

Relationship between social capital and election results

Anisha Babu¹, Hyeonjin Cha¹, Diana DeWald¹, & Murat Kezer¹

¹ University of Oregon

Author Note

Add complete departmental affiliations for each author here. Each new line herein must be indented, like this line. Enter author note here.

The authors made the following contributions. Anisha Babu: Conceptualization, Data Analysis, Writing - Original Draft Preparation, Writing - Review & Editing; Hyeonjin Cha: Conceptualization, Data Analysis, Writing - Original Draft Preparation, Writing - Review & Editing; Diana DeWald: Conceptualization, Data Analysis, Writing - Original Draft Preparation, Writing - Review & Editing; Murat Kezer: Conceptualization, Data Analysis, Writing - Original Draft Preparation, Writing - Review & Editing.

Abstract

One or two sentences providing a **basic introduction** to the field, comprehensible to a scientist in any discipline.

Two to three sentences of **more detailed background**, comprehensible to scientists in related disciplines.

One sentence clearly stating the **general problem** being addressed by this particular study.

One sentence summarizing the main result (with the words “**here we show**” or their equivalent).

Two or three sentences explaining what the **main result** reveals in direct comparison to what was thought to be the case previously, or how the main result adds to previous knowledge.

One or two sentences to put the results into a more **general context**.

Two or three sentences to provide a **broader perspective**, readily comprehensible to a scientist in any discipline.

Keywords: keywords

Word count: X

Relationship between social capital and election results

Data Preparation

Load data and clean names

We first load the datasets and clean the variable names.

Clean data

Election data.

- We start with the election data as it is more comprehensive in terms of the number of counties. First, we select the variables of interests. Then, we select the election year (i.e., 2000, 2008, 2012, 2016) that we will match with social capital data.
- The name of the year variable is changed in a way that shows it is the year of election (so that it is not mixed with the same year variable in social capital data).
- We create new datasets for each presidential election we are interested in. These will be later merged with corresponding social capital data.

Social capital data.

- For each social capital dataset (i.e., 1997, 2005, 2009, 2014), we first add state code for some counties that do not readily contain that information. Then, we create two variables out of the area name such that we have different variables for county names and state codes.
- We select the relevant variables and clean the variable names.
- We create a year variable indicating when the data were collected.

- Finally, we reorder variables so that the order of the variables is the same across datasets. This will be useful when we want to merge social capital data across year so that we can get descriptive statistics for each year simultaneously and that we can visualize the changes across years in social capital.

Merge Datasets

- First, we merge social capital data across years for reasons explained above, and call it `s_capital`.
- Next, we merge corresponding election and social capital data for 4 time points. **In doing so**, we keep the rows that exist in both election and social capital data. For instance, if we do not have the election information for a county, we do not include it in the merged dataset even if we have that county's social capital data. These datasets are called `df_year`. *Year* denotes the year of election. Also, we remove the duplicate variables (i.e., state and county names) and fix the names. We did not remove them earlier because we first wanted to merge the social capital data with all the variables.
- Finally, we merge all election and social capital data in the same dataset (i.e., `df`).

Introduction

Social science literature has extensively examined the relationship between social capital and politics (e.g. Morales & Guigni, 2016; Jottier & Heyndels, 2012; La Due Lake & Huckfeldt, 1998). However, relatively little is known on the impact of social capital election results.

Methods

We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study.

Participants

Material

Procedure

Data analysis

We used R (Version 4.0.2; R Core Team, 2020) and the R-packages *dplyr* (Version 1.0.2; Wickham et al., 2020), *forcats* (Version 0.5.0; Wickham, 2020a), *ggplot2* (Version 3.3.2; Wickham, 2016), *here* (Version 0.1; Müller, 2017), *janitor* (Version 2.0.1; Firke, 2020), *knitr* (Version 1.30; Xie, 2015), *magrittr* (Version 1.5; Bache & Wickham, 2014), *papaja* (Version 0.1.0.9997; Aust & Barth, 2020), *purrr* (Version 0.3.4; Henry & Wickham, 2020), *readr* (Version 1.3.1; Wickham, Hester, & Francois, 2018), *rio* (Version 0.5.16; Chan, Chan, Leeper, & Becker, 2018), *stringr* (Version 1.4.0; Wickham, 2019), *tibble* (Version 3.0.3; Müller & Wickham, 2020), *tidyr* (Version 1.1.2; Wickham, 2020b), and *tidyverse* (Version 1.3.0; Wickham, Averick, et al., 2019) for all our analyses.

```
## Warning: package 'kableExtra' was built under R version 4.0.3
```

##	bowl	civic	golf	relig	sport
## bowl	1.00000000	0.163331564	0.1843690062	1.754235e-01	-0.011262877
## civic	0.16333156	1.000000000	0.1658962995	2.547000e-01	-0.003264050
## golf	0.18436901	0.165896299	1.0000000000	3.491323e-01	-0.021985208
## relig	0.17542352	0.254699957	0.3491322736	1.000000e+00	0.002806421

