Interim Report: Who Votes in NC?

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Introduction

Context: Why Is Voter Turnout Prediction Important

The United States is getting closer to the 2020 Congressional Elections on November 3, 2020. With the current polarizing political landscape, the Congressional Election outcomes are significant to determine the next stage of this country. As it becomes critical for statisticians to help build forecasting models to predict the election outcomes, we need to first understand the patterns of voter turnout. Voting has special importance in democratic systems, but only about half of the eligible U.S. citizenry votes, and there are real political consequences when voters differ systematically from nonvoters (Uhlaner et al.). There has been abundant literature proving that variation in voter turnout will have electoral consequences (Hansford, et al.), in a number of ways. First of all, the media conventional wisdom is that "higher turnout benefits Democrats," although there has been mixed evidence from political scientists regarding this claim (Weinschenk, 2019). Second, literature has proven certain demographic factors to statistically significantly benefit one party over the other, in both Congressional Elections and Presidential races. For example, gender, race and party registration could help profile voting patterns for Congressional elections (Uhlaner et al.). Election prediction models need the baseline population of voters to predict the potential outcomes, and the demographic composition of voters will directly determine the forecasting results.

This report seeks to understand the voter turnout of North Carolina for 2020 NC Congressional Elections, predicting who will vote in 2020.

TODO: Why NC? Discuss how NC has been a swing state and has complex demographic composition that will shed light to methodologies helpful to predict other states as well.

Data Description

Where the data comes from

Why we selected only the year of 2016? Significance of presidential election year, but needs literature review to confirm.

Data Cleanup and Variable Transformation

Method

Variable Selection

Why we selected gender, race, party to be significant, among others (from Uhlaner):
We focus on race, ethnicity, and gender as they are important categories in contemporary U.S. politics. Our study thus adds to the minority empowerment literature. But treating these categories separately

misses a crucial point: they intersect, and that intersectionality matters. White women have different experiences than Latinas; African American men have different experiences than African American women. In this article, we assess whether being collectively descriptively represented affects turnout by looking at seven elections, the presidential races of 2000, 2004, 2008, and 2012, and the off-year elections of 2002, 2006, and 2010 to assess the intersectional impact of collective descriptive representation on voter participation. There are well-established results on the participation of people of different gender, ethnicity, and race. Overall, historically white males had the highest voting rates in the United States, but the gender edge evaporated in the 1980s while racial and ethnic dif- ferences have narrowed, but remain. The turnout rates for men and women became essentially equal in 1980 and 1982, and ever since they have been higher for women (Center for American Women and Politics 2011).4 Note, however, that for most politi- cal activities other than voting, men still outpace women (Conway, Steuernagel, and Ahern 2005, 94–97; Verba, Schlozman, and Brady 1995, 254–57). African Americans also, historically, participated less than other Americans. That gap has been decreas- ing, reflecting the Civil Rights movement and other changes, until by 1990 the African American turnout rate was close to that of whites. Obama's candidacy and presidency has further mobilized African American voting; in 2008, turnout of African Americans was just 1.4 points below that of non-Hispanic whites and moved 2 points higher in 2012 (File 2013, 3).5 Latinos vote at lower rates than either African Americans or whites, even when the comparison is, appropriately, limited to citizens.

Charles on employment, wage and voter turnout: why we selected median income to be significant Using county-level data that we have assembled for elections between 1969 and 2000, and employing a variety of OLS and TSLS models, we find that increases in local per capita earnings and log employment per adult reduce voter turnout in gubernatorial, congressional, senatorial and state legislative elections, but have no statistically significant effect on turnout in presidential contests.

