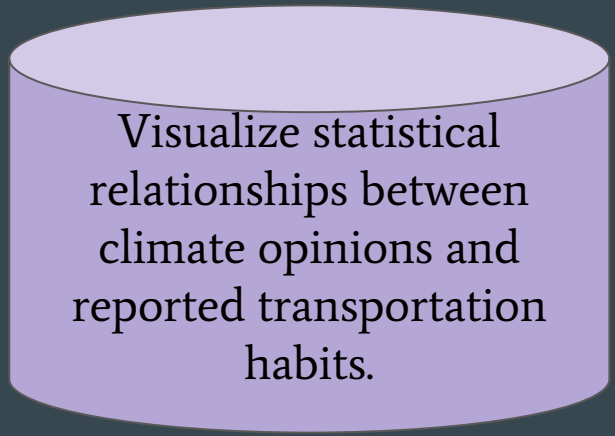
United States Census 2015

Use cases

User: A researcher who is interested in 1) predictors of climate opinions 2) climate opinions as predictors of climate related behaviors.

This is a tool to help the user quickly assess relationships worth exploring (not for causal inference).

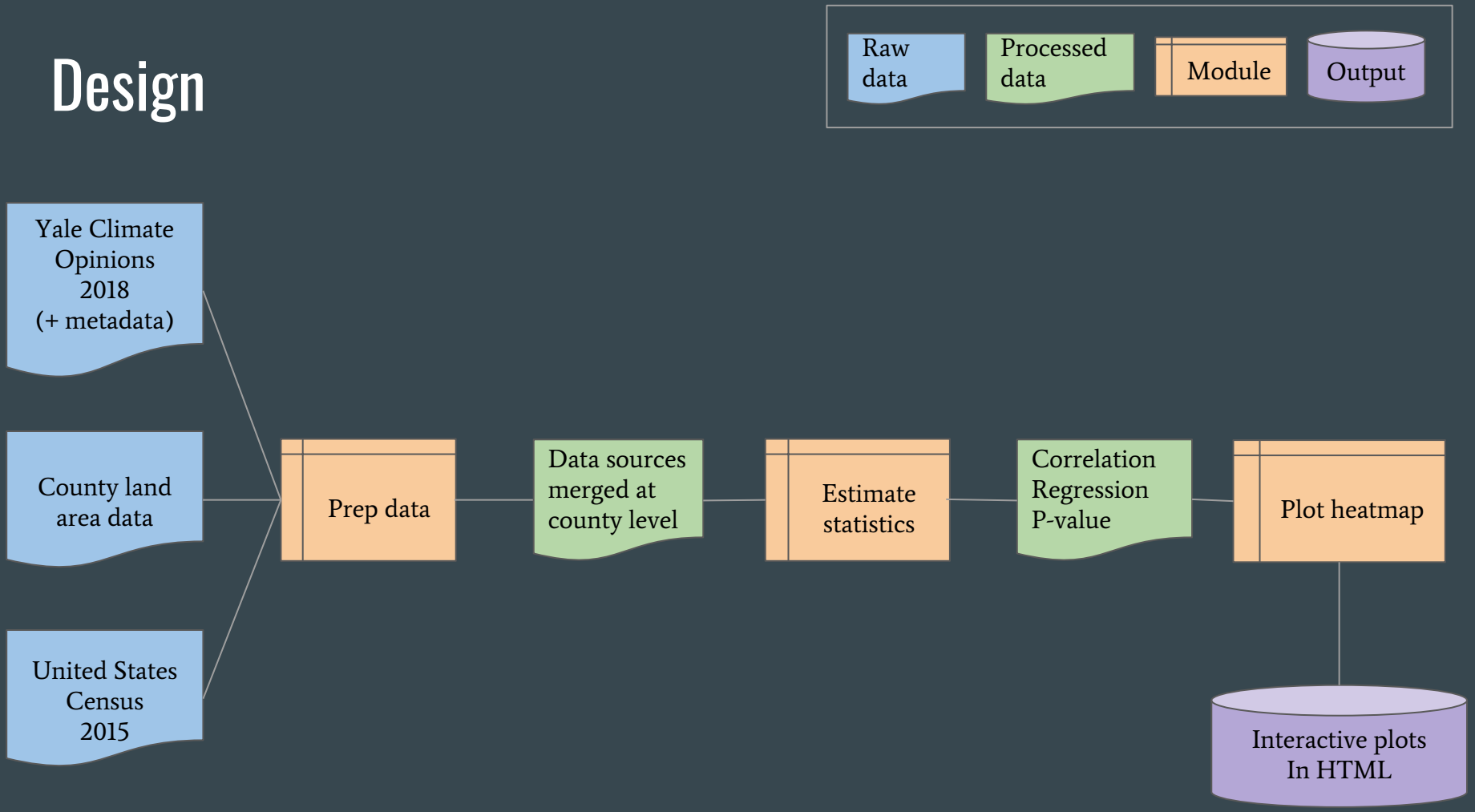




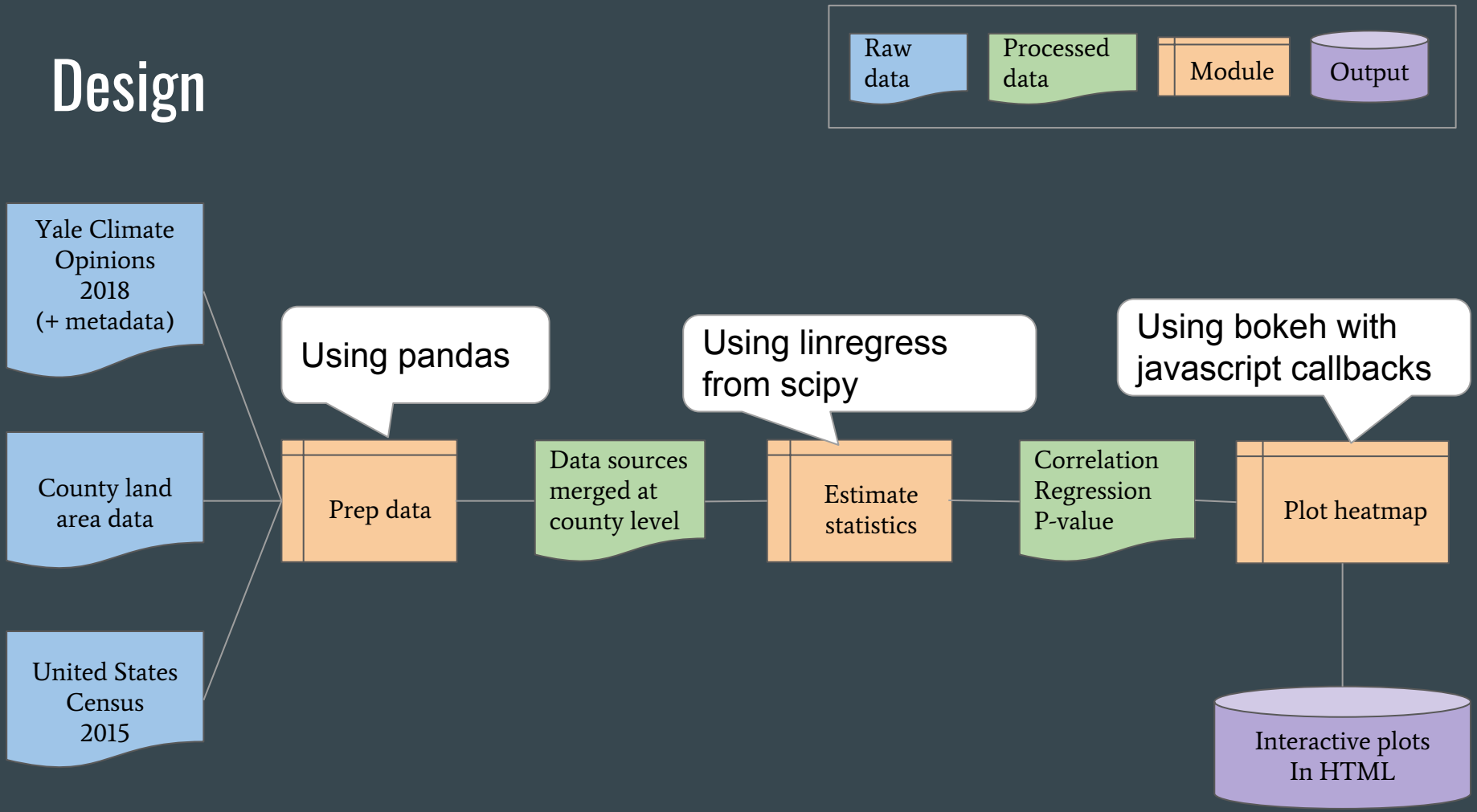
Demo.

