



Where Votes Matter Most

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Introduction

There is a growing understanding in the United States that where people live has a pronounced effect on how impactful their vote can be. This is especially apparent in presidential elections due to the well publicized phenomenon of swing states. The 2000 presidential election was famously decided by 537 votes because those votes were cast in Florida rather than elsewhere. Although the unequal influence between states in regard to presidential elections is widely known, less publicity is generally given to races for seats in Congress. House and Senate races are routinely close and extremely impactful, yet are often excluded from the voting power conversation. As a result, voters outside of swing states may have significantly more power than they realize. In order to understand how voting power varies geographically, we posed the following question:

Where can an individual vote have the most impact in federal elections?

Utility Values

A utility value is a number between 0 and 1 that represents how useful something is. In our model, 0 represents the worst possible margin for a type of election and 1 represents a tie. For a district to have a utility value of 0, every election there would have to be such a blowout that it wouldn't even matter if the votes are counted. For a district to have a utility value of 1, every election there would have to be a tie; one vote would make all the difference.

Methods

The data were processed using R. Our model allowed for experimentation with various factors and combination weights to determine which methods of measuring the data and synthesizing utility values would be most informative. Margins of victory for each individual election were calculated in each district by both **raw** vote count and **percent**. The margins of elections that did not occur in a given year were set to either **NA** or **0**. Each district was given a single normalized value by taking either the **mean** or **median** of every election from 1996-2018 by type and dividing it by the highest known margin of that type. The normalized values were outputted for viewing. The raw, mean, NA values were ultimately selected.

In order to synthesize the three normalized election values into a single utility value, presidential values were scaled again according to the number of electors in that state with a weight of 1/3. Four different sets of combination weights were tested. Member weighting was selected.

The blue boxes below denote possible choices and are situated in line with the step during the process in which they became relevant. Green nodes represent outputted data frames.

Weighting	House	Senate	Presidency
Equal	1/3	1/3	1/3
Frequency	3/6	1/6	2/6
Branch	1/4	1/4	2/4
Members	100/1070	435/1070	535/1070