Results and Interpretations

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binary_model = readRDS("grouped_model_no_randeff_whole_dataset.rds")
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	Estimate	Std. Error	2.5% Quantile	97.5% Quantile
Intercept	0.00	0.00	-0.01	0.00
Median Income > 64,509	0.10	0.00	0.09	0.10
Median Income 46,864-52,798	0.09	0.00	0.08	0.09
Median Income 52,798-64,509	0.36	0.00	0.35	0.36
Gender Male	-0.43	0.00	-0.44	-0.42
Gender Unspecified	-0.08	0.01	-0.09	-0.06
Race Black	0.03	0.00	0.03	0.04
Race Other	-0.41	0.00	-0.42	-0.40
Age 30-44	0.62	0.00	0.61	0.63
Age 45-59	1.08	0.00	1.07	1.09
Age 60+	0.94	0.00	0.93	0.95
Party Republican	0.19	0.01	0.18	0.20
Party Other	-0.24	0.00	-0.25	-0.23
Gender Male:Party Republican	0.18	0.00	0.17	0.19
Gender Unspecified:Party Republican	0.10	0.01	0.08	0.13
Gender Male:Party Other	0.21	0.00	0.20	0.22
Gender Unspecified:Party Other	0.01	0.01	-0.01	0.02

	Estimate	Std. Error	2.5% Quantile	97.5% Quantile
Race Black:Party Republican	-0.98	0.01	-1.00	-0.96
Race Other:Party Republican	-0.28	0.01	-0.30	-0.27
Race Black:Party Other	-0.42	0.01	-0.43	-0.41
Race Other:Party Other	-0.08	0.01	-0.10	-0.07
Gender Male:Age 30-44	0.02	0.00	0.01	0.03
Gender Unspecified:Age 30-44	-0.41	0.01	-0.43	-0.40
Gender Male:Age 45-59	0.11	0.00	0.10	0.12