Link to Demo

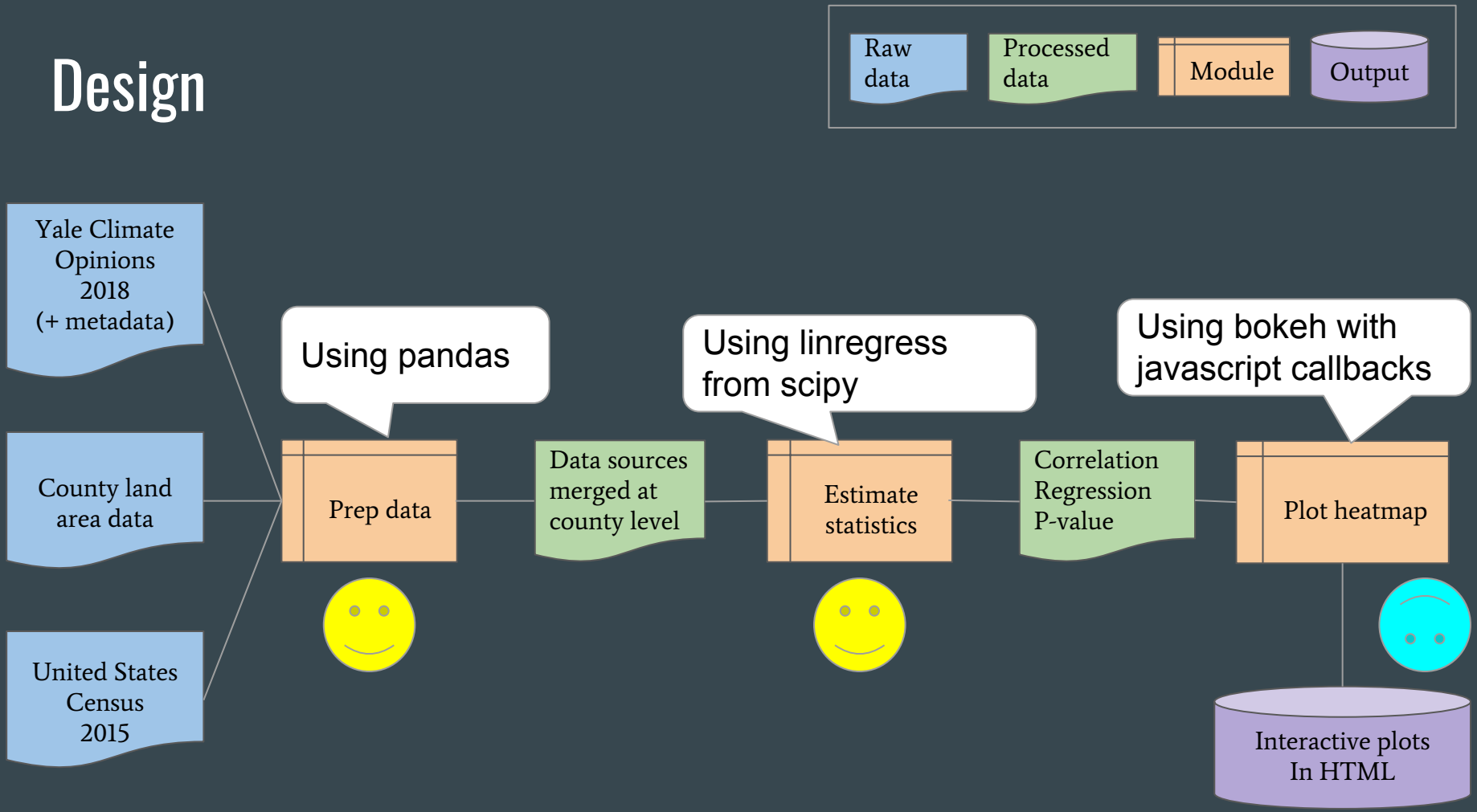
Design


Raw data
Processed data
Module
Output
Yale Climate Opinions 2018 (+ metadata)
County land area data
United States Census 2015
Prep data
Data sources merged at county level
Estimate statistics
Correlation Regression P-value
Plot heatmap
Interactive plots In HTML