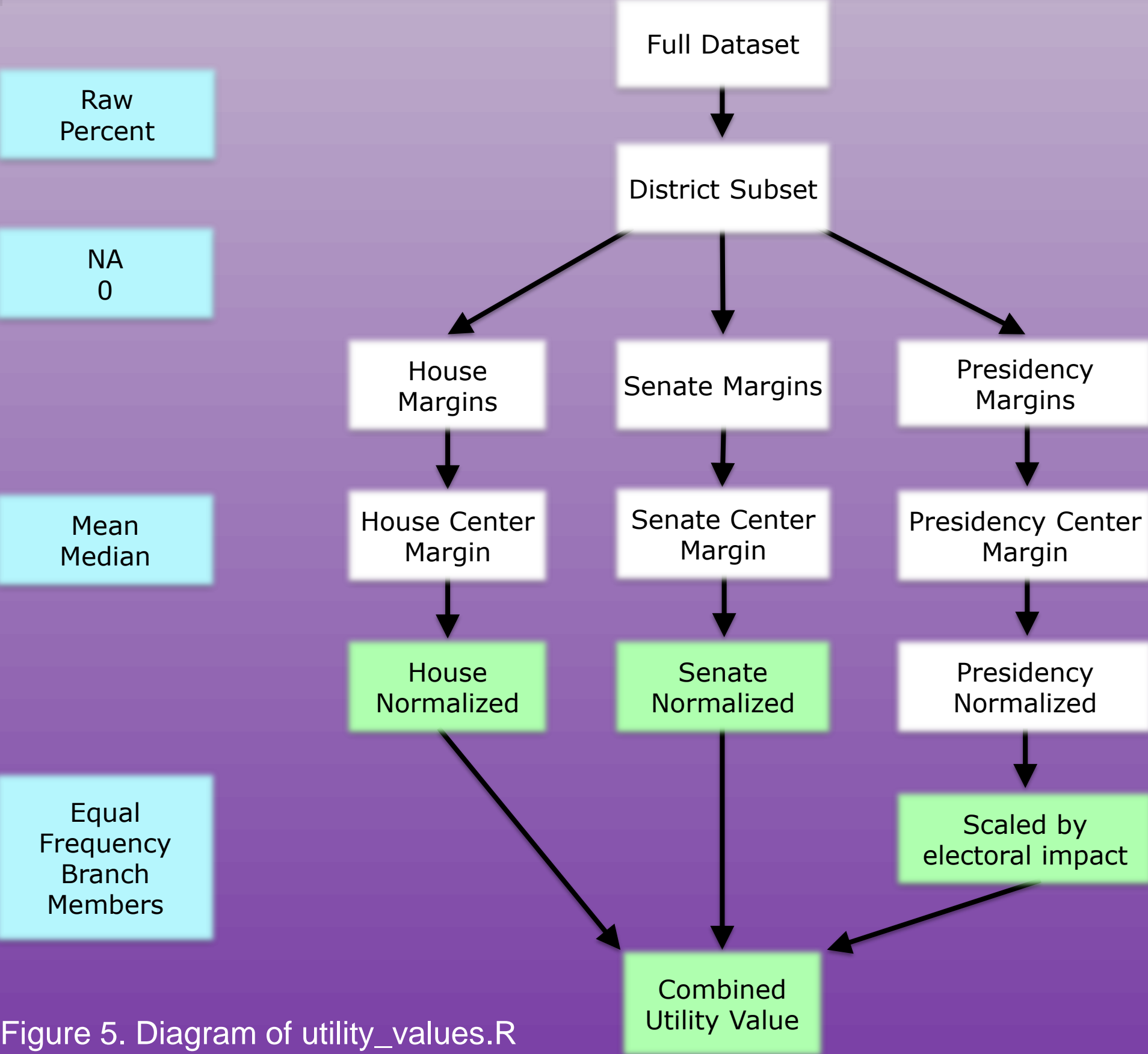


Figure 5. Diagram of utility_values.R

Results

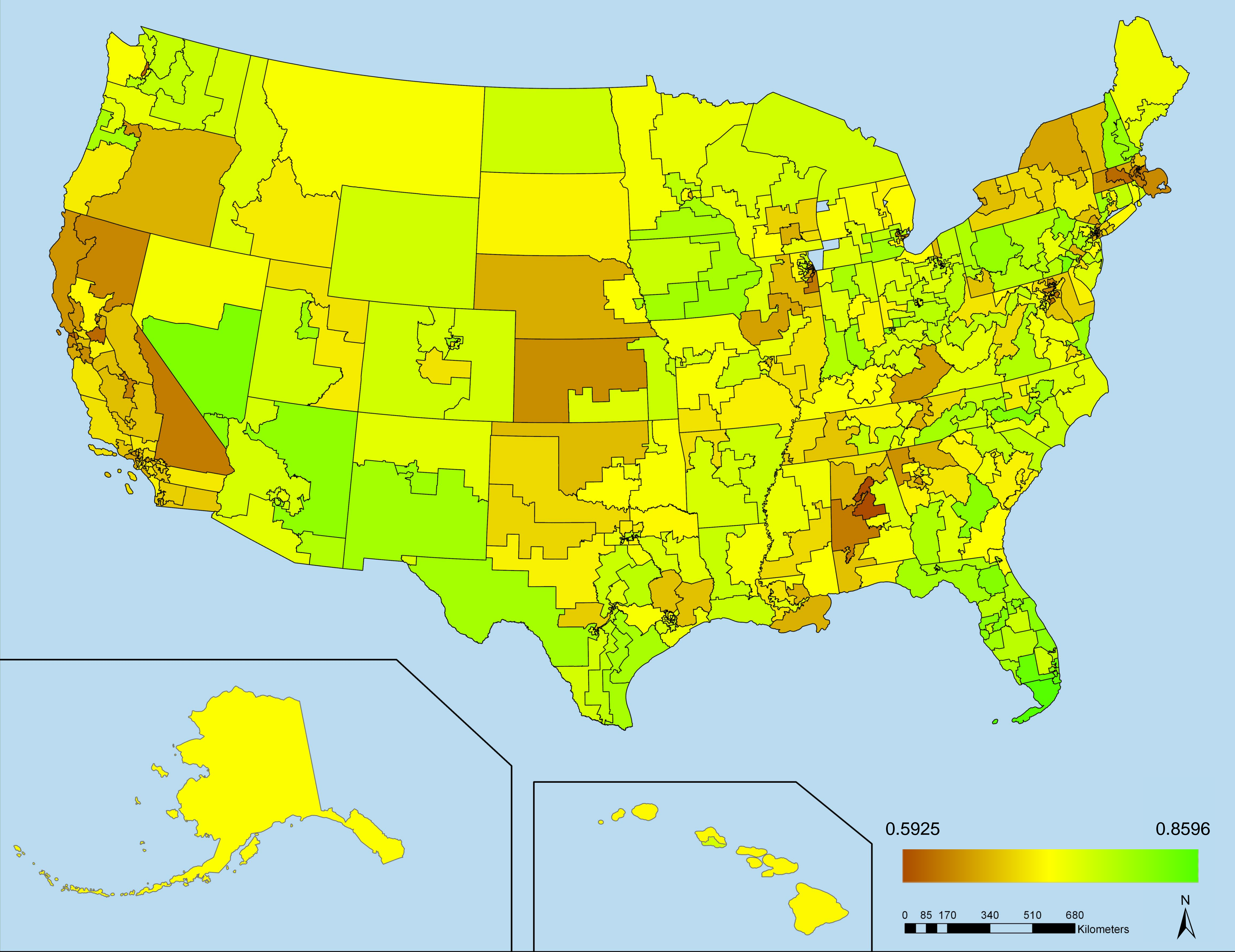


Figure 1. Utility of Individual Votes across 116th Congressional Districts

Combines the Utility Values from House, Presidential and Senate Elections using the Members weighting scheme.

