

Team “Junior Varsity Stats”

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Key points

- Response: voter turnout rate by county level
- Multilevel modeling with 2 previous midterm elections
- Not time series
- 2018 demographics data were predicted using time trend

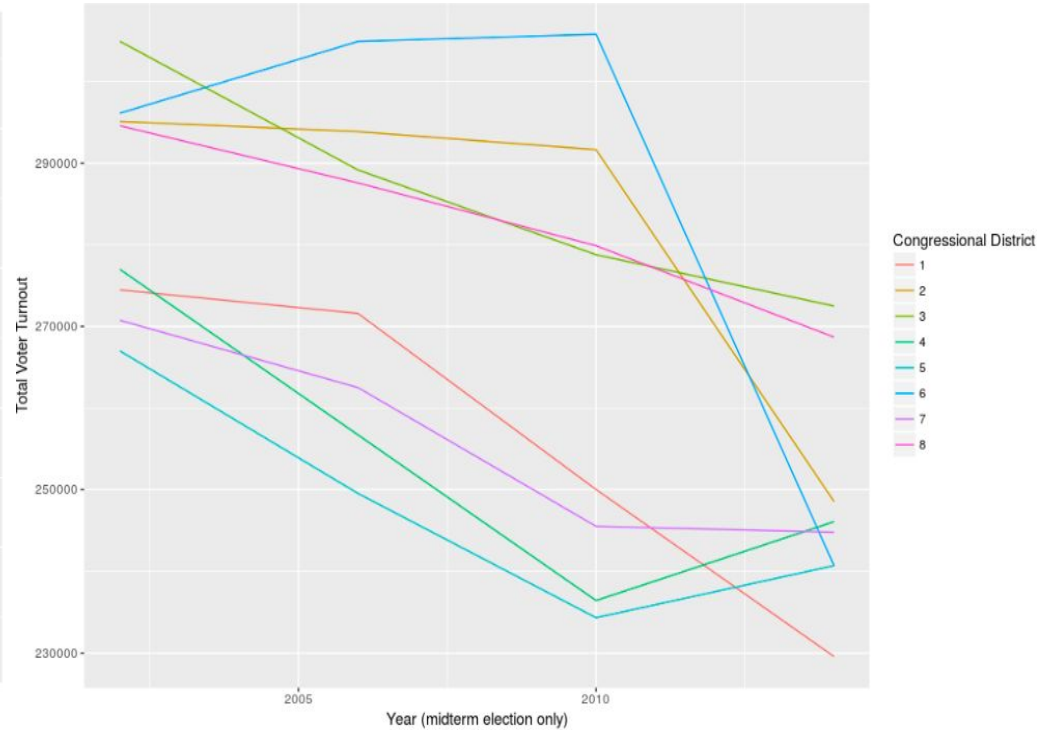
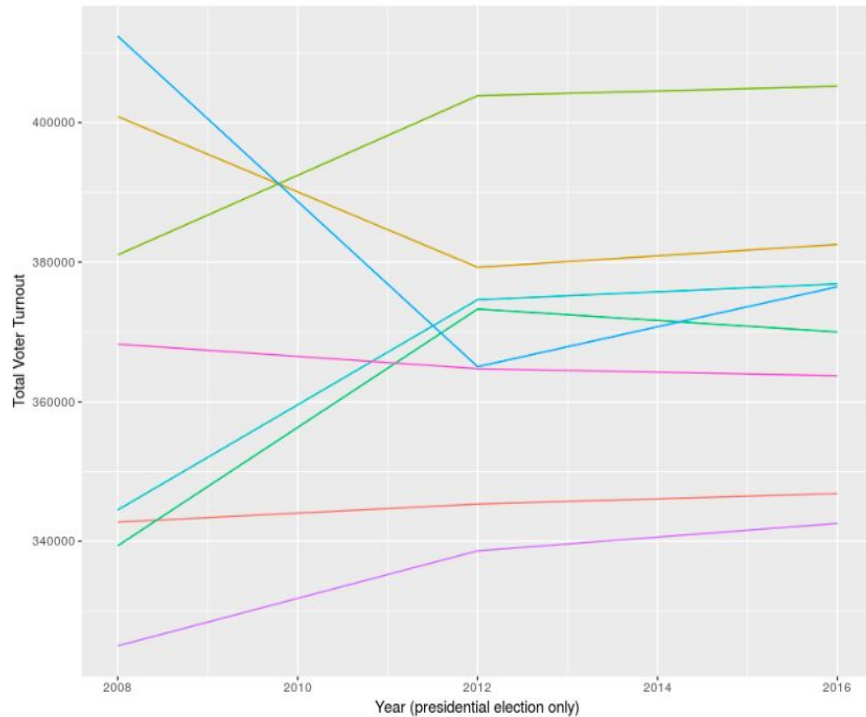
The Data

- Voter Turnout: Minnesota Secretary of State
- Demographics: US Census Bureau
- Political
 - + Social Capital: [Northeast Regional Center for Rural Development - Pennsylvania State University](#)
 - + Partisan Control: [senate.gov](#), [history.house.gov](#), [leg.state.mn.us](#)
 - + Campaign Contribution: [followthemoney.org](#)

Previous Time
periods

Socio-Economic
dynamic

Political structure



Change of Voter Turnout over Time by Congressional Districts

Multilevel Models

Account for the 87 Counties

- Variability within the counties (e.g. demographic data changes over time)
- Variability between counties

Linear Regression looks at all counties and years independently

RESULTS - 2018

Congressional district	Total voter turnout
1	242781.7
2	258453.0
3	361741.0
4	245847.0
5	243931.5
6	160511.7
7	256105.8
8	278640.7

Total: 2048012

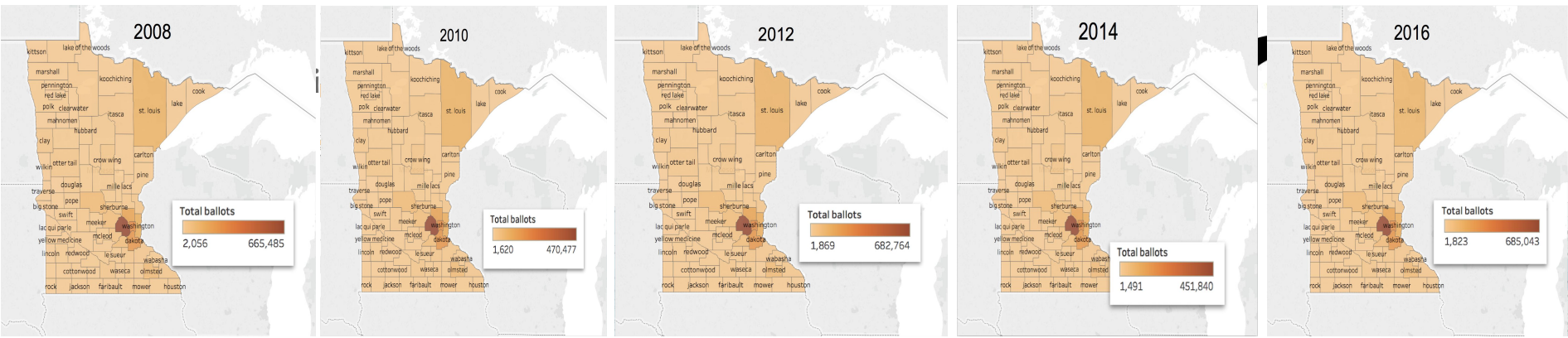


Figure a)