## sport	-0.01126288	-0.003264050	-0.0219852075	2.806421e-03	1.000000000
## pol	-0.02966700	0.001966347	-0.0334108615	-9.423555e-05	0.012883481
## prof	-0.01392921	0.076733734	-0.0417492547	-3.323368e-02	0.021631055
## bus	0.09723730	0.140544743	0.1370127533	3.110755e-01	-0.020948989
## labor	0.01396846	0.127298046	-0.0318697416	-4.609051e-02	0.017101150
## respn	0.04573144	0.033975898	0.0008135967	-8.286148e-03	-0.004274877
## pvote	0.08361274	0.095880533	0.1007224264	4.908534e-02	0.028533722
## pop	-0.06101167	-0.070326839	-0.1026103152	-2.262784e-01	0.023425173
## nccs	0.22185326	0.347937372	0.2808439095	3.743616e-01	0.017981863
## assn	0.29451849	0.484150132	0.4950591900	9.183900e-01	0.023813113
## demmargin	-0.09156467	-0.037419358	-0.1379312816	-3.337933e-01	0.024754801
##	pol	prof	bus	labor	respn
## bowl	-2.966700e-02	-0.01392921	0.09723730	0.0139684639	0.0457314391
## civic	1.966347e-03	0.07673373	0.14054474	0.1272980463	0.0339758984
## golf	-3.341086e-02	-0.04174925	0.13701275	-0.0318697416	0.0008135967
## relig	-9.423555e-05	-0.03323368	0.31107552	-0.0460905051	-0.0082861484
## sport	1.288348e-02	0.02163105	-0.02094899	0.0171011497	-0.0042748774
## pol	1.000000e+00	0.20178507	0.08837989	0.0511035445	-0.0353395859
## prof	2.017851e-01	1.00000000	0.16314793	0.1102856692	0.0756318706
## bus	8.837989e-02	0.16314793	1.00000000	-0.0188081662	-0.1678024962
## labor	5.110354e-02	0.11028567	-0.01880817	1.0000000000	0.1920688496
## respn	-3.533959e-02	0.07563187	-0.16780250	0.1920688496	1.0000000000
## pvote	4.581321e-02	0.04152891	0.07735125	-0.0036691656	0.1131580514
## pop	4.668483e-02	0.08947146	-0.09489972	0.0586595869	0.1039281594
## nccs	8.661840e-02	0.13549486	0.32688972	-0.0002338711	-0.1209083839
## assn	6.319277e-02	0.09392249	0.47070855	0.0830621339	0.0133341334
## demmargin	8.501235e-02	0.18630848	-0.09135165	0.1315740835	0.0595954442

```
##              pvote      pop      nccs      assn  demmargin
## bowl      0.083612738 -0.06101167  0.2218532641  0.29451849 -0.09156467
## civic     0.095880533 -0.07032684  0.3479373723  0.48415013 -0.03741936
## golf      0.100722426 -0.10261032  0.2808439095  0.49505919 -0.13793128
## relig     0.049085341 -0.22627840  0.3743615599  0.91838999 -0.33379330
## sport     0.028533722  0.02342517  0.0179818630  0.02381311  0.02475480
## pol       0.045813214  0.04668483  0.0866183961  0.06319277  0.08501235
## prof      0.041528912  0.08947146  0.1354948632  0.09392249  0.18630848
## bus       0.077351254 -0.09489972  0.3268897173  0.47070855 -0.09135165
## labor     -0.003669166  0.05865959 -0.0002338711  0.08306213  0.13157408
## respn     0.113158051  0.10392816 -0.1209083839  0.01333413  0.05959544
## pvote     1.000000000  0.02826091  0.2303456902  0.11604985  0.10013568
## pop       0.028260911  1.000000000 -0.0958799517 -0.19781990  0.35179190
## nccs      0.230345690 -0.09587995  1.0000000000  0.49110261 -0.06627689
## assn      0.116049854 -0.19781990  0.4911026061  1.000000000 -0.25818469
## demmargin 0.100135681  0.35179190 -0.0662768883 -0.25818469  1.00000000

##

## Call:
## lm(formula = demmargin ~ 1 + bowl + civic + golf + relig + sport +
##      pol + prof + bus + labor + pvote + respn + pop, data = df_anal_2016)
##

## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.90456 -0.18538 -0.04293  0.15323  1.21563

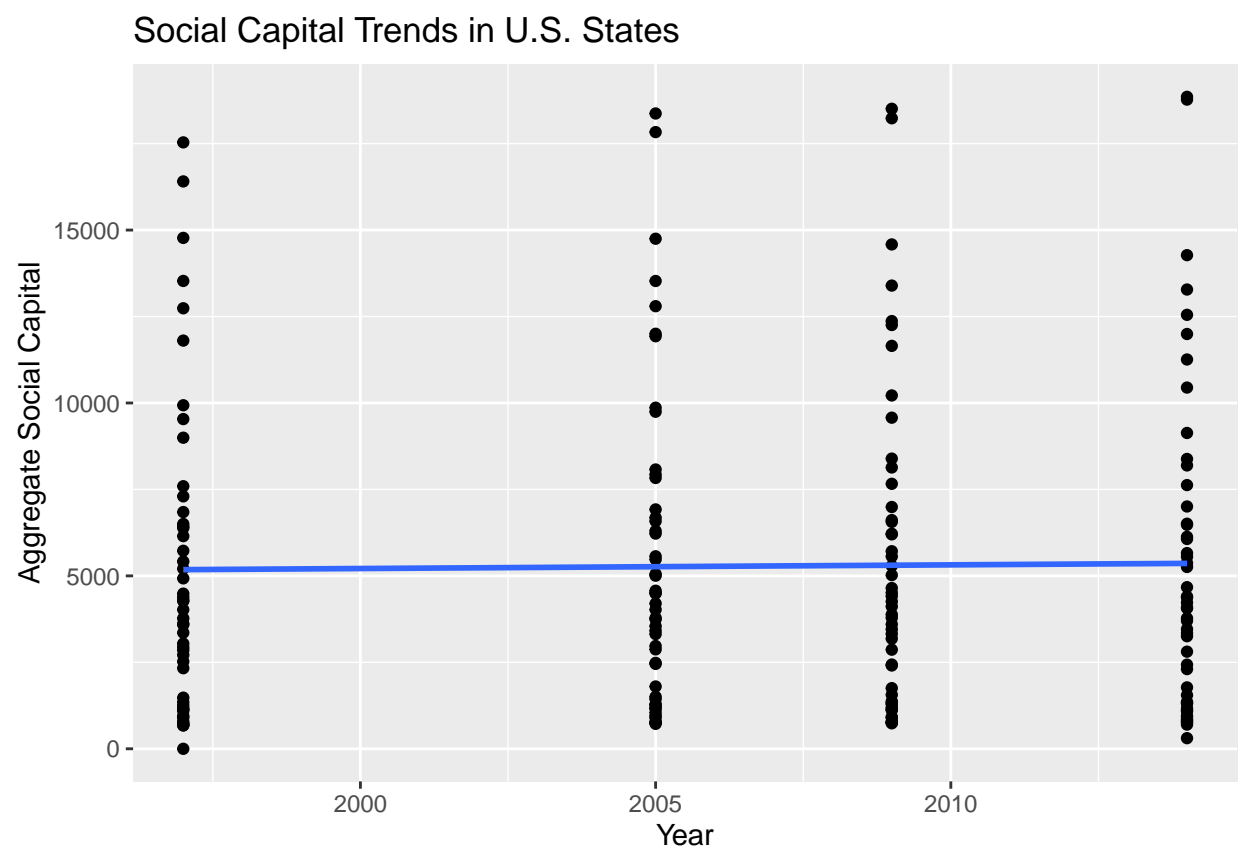
##

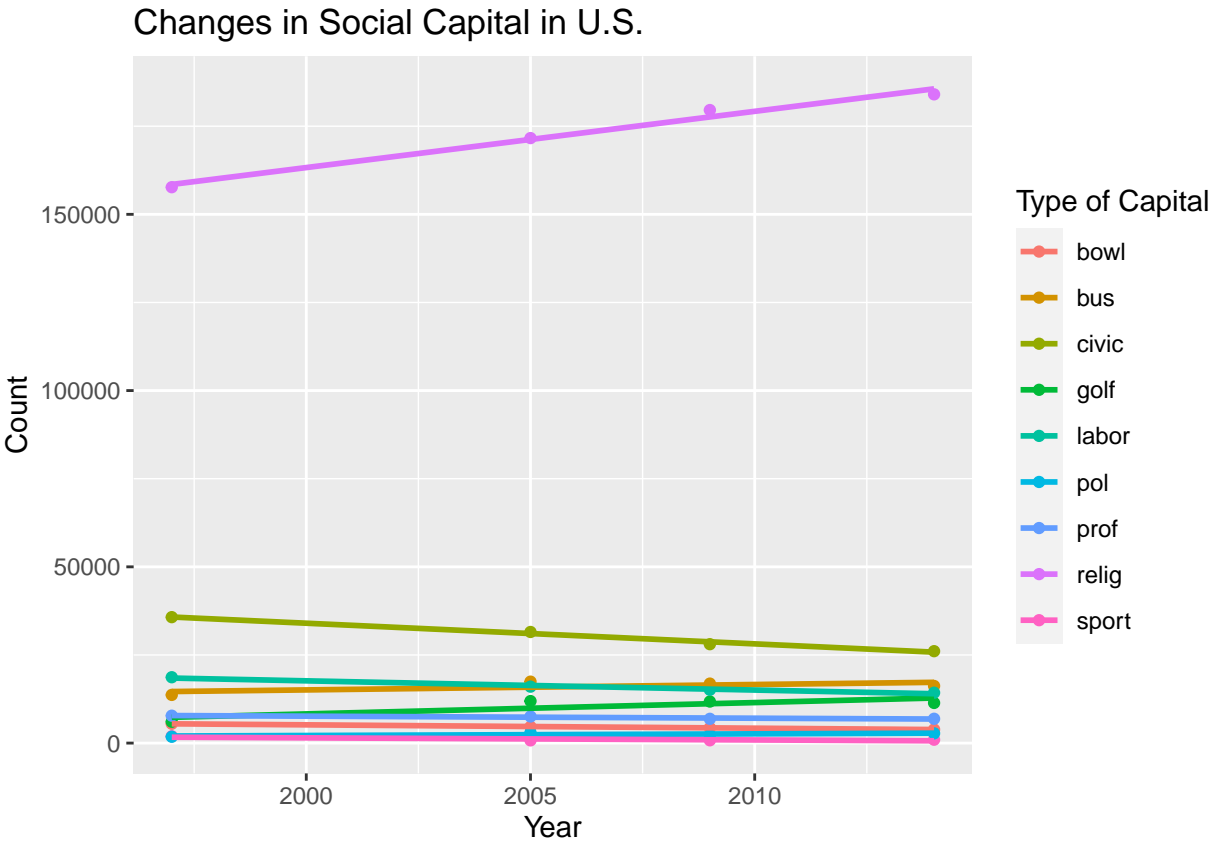
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
```