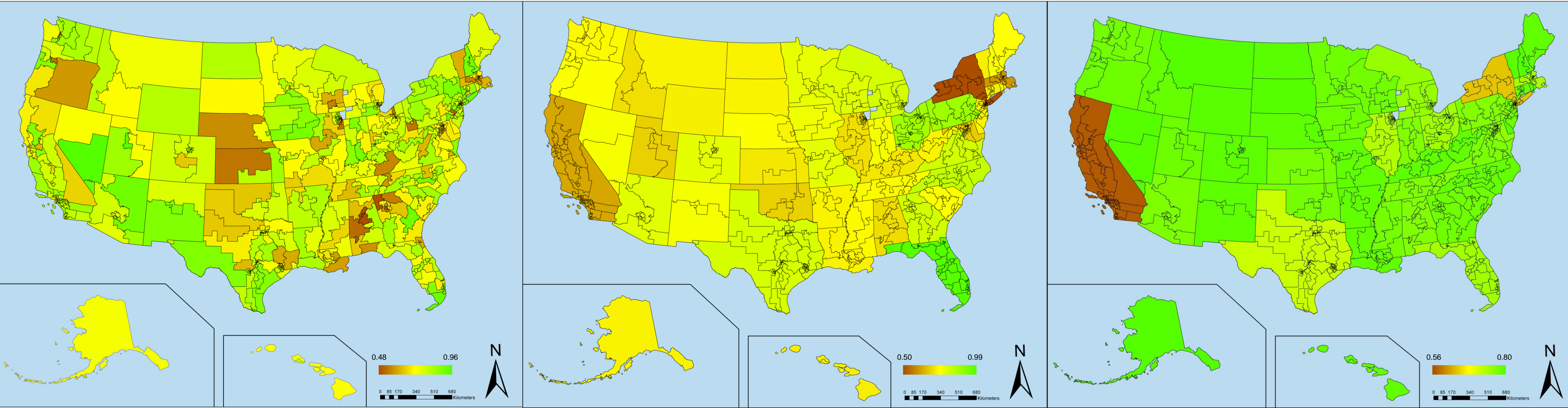


Figure 2. Utility of Individual Votes in House Elections across 116th Congressional Districts

Figure 3. Utility of Individual Votes in Presidential Elections across 116th Congressional Districts

Figure 4. Utility of Individual Votes in Senate Elections across 116th Congressional Districts