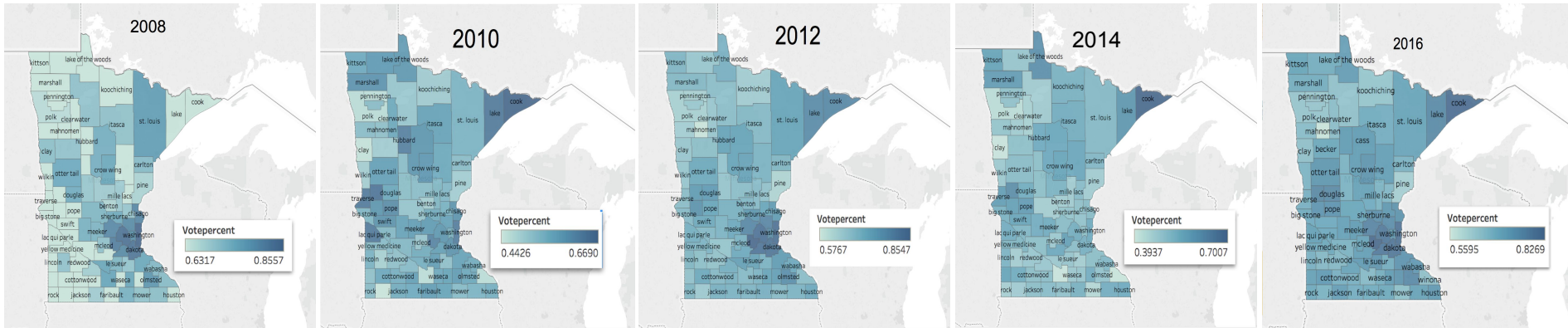


Figure b)

Map based on Longitude and Latitude. Color shows details about turnout volume, and rate respectively. The marks are labeled by county name. Data filtered by year

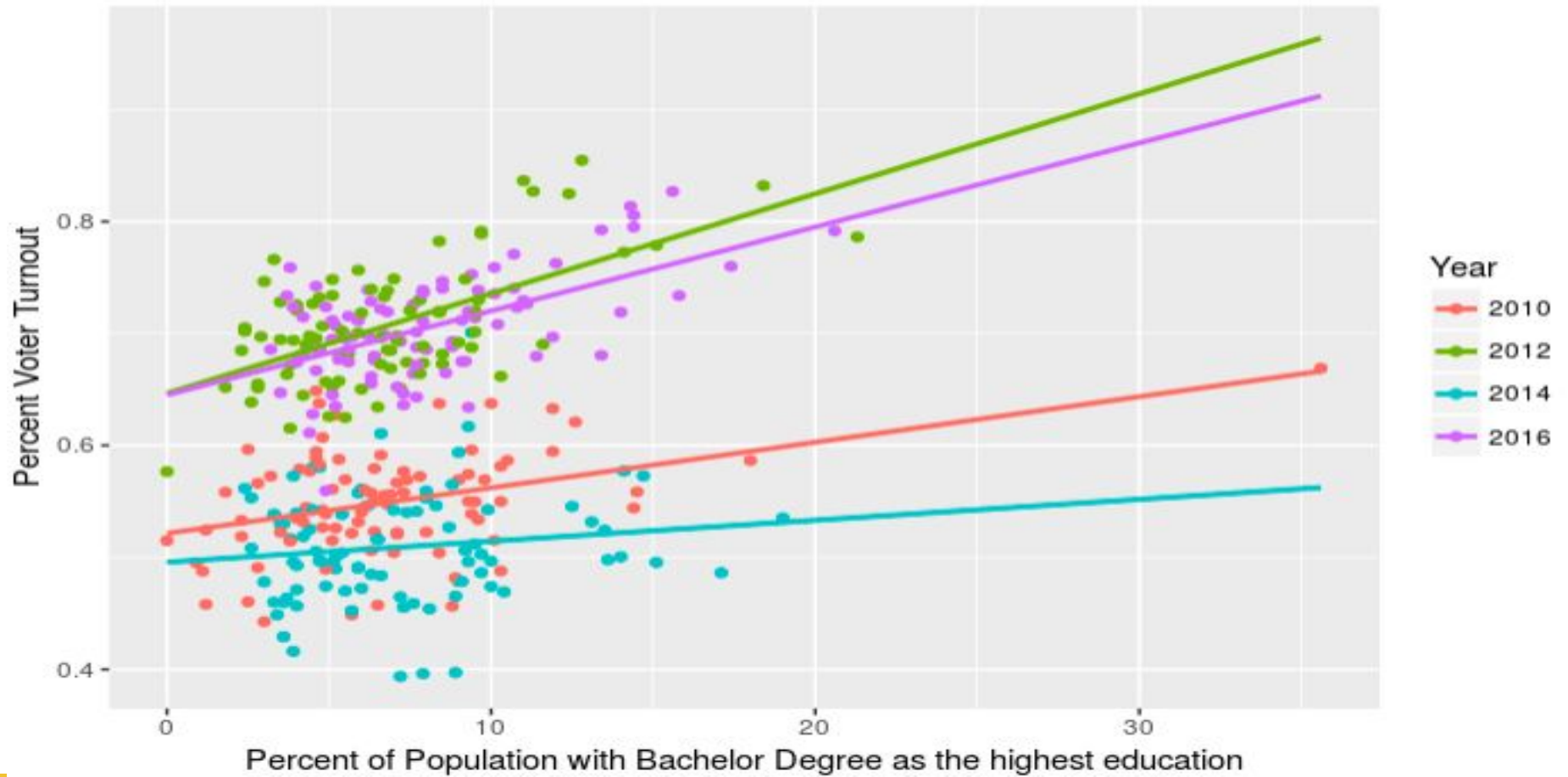
Modeling

Pct Bachelor's Degree	$1.05 * 10^{-3}$
Pct Age 20-24	$-5.8 * 10^{-3}$
Pct Age 25-29	$-5.5 * 10^{-3}$
Pct White Population	$-6.7 * 10^{-1}$
Pct Female Population	$-5.5 * 10^{-1}$
Unemployment Rate	$-3.7 * 10^{-3}$
Median Household Income (thousand dollars)	$-1.7 * 10^{-5}$