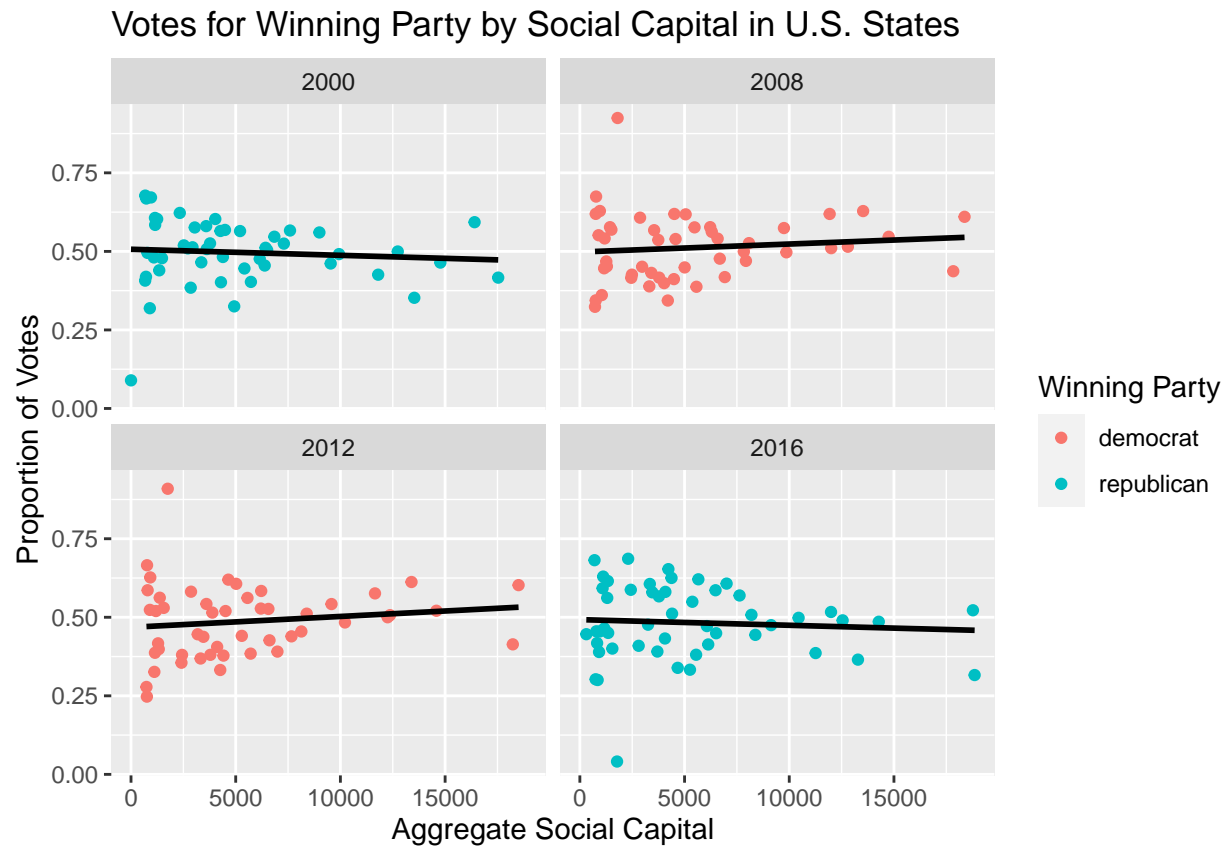
```

## (Intercept) -4.604e-01  4.802e-02  -9.588  < 2e-16 ***
## bowl        -2.034e-01  9.204e-02  -2.210   0.0272 *
## civic        6.436e-02  3.853e-02   1.671   0.0949 .
## golf        -4.419e-02  4.695e-02  -0.941   0.3467
## relig       -1.583e-01  1.110e-02 -14.253  < 2e-16 ***
## sport        1.861e-01  2.800e-01   0.665   0.5064
## pol          4.993e-01  2.240e-01   2.229   0.0259 *
## prof         1.165e+00  1.454e-01   8.011  1.60e-15 ***
## bus         -4.153e-02  4.610e-02  -0.901   0.3677
## labor        4.958e-01  9.433e-02   5.256  1.58e-07 ***
## pvote        3.632e-01  5.692e-02   6.381  2.02e-10 ***
## respn       -2.638e-02  4.800e-02  -0.550   0.5826
## pop          2.653e-07  1.607e-08  16.504  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.283 on 3102 degrees of freedom
## Multiple R-squared:  0.2362, Adjusted R-squared:  0.2333
## F-statistic: 79.94 on 12 and 3102 DF,  p-value: < 2.2e-16

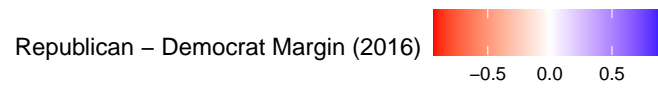
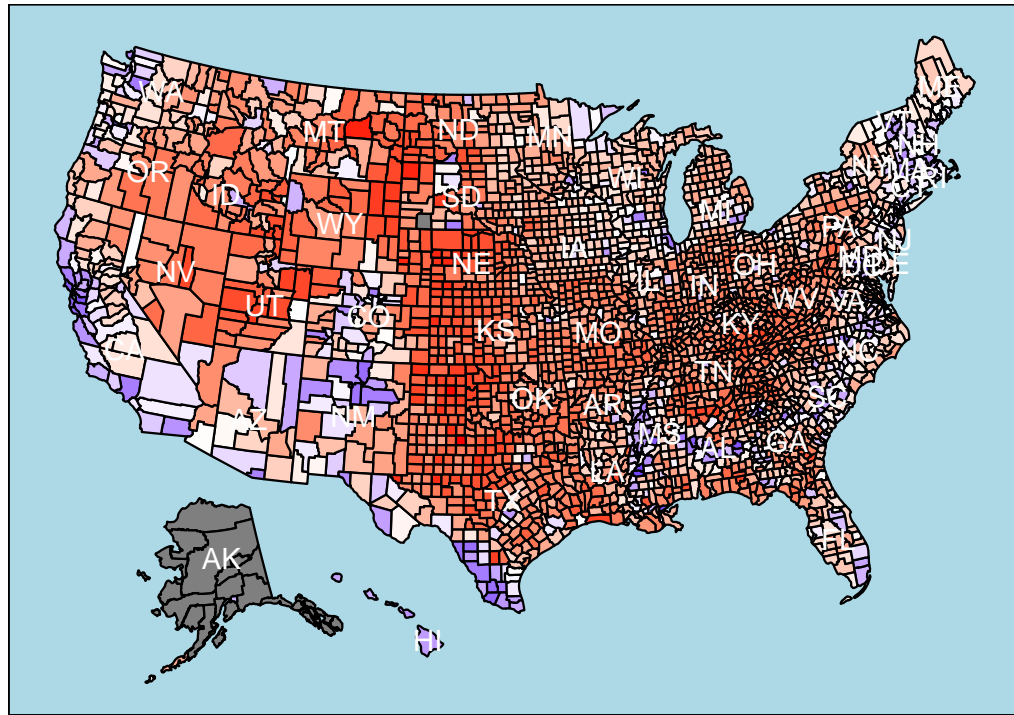
```

