

Gerrymandering Code Documentation

We added comments throughout our code to clarify the definition of the functions below. We include embedded functions in the function descriptions to highlight how the functions that we have created integrate together.

Function Descriptions

RepPhone

Description: Uses a webscrape to retrieve the phone number of an individual's representative

Parameter: str-- a person's district number

Returns: str-- the representative's phone number

Exceptions: str-- returns a statement indicating that the representative's contact information is not available and links to FairVotingPA's website

RepLastName

Description: Uses a webscrape to retrieve the first and last name of an individual's representative for their district

Parameter: str-- a person's district number

Returns: str-- the representative's first and last name

CallScript

Description: Includes information retrieved from the RepName, RepPhone, districtFinder, egap, and popRank functions to create a personalized call script. The script is downloaded to a file path that the user specifies when interacting with the GUI

Parameters: str-- a person's name and their district number

Functions used: repLastName, popRank, egap, choromap

Returns: plot--a map that shows the level of gerrymandering across Pennsylvania, by district; str-- a call script based on the individual and their district's data

choromap

Description: Takes the population rank data and represents it geospatially on a map of Pennsylvania. The colors represent the ranking spectrum for gerrymandering, with the lighter colors at the top representing the least gerrymandered and the colors towards the bottom representing the most gerrymandered districts.

Parameter: None

Functions used: popRank

Returns: plot-- a map that shows the level of gerrymandering across Pennsylvania, by district

Exceptions: str-- Returns a string on a popup that indicates an error occurred when generating the map

egap

Description: Uses a csv of election results from house congressional districts from the state of Pennsylvania. It uses sqlite3 to create a database and use SQL commands to run calculations. Specifically, it calculates the lost and surplus votes for each district and each party, then finds the difference between the total wasted votes between the parties. It then divides this difference by the total votes cast during the election to provide a single percentage number, which is the efficiency gap for the overall state of Pennsylvania.

Parameter: There is no parameter for this function as it provides the same output each time.

Returns: str-- a sentence that is formatted to include the absolute value of the efficiency gap

popRank

Description: Takes data from the Census Bureau's API and uses it to calculate the percent difference in population in each State House District.

Parameter: No parameter as it is pulling data from a source and it provides the same output.

Returns: sortPopData -- a data frame that lists each State House District in order of their percent difference from the average population that should be in each state house district if the populations were equal.

districtFinder

Description: Inputs a user's location information into openstates.org to find the corresponding district number. Uses a webdriver to automate access the openstates page and submit address.

Parameters: str -- street, city, state, zipcode

Returns: str-- the district number that corresponds with the inputted information

PAzipcodes

Description: Uses a webscrape to create a list of all the valid zip codes in Pennsylvania

Returns: Parameters: None

Returns: list of str-- a list of valid zip codes (as strings) in Pennsylvania

main

Description: This function establishes the GUI that the user interacts with to obtain their representative's information and a tailored call script to say to their representative. The user will type in their name, address, and a download location for the call script

Parameters: None

Functions used: CallScript, districtFinder, repPhone, PAzipcodes

Returns: file with str-- a call script downloaded to the individual's computer at the file path they indicated in the GUI