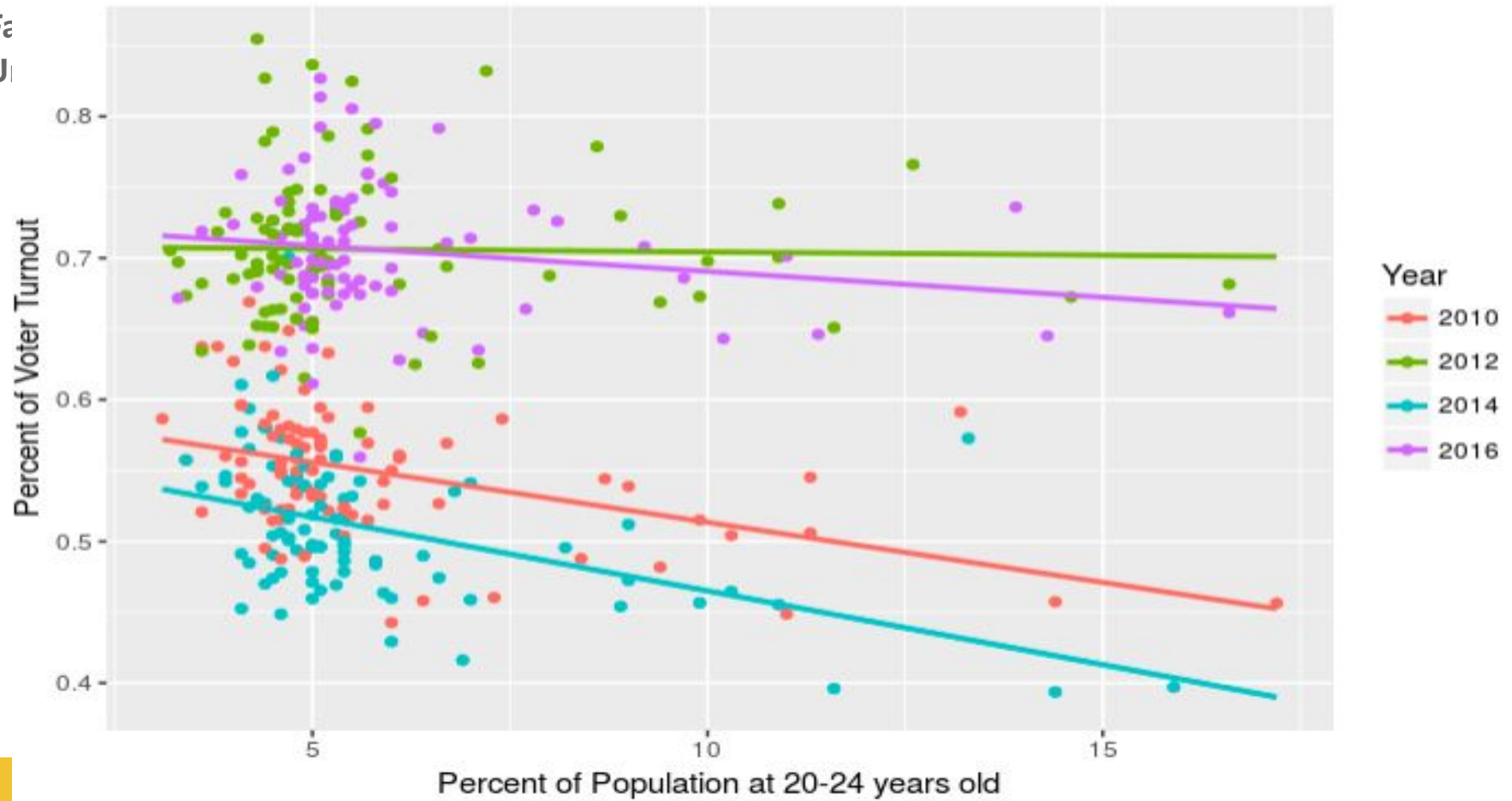
Pct living under Poverty	$-6.7 * 10^{-3}$
Pct Public Administration Population	$4.0 * 10^{-1}$
Pct Finance Population	$7.8 * 10^{-1}$
Pct Professional Population	$8.3 * 10^{-1}$
Pct Information Population	$1.5 * 10^{-0}$
Median Household Income : White Population	$1.5 * 10^{-5}$
Association Index	$1.1 * 10^{-1}$