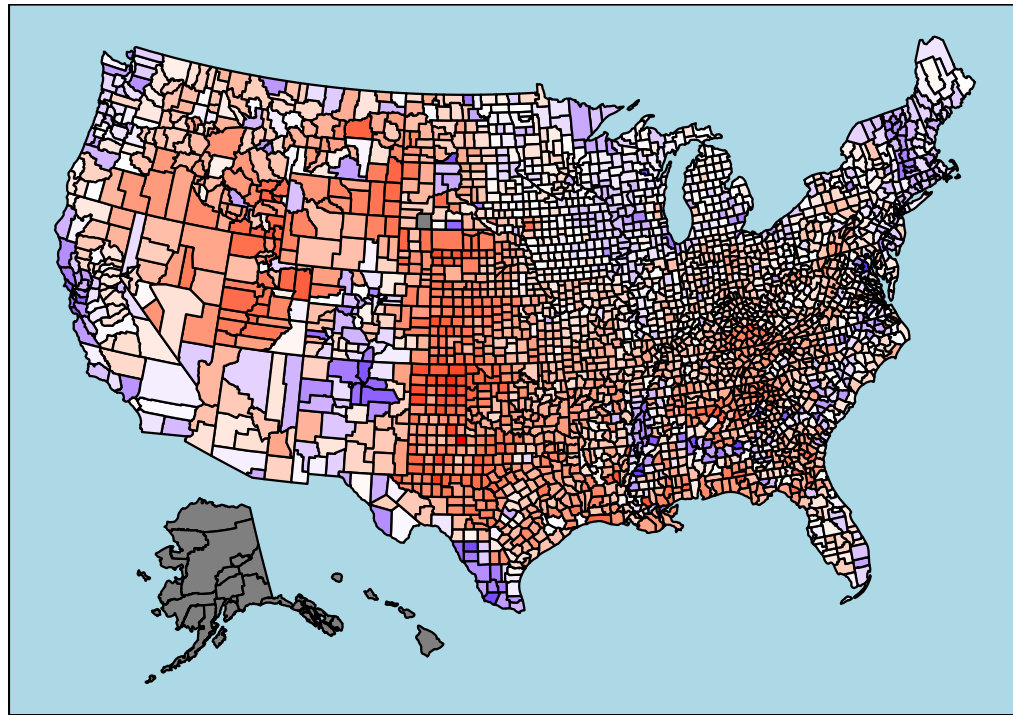







```
## Warning: package 'usmap' was built under R version 4.0.3
```

