

Combatting Gerrymandering

The Effectiveness of Independent Committees in Redistricting

Cartographer: Chris Mohr

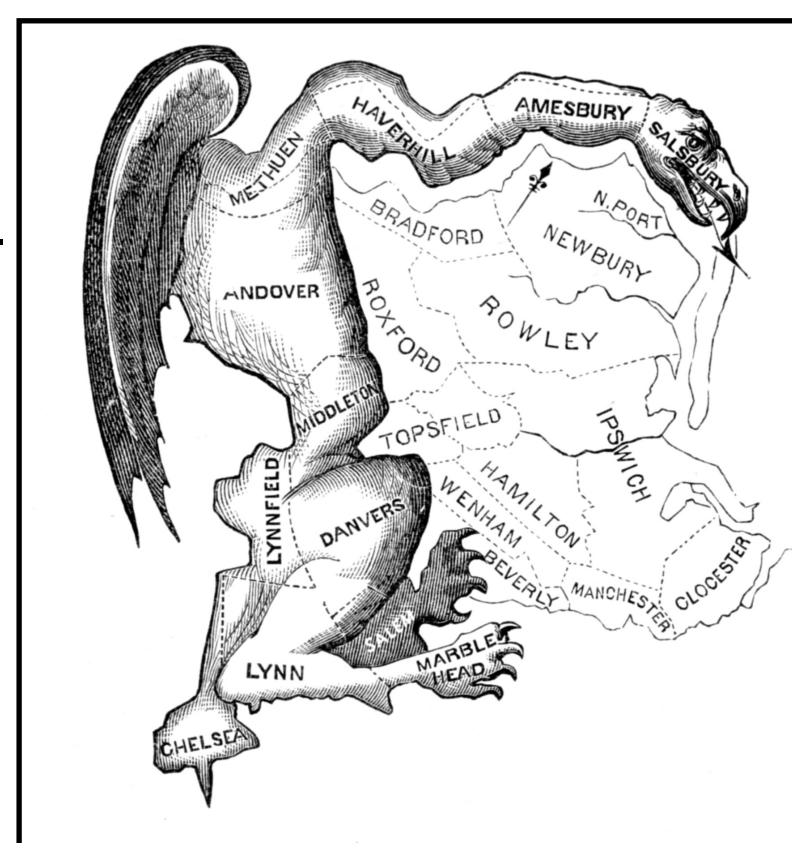
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Course: Introduction to GIS, Fall 2017