The response

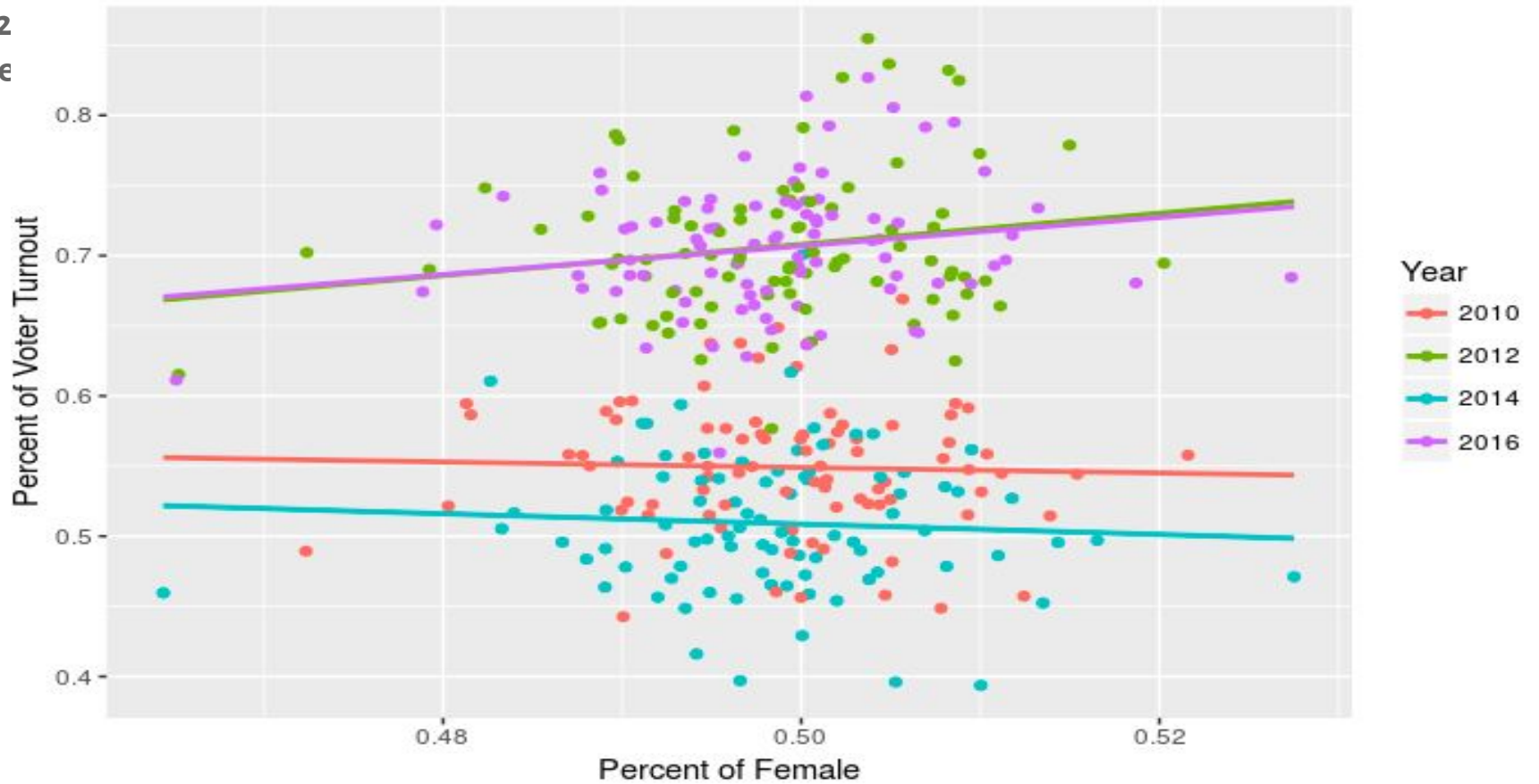
What factors may be related to
voter turnout?



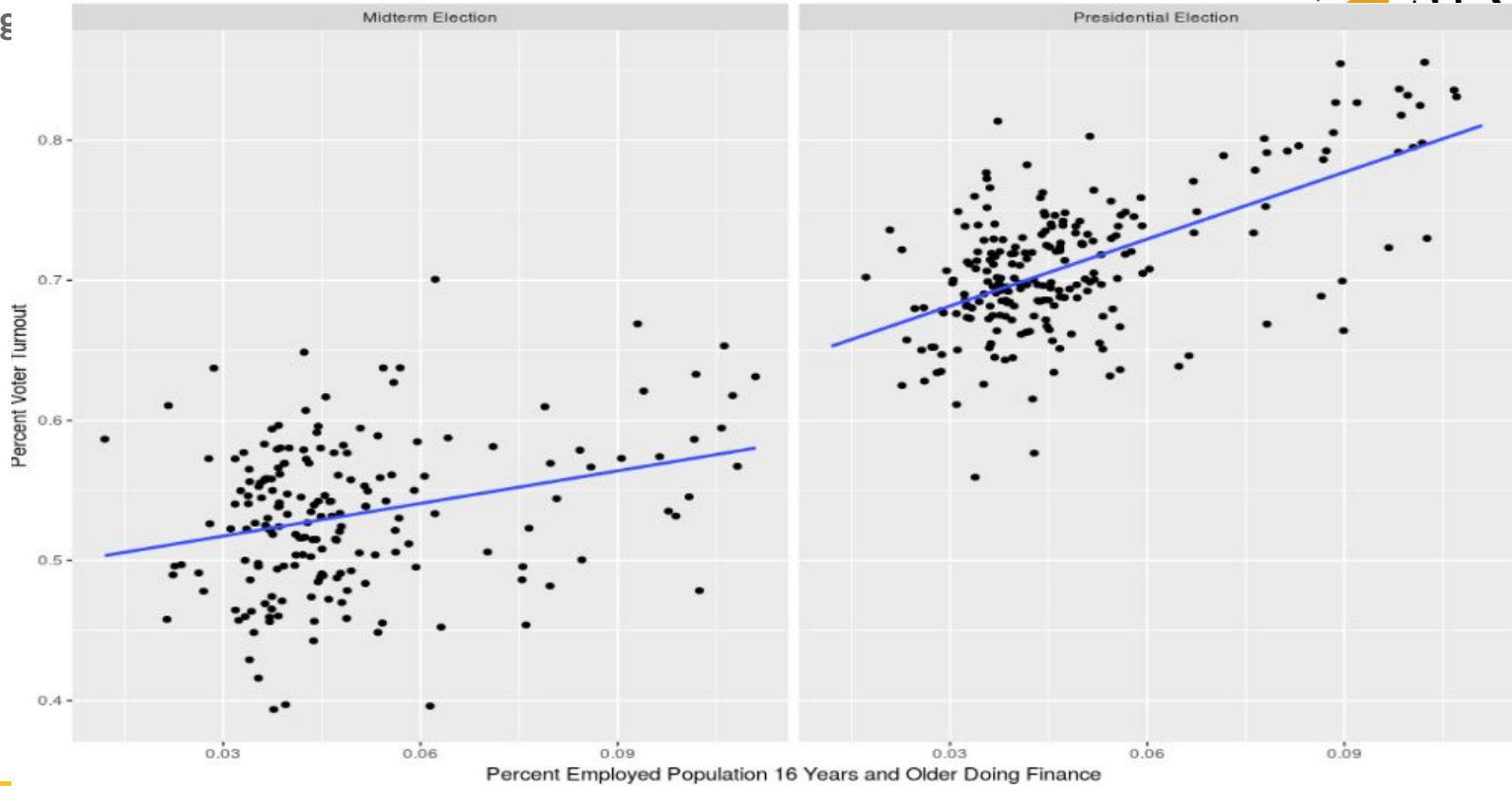
DEMOGRAPHIC 1: Percent of Population with Bachelor Degree as the highest education