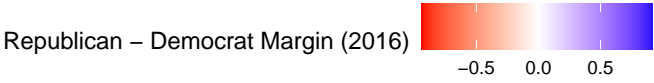
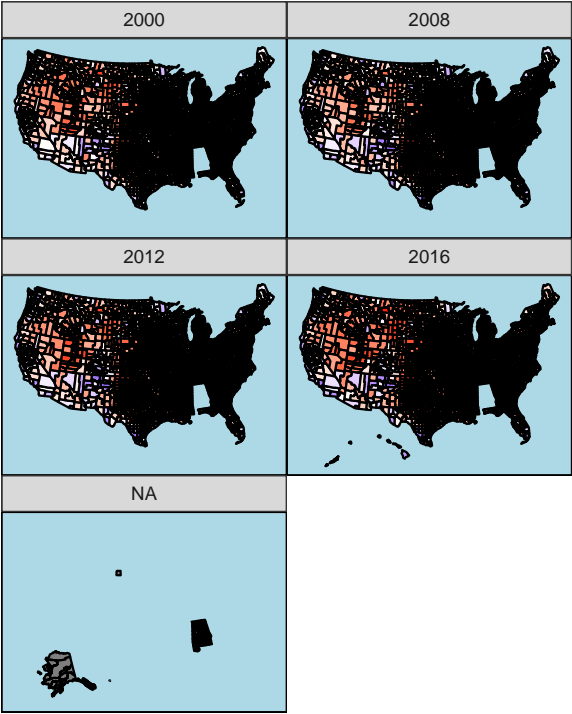