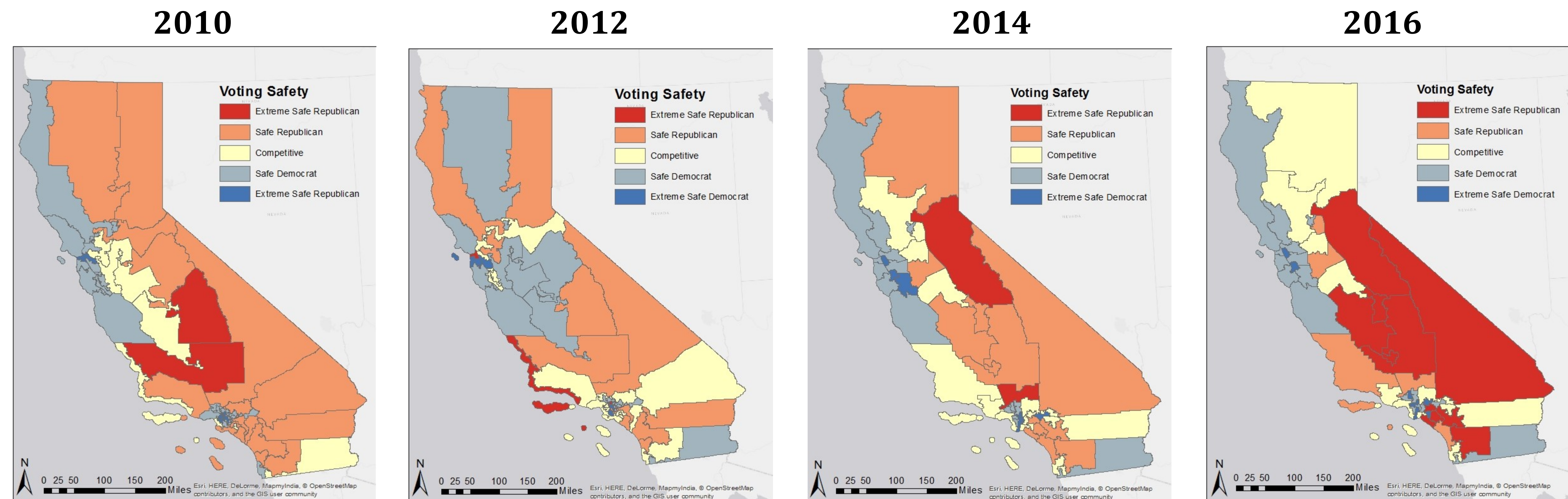
Introduction

In recent years, as politics has become more divided along party lines, a lot of people have pointed to gerrymandering as the main reason behind electing such radical politicians. To give an advantage to incumbent parties in elections, voting districts have been drawn to give a numerical advantage to one party, usually by grouping together people by race and income. Due to the way voting district lines are drawn, we have seen a rise in the number of "safe" districts for politicians. In an effort to reduce the effect of gerrymandering and create freer and fairer elections, states