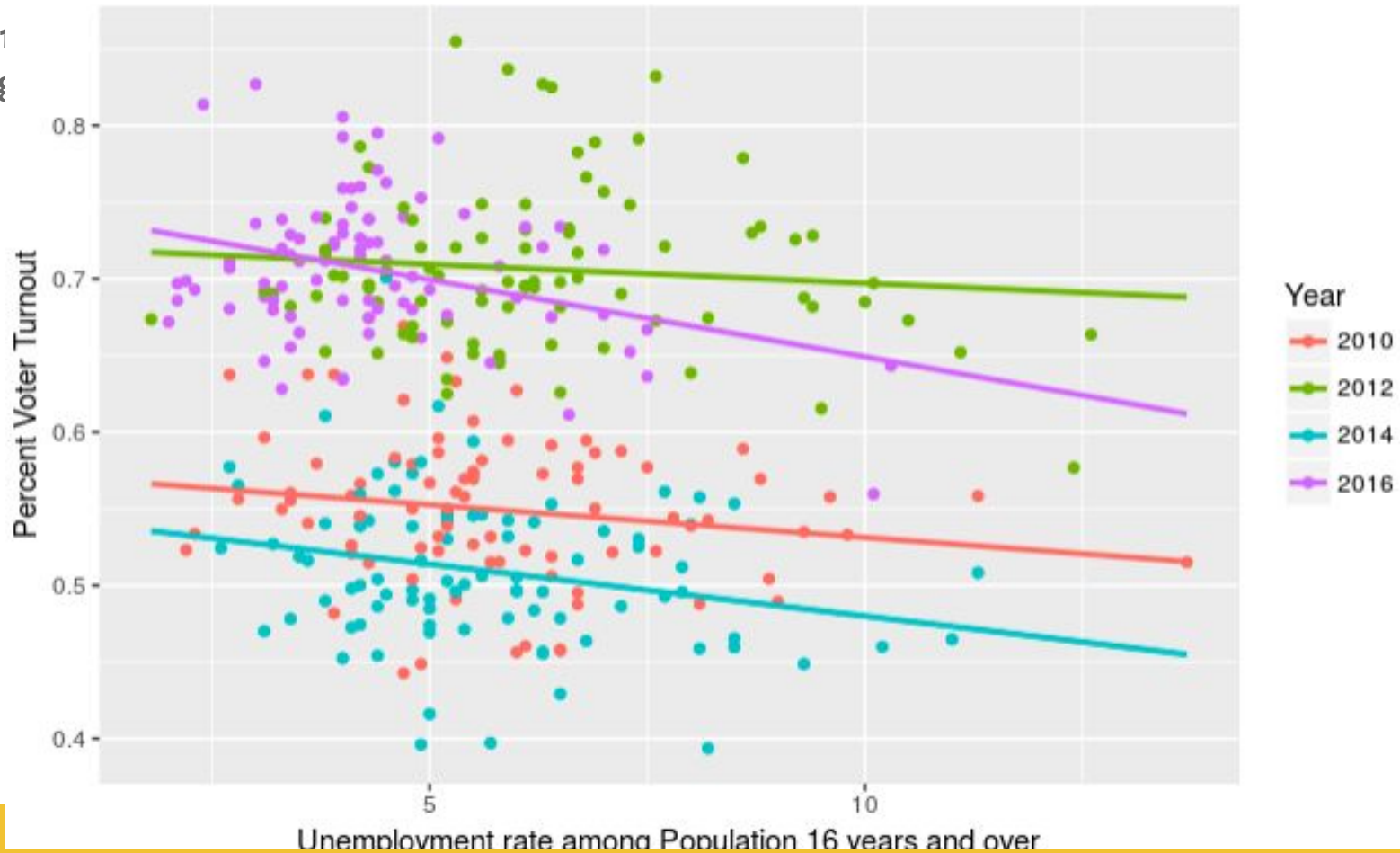
DEMOGRAPHIC 1: Percent of Population 20-24 years old vs. Voter Turnout