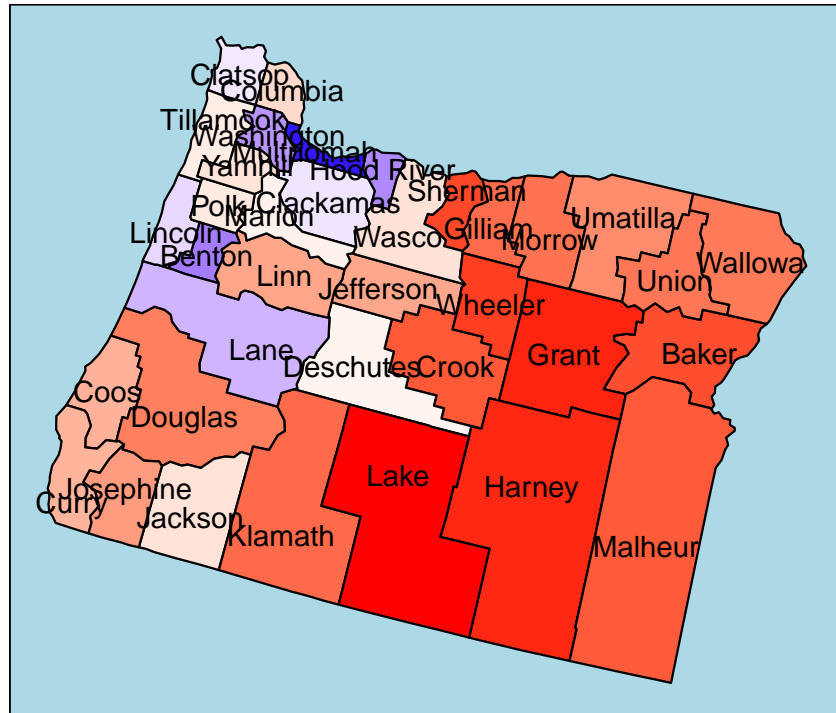


Republican - Democrat Margin (2008)