have experimented with different ways of re-drawing districts to make them more representative of the population. One such idea used in California comes from a 2010 ballot initiative, involving having the districts drawn by a 14-person independent commission consisting of Democrats, Republicans and Independents. This GIS project will analyze the effects of the independent commission to determine if it has been effective in creating more competitive districts with a more representative population of the state.



Source: Wikipedia.org

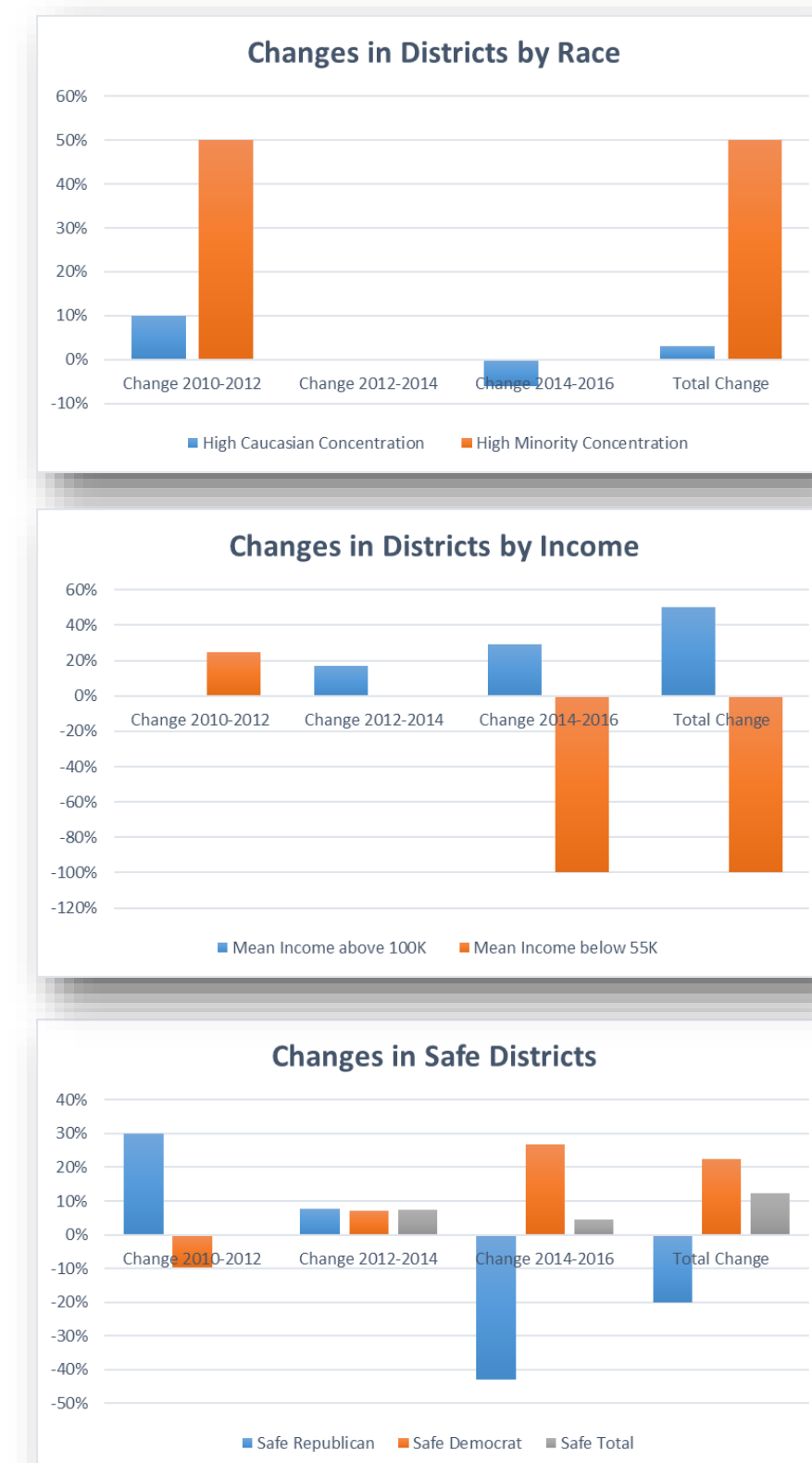
Change in Safe Districts by Election Result