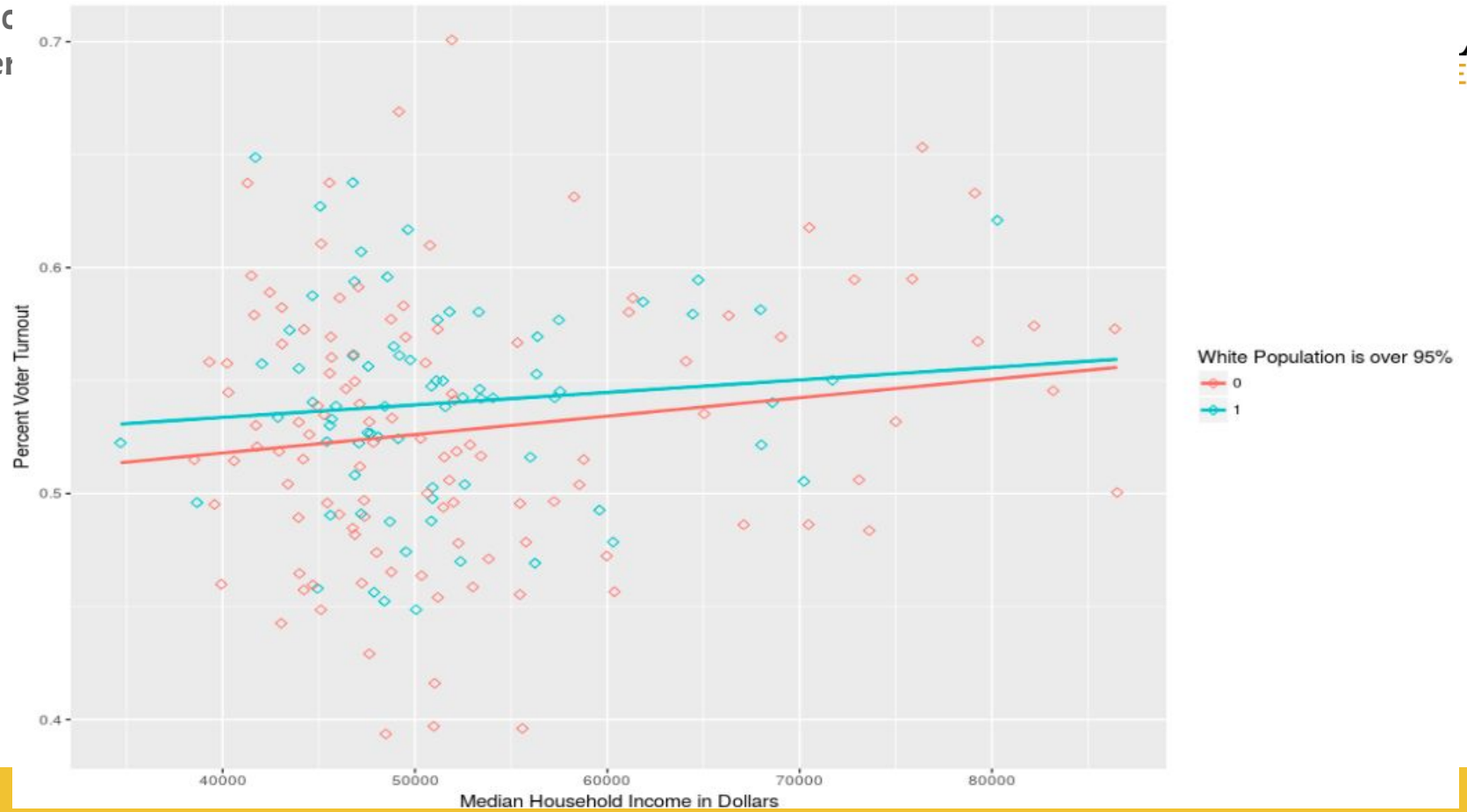


DEMOGRAPHIC: Percent of Female vs. Voter Turnout

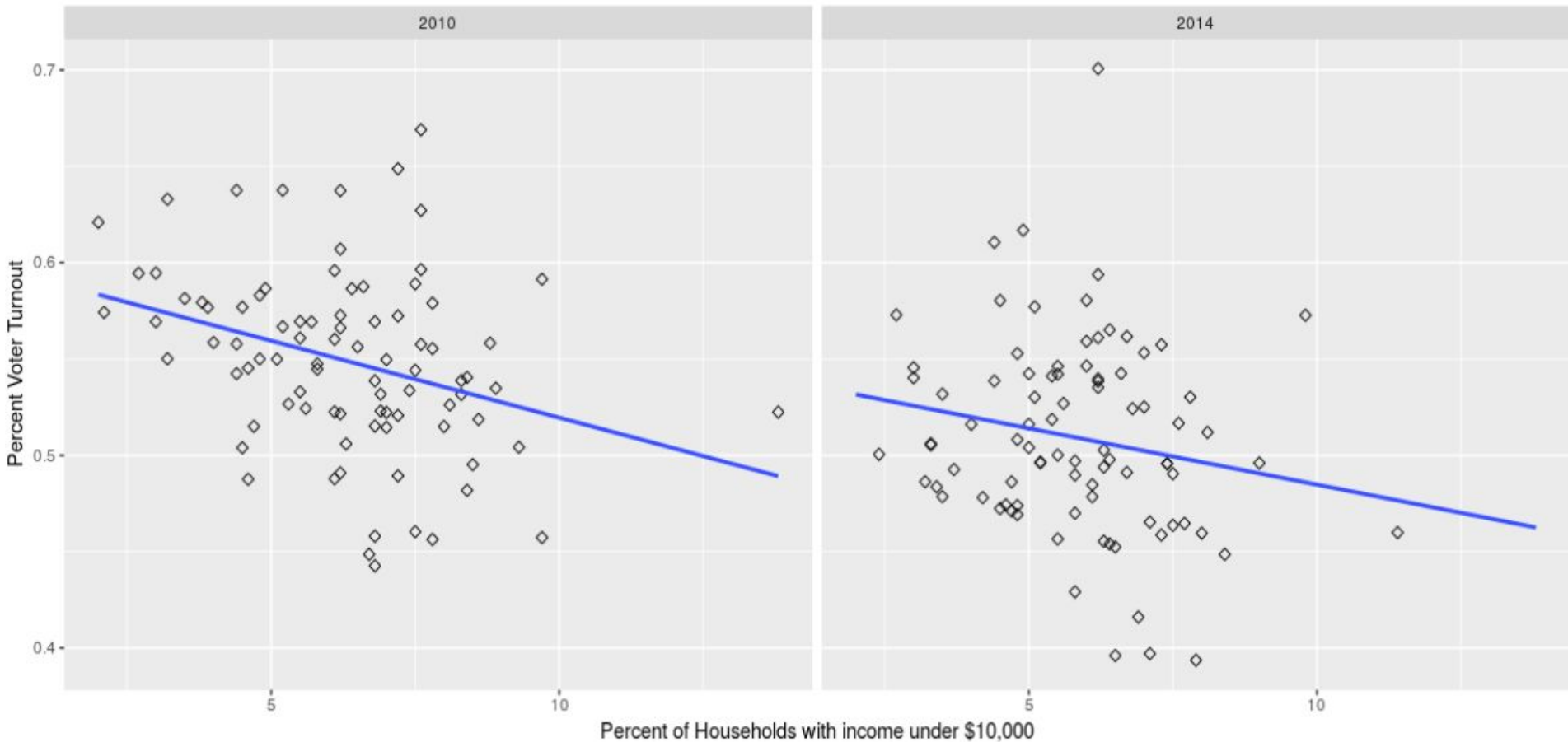


DEMOGRAPHIC: Percent of Workforce doing Finance vs. Voter Turnout

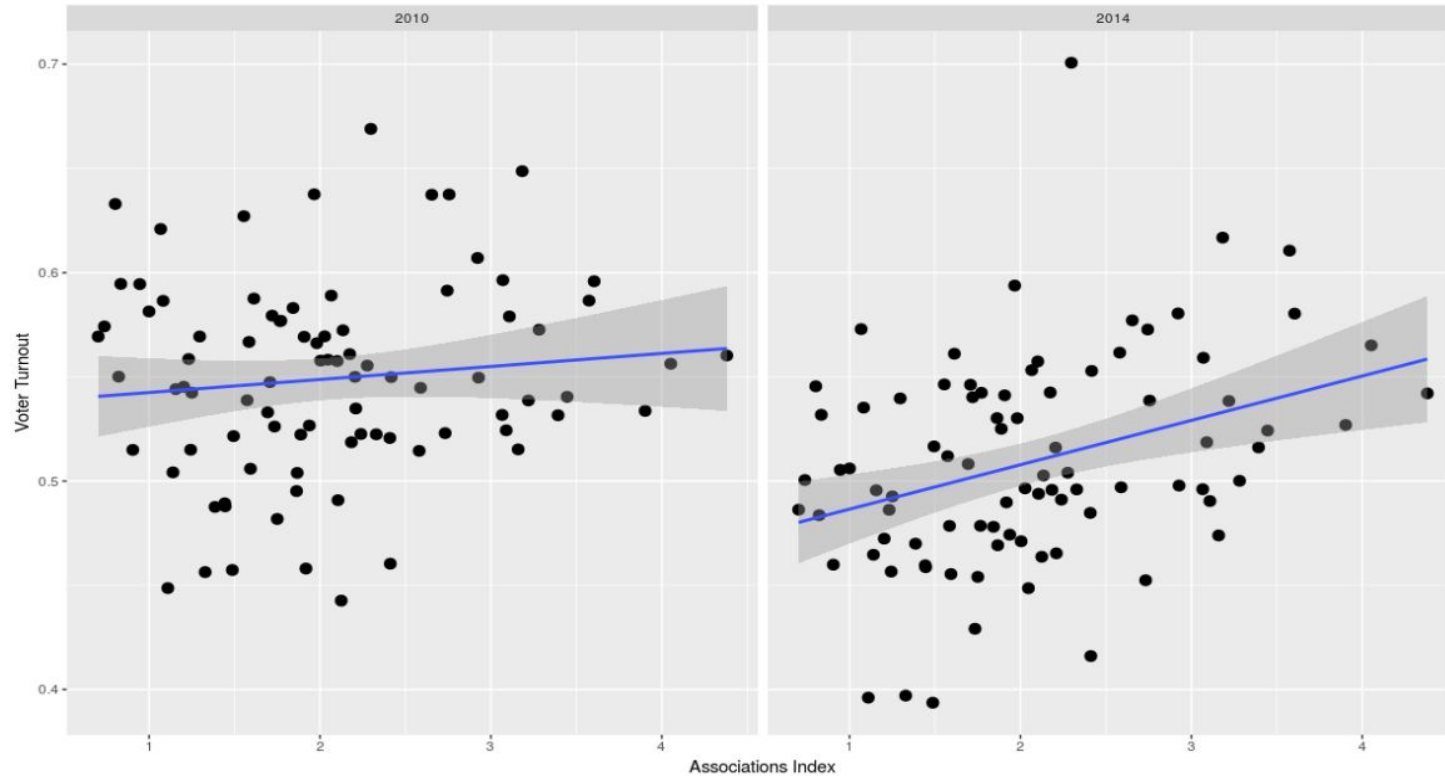




ECONOMIC 2: Median Household Income vs. Voter Turnout



ECONOMIC 3: Percent of Households with income under \$10,000 vs. Voter Turnout