-0.5 0.0 0.5

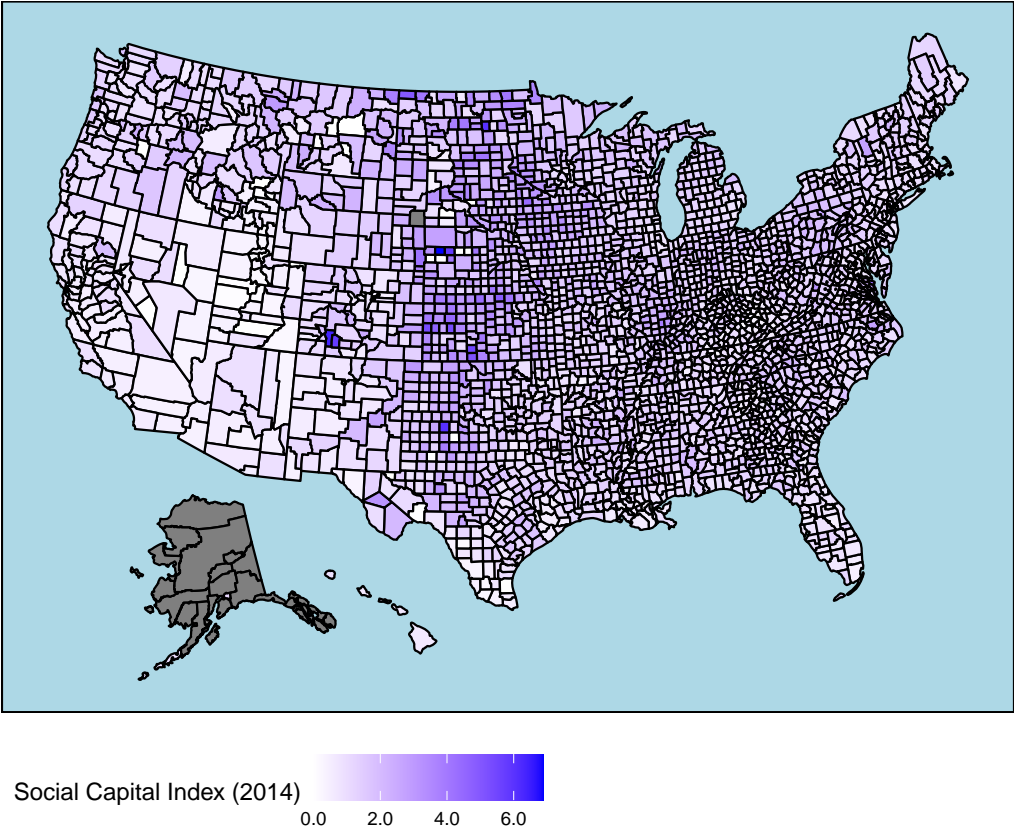
[1] 2000 2008 2012 2016

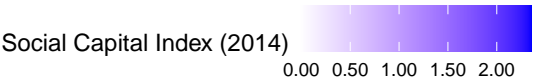
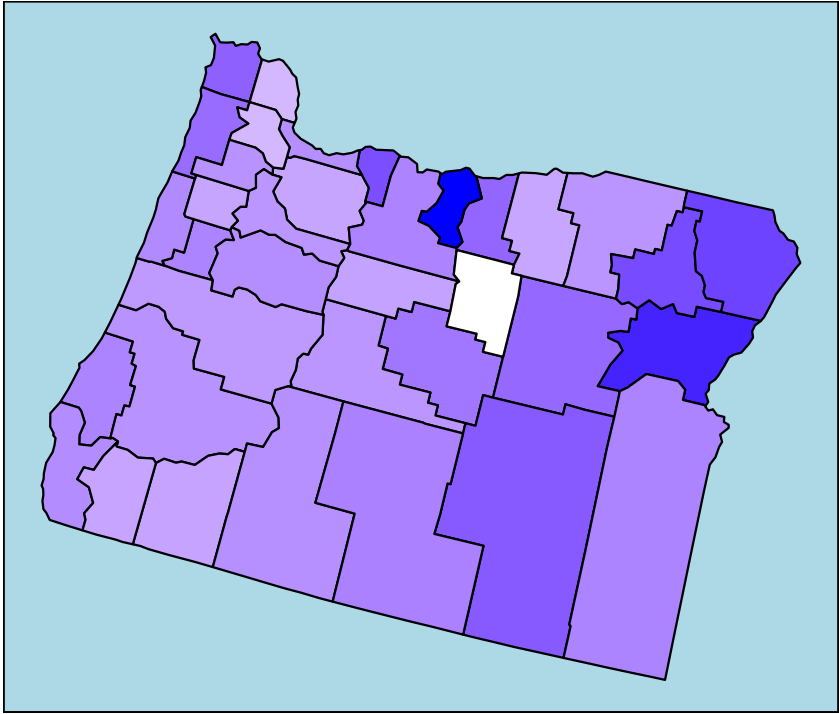




Republican – Democrat Margin (2016)