Methodology

For my analysis, I essentially ran a progression from 2010 to 2016 to see how the distribution of voters changed due to redistricting. I began with mapping the distribution of voters by race and income in 2010 to create an original data set with which I could base further analysis off of. For income, I simply mapped each district using mean inflation-adjusted income. For race, I first mapped the population using statistics on race from the US census Bureau, then classified the level of racial mixture in each district using the percentages of white versus minority populations. I next analyzed districts using congressional election results. I classified each district from extremely safe republican to extremely safe democrat, using the national average as the base measure to determine safe districts. A safe district is defined as having the voting for one party be 10% higher than the national average. I defined extremely safe as having 20% higher than the national average. I did the same for the election results of 2012, 2014, and 2016, calculating a percent change in the number of safe districts.

Results

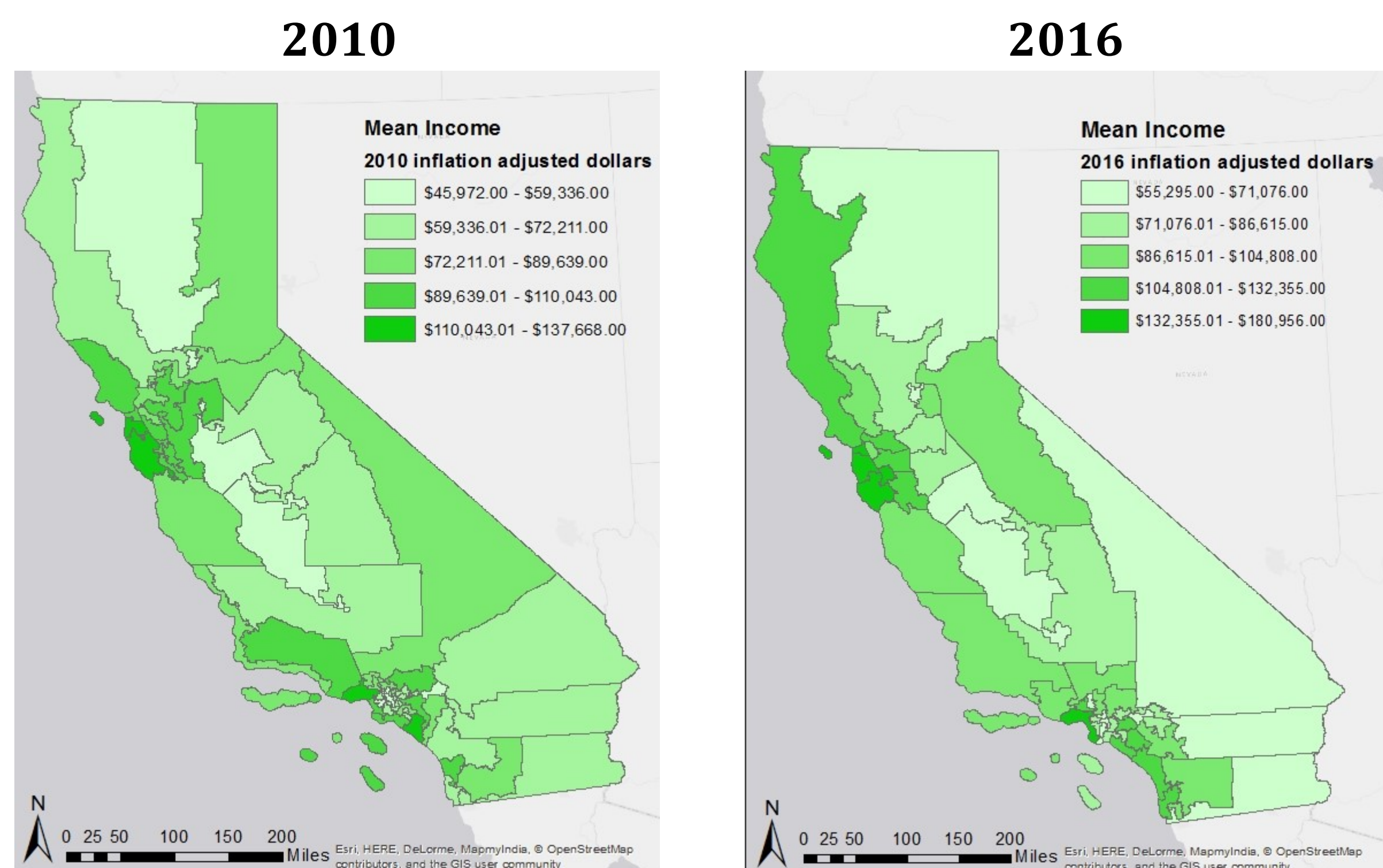


Based on my analysis, I found that the committee has not made a significant impact on the level of gerrymandering that occurs in California. In both the distribution of voters by income and race and in the number of safe districts, I found that all factors were affected negatively by the new district lines drawn by the committee.