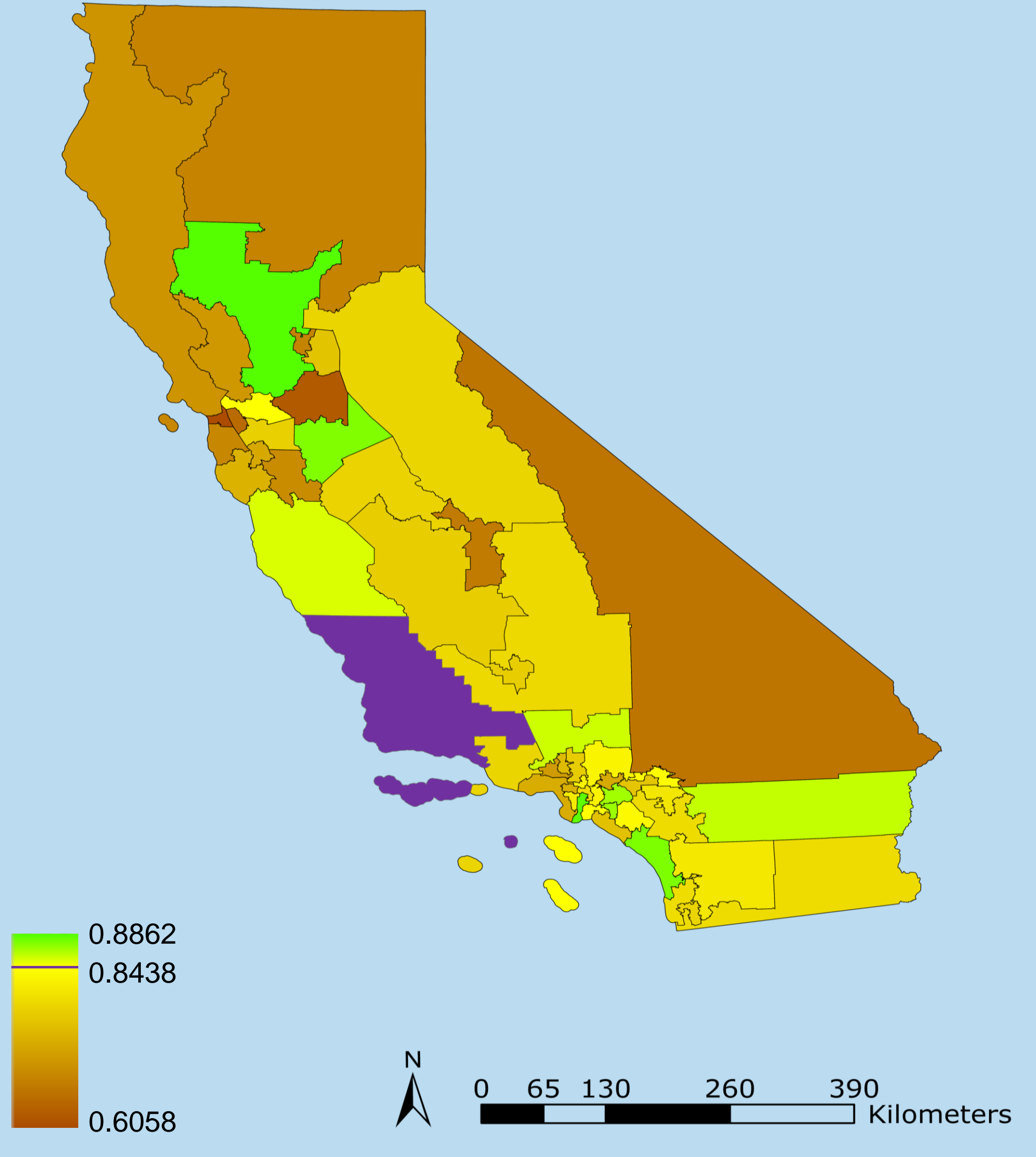


Figure 6. California raw House margins by district compared to CA-24 (purple)

Conclusions

If you really want your vote to matter, move to Florida.

The top five districts were all in southern Florida, with FL-26 coming in first with a utility value of 0.8596. In fact, Florida was consistently at or near the top of every factor and weighting scheme we tried. Its status as the largest presidential swing state makes it tough to beat because it has a lot of electoral votes to allocate (29), but consistently thin margins by which to decide. Other swing states, such as Pennsylvania and Ohio, also ranked highly with values above 0.8. The highest non-swing state in our final ranking came from Georgia (GA-12) with a utility value of 0.8186. The worst places to vote are AL-6, CA-12, WA-7, CA-9, and MA-2, all of which had utility values below 0.6151.

California is predictably a bad place to vote in federal elections. Because of its large size and relative political homogeneity, statewide elections are often won by massive margins. CA-24, which includes all of Santa Barbara County, ranks 12th out of California's 53 districts. The best place to vote is CA-3 with a combined utility value of 0.7209, followed by CA-44, -49, -10, and -46. The worst is CA-12 with a value of 0.6069, followed by CA-9, -13, -8, and -22.

Nearby Nevada is a fantastic place to vote. NV-4 ranks 7th in the country and has a value of 0.8258, while NV-3 has 0.8155. Both include part of Las Vegas.

Our decision to give presidential elections such a high weight was partially responsible for the abundance of swing states (like FL and NV) in the top spots. However, even within swing states, our analysis shows that there is often a large degree of variation in voting power between districts. Our results challenge the simplistic view that votes only matter in swing states.

References and Data

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