-0.6 -0.3 0.0 0.3 0.6





Results

Discussion

References

- Aust, F., & Barth, M. (2020). *papaja: Create APA manuscripts with R Markdown*. Retrieved from <https://github.com/crsh/papaja>
- Bache, S. M., & Wickham, H. (2014). *Magrittr: A forward-pipe operator for r*. Retrieved from <https://CRAN.R-project.org/package=magrittr>
- Chan, C.-h., Chan, G. C., Leeper, T. J., & Becker, J. (2018). *Rio: A swiss-army knife for data file i/o*.
- Firke, S. (2020). *Janitor: Simple tools for examining and cleaning dirty data*. Retrieved from <https://CRAN.R-project.org/package=janitor>
- Henry, L., & Wickham, H. (2020). *Purrr: Functional programming tools*. Retrieved from <https://CRAN.R-project.org/package=purrr>
- Müller, K. (2017). *Here: A simpler way to find your files*. Retrieved from <https://CRAN.R-project.org/package=here>
- Müller, K., & Wickham, H. (2020). *Tibble: Simple data frames*. Retrieved from <https://CRAN.R-project.org/package=tibble>
- R Core Team. (2020). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from <https://www.R-project.org/>
- Wickham, H. (2016). *Ggplot2: Elegant graphics for data analysis*. Springer-Verlag New York. Retrieved from <https://ggplot2.tidyverse.org>
- Wickham, H. (2019). *Stringr: Simple, consistent wrappers for common string operations*. Retrieved from <https://CRAN.R-project.org/package=stringr>
- Wickham, H. (2020a). *Forcats: Tools for working with categorical variables (factors)*. Retrieved from <https://CRAN.R-project.org/package=forcats>

- Wickham, H. (2020b). *Tidyr: Tidy messy data*. Retrieved from <https://CRAN.R-project.org/package=tidyr>
- Wickham, H., Averick, M., Bryan, J., Chang, W., McGowan, L. D., François, R., . . . Yutani, H. (2019). Welcome to the tidyverse. *Journal of Open Source Software*, 4(43), 1686. <https://doi.org/10.21105/joss.01686>
- Wickham, H., François, R., Henry, L., & Müller, K. (2020). *Dplyr: A grammar of data manipulation*. Retrieved from <https://CRAN.R-project.org/package=dplyr>
- Wickham, H., Hester, J., & François, R. (2018). *Readr: Read rectangular text data*. Retrieved from <https://CRAN.R-project.org/package=readr>
- Xie, Y. (2015). *Dynamic documents with R and knitr* (2nd ed.). Boca Raton, Florida: Chapman; Hall/CRC. Retrieved from <https://yihui.org/knitr/>

Table 1

(#tab:descriptives tables)Table 1
 <i>A summary table for total votes and population by state.</i>

Sate	N	Total Votes		Population	
		M	SD	M	SD
AK	9	7036.33	398.67	103141.67	147915.25
AL	871	29358.00	44896.51	68879.68	100914.62
AR	975	13892.38	21091.14	37270.45	53303.44
AZ	195	142568.75	322061.96	388107.70	871560.05
CA	754	220437.07	459793.34	616297.65	1378440.96
CO	822	36534.26	73810.47	73782.09	148932.52
CT	104	195334.13	149300.04	436422.76	343038.81
DC	13	263094.69	45450.29	594503.38	38658.20
DE	39	131234.72	82538.43	282679.28	173389.87
FL	867	115569.11	169851.71	255262.47	407373.04
GA	2067	22354.78	50236.18	56445.14	119007.58
HI	12	107234.25	108642.95	355042.00	387066.96
IA	1287	15009.59	25993.86	30213.59	50321.87
ID	572	13985.49	27273.27	32808.63	60062.09
IL	1326	51236.38	206026.82	123385.72	528244.83
IN	1196	27699.71	45113.14	68418.50	113413.69
KS	1365	11002.53	31921.51	26360.95	70262.47
KY	1560	14628.43	32859.33	34966.85	71505.35
LA	832	30059.10	40530.66	70716.44	97338.35
MA	182	216389.62	187780.62	461166.55	393704.30
MD	312	104048.16	124061.99	232447.60	279563.92
ME	208	44052.68	39267.75	81514.40	69146.66
MI	1079	56095.34	121992.73	119409.92	266775.54
MN	1131	31945.15	79108.64	58910.11	140710.23
MO	1495	22519.63	56794.59	59414.99	129819.53

Table 2

(#tab:descriptives tables)Table 2
 <i>A summary table for votes by candidate and year of election.</i>

Year	Party	N	Mean Candidate Votes	SD Candidate Votes
2000	democrat	3107	16217.87	57150.19
2000	green	3107	NA	NA
2000	republican	3107	16048.65	38632.37
2000	NA	3107	338.98	953.87
2008	democrat	3108	22156.76	76972.02
2008	republican	3108	19166.61	44839.53
2008	NA	3108	576.80	1848.41
2012	democrat	3108	20973.53	73998.15
2012	republican	3108	19409.48	44596.24
2012	NA	3108	838.35	2952.17
2016	democrat	3115	21070.80	80496.43
2016	republican	3115	20160.42	43156.86
2016	NA	3115	2449.34	7508.95

Note: N = total number of counties in the US reporting data.