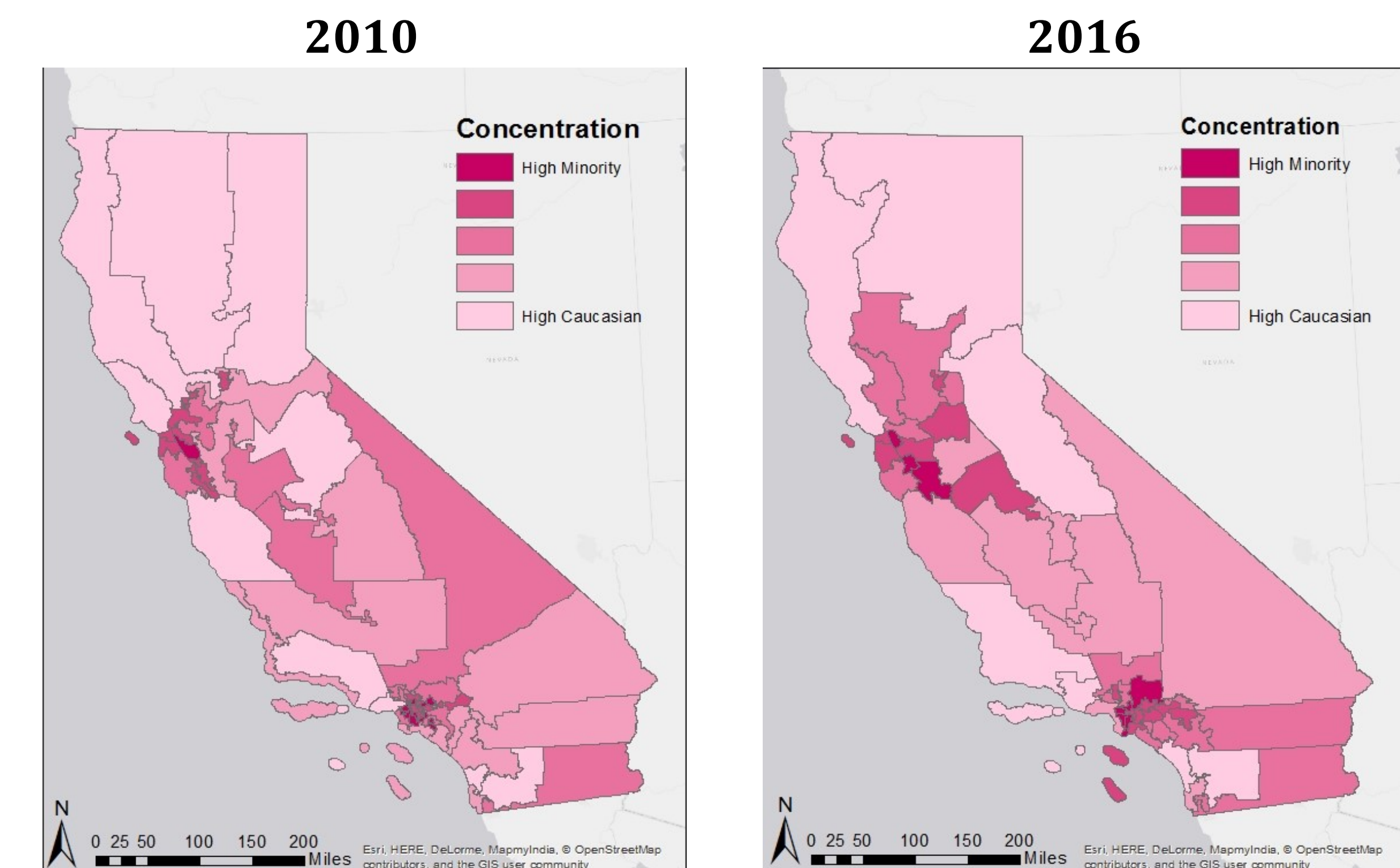
While there was a decrease in the number of districts with a mean income below \$50,000/year, there was a 50% increase in the number of districts with a mean income higher than \$100,000/year. With regards to the distribution of voters by race, there was a 50% increase in the number of districts high minority concentration and a 3% increase in the number of districts with high white concentration. Finally, with regards to the number of safe districts, there was an overall increase in the number of safe districts by 12%. There was a 20% decrease in safe republican districts and a 23% increase in safe democratic districts. This could be attributable to unintentional gerrymandering and the overall left-leaning tendencies of California, but the evidence does not overpower the possibility of error due to outside factors.

So with my analysis showing that the committee has not been very effective, what is the most logical solution to the problem? I still believe that the only logical way to draw fair districts is with an independent committee. But based on my analysis, I think there needs to be further improvements, perhaps in the requirements for how districts are drawn. Until then, it is likely that we see the continued effect of gerrymandering in the future.

Change in Income Distribution by Voting District



Change in Racial Distribution by Voting District



References:

- Chung-I Chu, L. "Taming the Gerrymander—Statistical Physics Approach to Political Districting Problem." Science Direct, Physica A, 28 Feb. 2006, ac.els-cdn.com/S0378437106001555/1-s2.0-S0378437106001555-main.pdf?_tid.
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- Owen, Guillermo, and Bernard Grofman. "Optimal Partisan Gerrymandering." Science Direct, Political Geography Quarterly, 1 Jan. 1988, ac.els-cdn.com/0260982788900328/1-s2.0-0260982788900328-main.pdf?_tid=126958d8-d48b-11e7-bc49-0000aac-b362&acdnat=1511908124_5c512eb1b28a6c2c4b3ff51def6ed990.
- Petti, Jeannette. Rigging Elections: A Spatial Statistics Analysis of Political and Unintentional Gerrymandering. The Cornell Policy Review, 20 Oct. 2017, www.cornellpolicyreview.com/rigging-elections-spatial-statistics-analysis-political-unintentional-gerrymandering/.

Data Sources:

- Tiger shapefiles on Congressional Districts for 2010, 2012, 2014, and 2016 from the US Census Bureau.
- National election results for 2010, 2012, 2014, and 2016 by voting district from the New York Times.
- California congressional election results in 2010, 2012, 2014, and 2016 by voting district from the New York Times.
- Census data on the population of California by race and income in 2010, 2012, 2014, and 2016 from American Fact Finder in the US Census Bureau