Design


Raw data
Processed data
Module
Output
Yale Climate Opinions 2018 (+ metadata)
County land area data
United States Census 2015
Using pandas
Prep data
Data sources merged at county level
Using linregress from scipy
Estimate statistics
Correlation Regression P-value
Using bokeh with javascript callbacks
Plot heatmap
Interactive plots In HTML

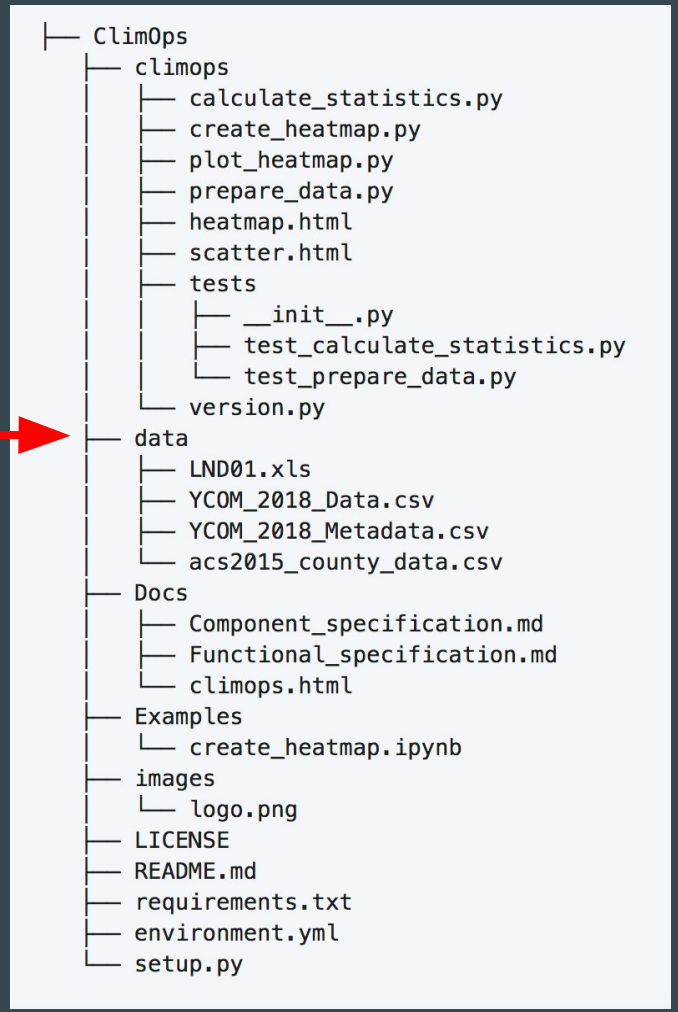
Design


Raw data
Processed data
Module
Output
Yale Climate Opinions 2018 (+ metadata)
County land area data
United States Census 2015
Using pandas
Prep data
Data sources merged at county level
Using linregress from scipy
Estimate statistics
Correlation Regression P-value
Using bokeh with javascript callbacks
Plot heatmap
Interactive plots In HTML

Project Structure

[Git hub repository]

Data might end up
in package directory



Lessons learned

- Good practices for coding and software design
- Experience with Git and version control
- Proper package structure
- Divide tasks efficiently and set deadlines for specific work to be done
- Unit testing
- Things always take longer than expected...

Future work

We had several ideas which we weren't able to implement within the timeframe:

- Be able to control for certain variables (e.g. population density, or state)
- Perform PCA (principal component analysis) on the data.
- Bring in other data sets e.g. more detailed transport behaviour or natural hazard impacts.
- Maps to show if there is a spatial pattern to some of the relationships

TEAM TO DO LIST (blue are not done yet)

- Final updates to functional and component specification
- Write installation instructions
- Write tests for stats module
- Finish tests for data cleaning
- Write examples of how to use our modules??
- Continuous Integration
- PEP8 and team code review
- Add this presentation and technology review to the documents
- Move data folder to climops directory