SOCIAL CAPITAL: Association Index vs. Voter Turnout

Variables considered but not significant

- Highschool Degree
- Citizenship
- Partisan Control
- Electoral Competitiveness

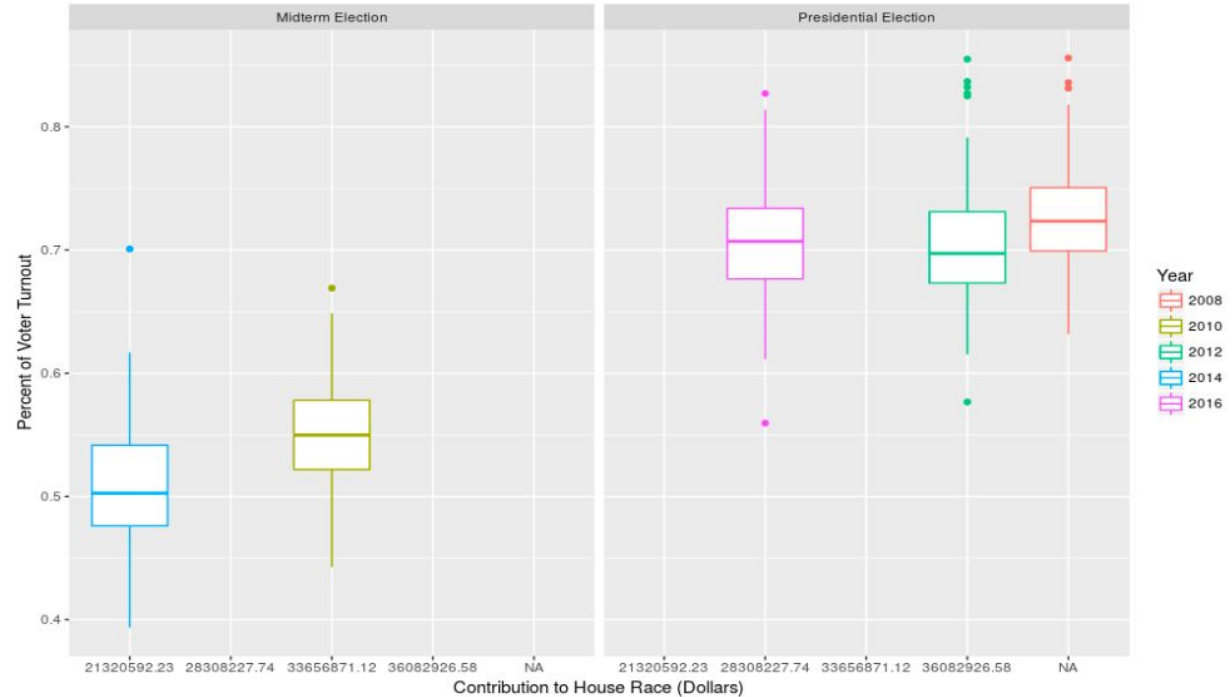
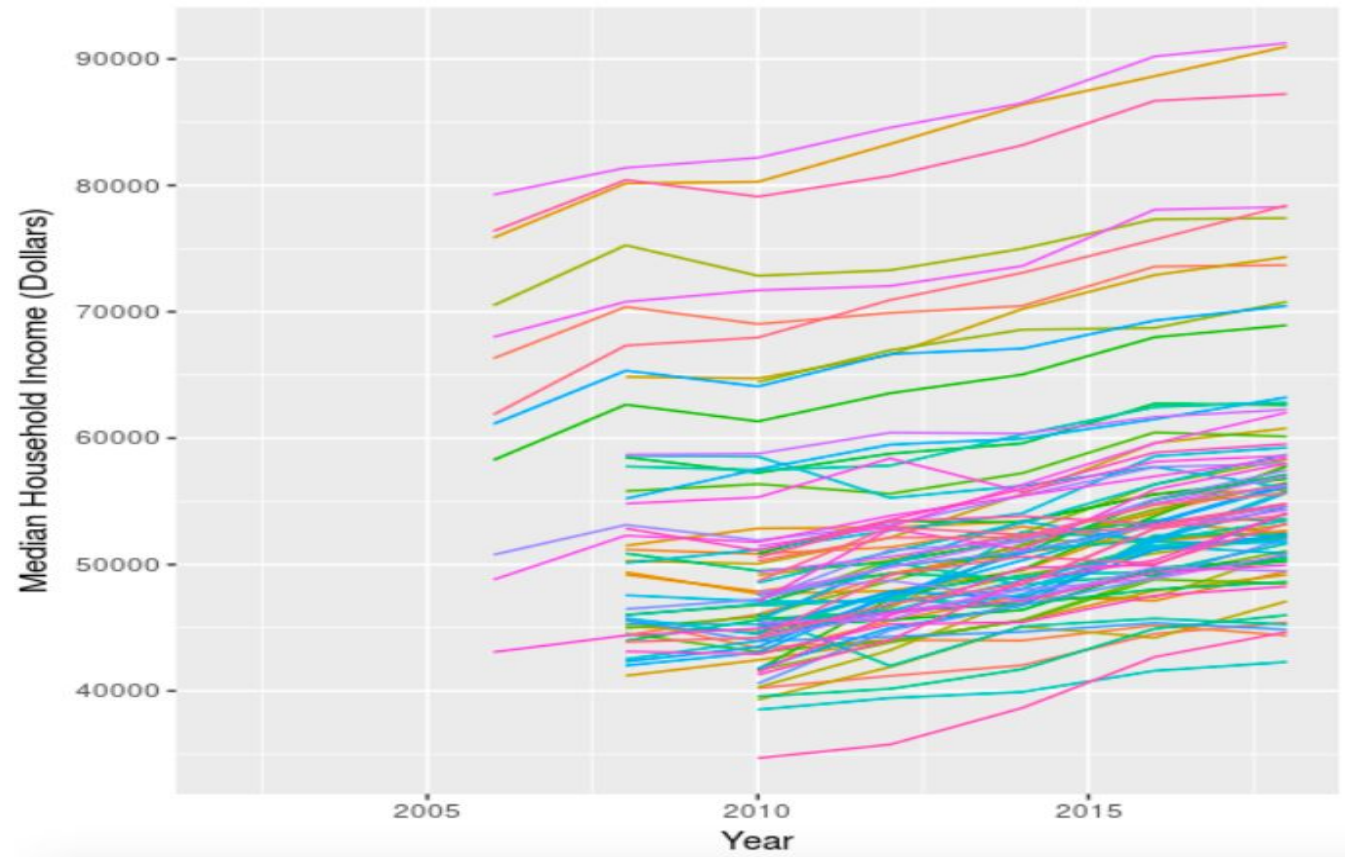
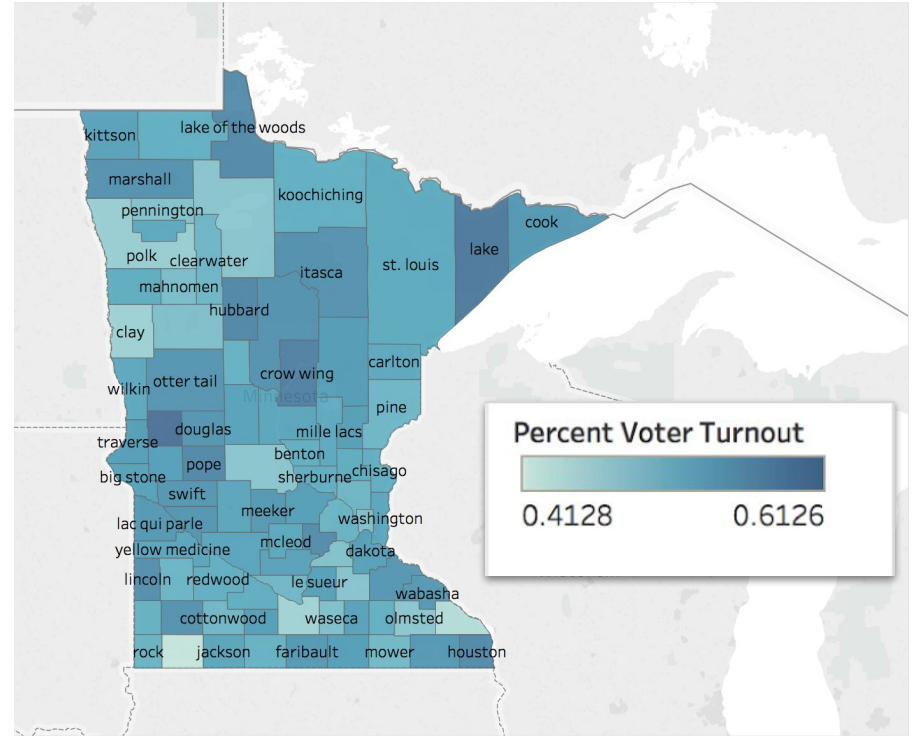
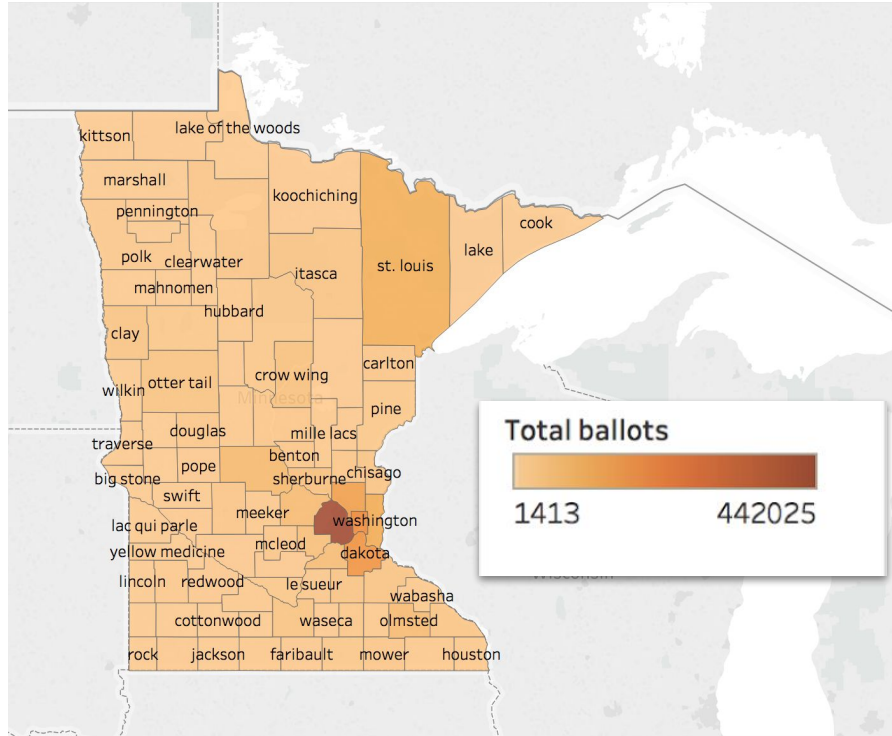


Figure. Contribution to the House Race vs. Voter Turnout

Predicting



Year vs. Median Household Income (2006-2018) (2018 predicted)



Map based on Longitude and Latitude. Color shows details about turnout volume, and rate respectively. The marks are labeled by county name. Data filtered by year

Limitations

- Data problems
 - + Inconsistency in Census data
 - + Predicted current data
- Multi-level model
- Not yet consider current events

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