Gender Unspecified:Age 45-59	-0.60	0.01	-0.62	-0.58
Gender Male:Age 60+	0.25	0.00	0.24	0.26
Gender Unspecified:Age 60+	-0.47	0.01	-0.50	-0.45
Age 30-44:Party Republican	0.04	0.01	0.03	0.05
Age 45-59:Party Republican	-0.05	0.01	-0.06	-0.04
Age 60+:Party Republican	-0.06	0.01	-0.07	-0.05
Age 30-44:Party Other	0.05	0.01	0.04	0.06
Age 45-59:Party Other	0.01	0.01	0.00	0.02
Age 60+:Party Other	0.27	0.01	0.25	0.28
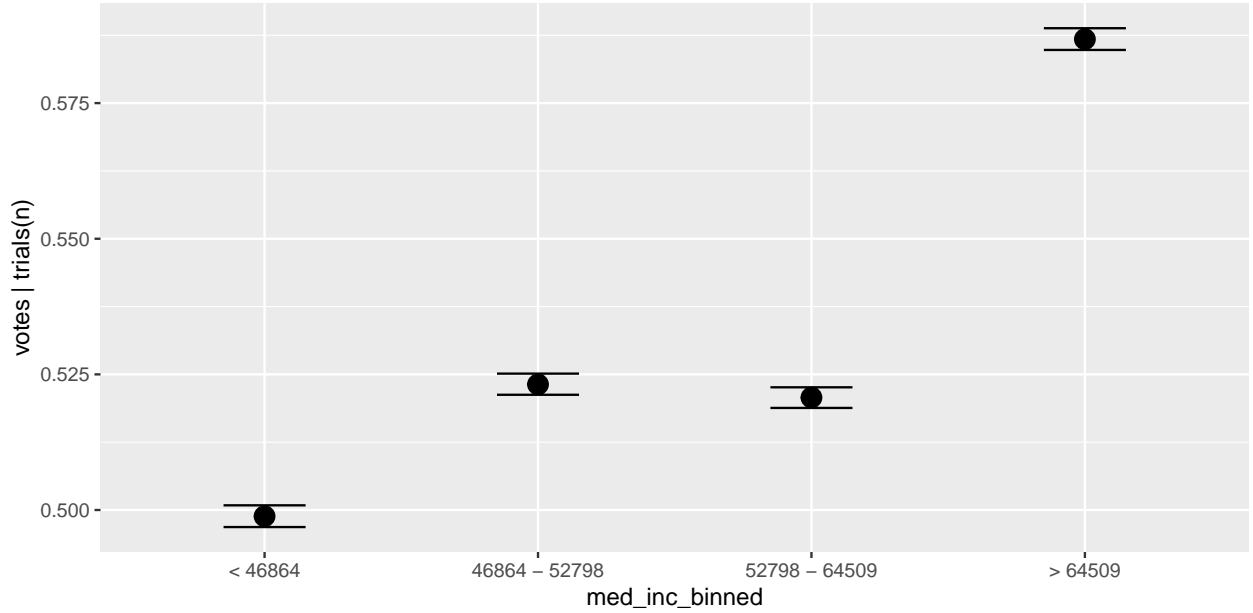
From the plot above, we see that the expected probability of voting is generaly greater that 50% for all median household income levels, but tends to increase as median household income increases, holding all other attributes constant (age, gender, race, party).
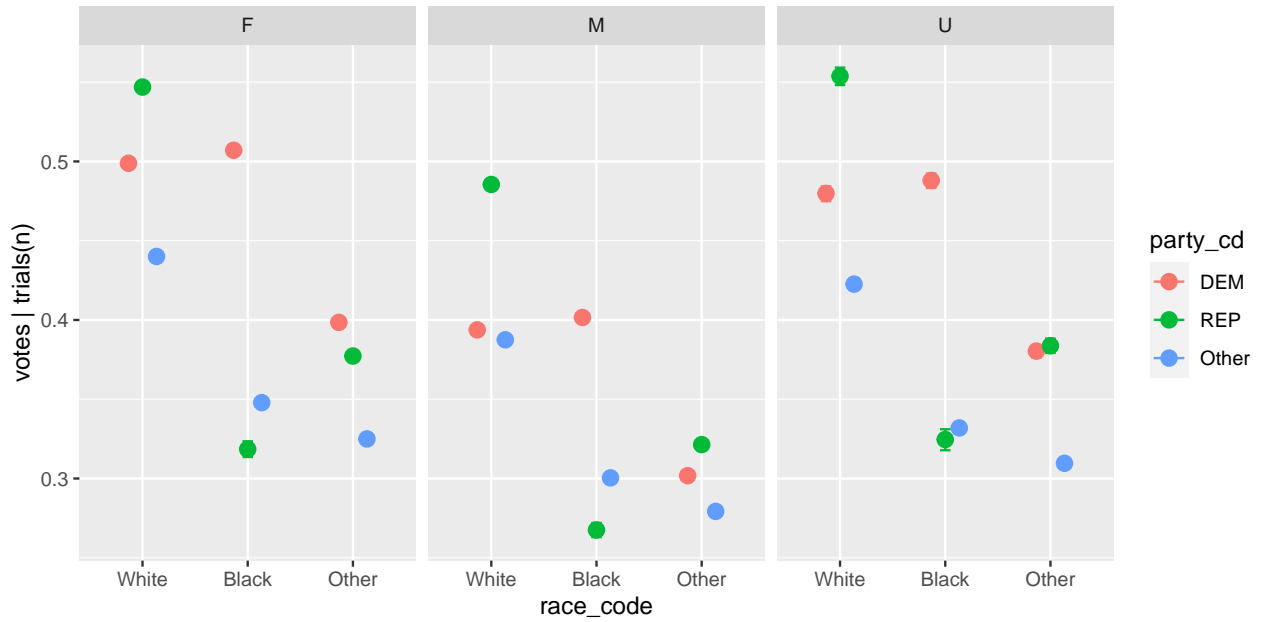
We can interpret each point in the plot above as follows: holding median household income level at baseline (less than $46,864) and age at baseline (ages 18-29), the y-axis value is the expected probability that a person of a particular race (x-axis), party (color), and gender (facet) votes. For example, the expected probability that a black, male, Democrat votes is 0.5, whereas the expected probability that a black, male, Republican votes is greater than 0.5. We can also see that women, regardless of race and party, are expected to be more likely to vote than men.
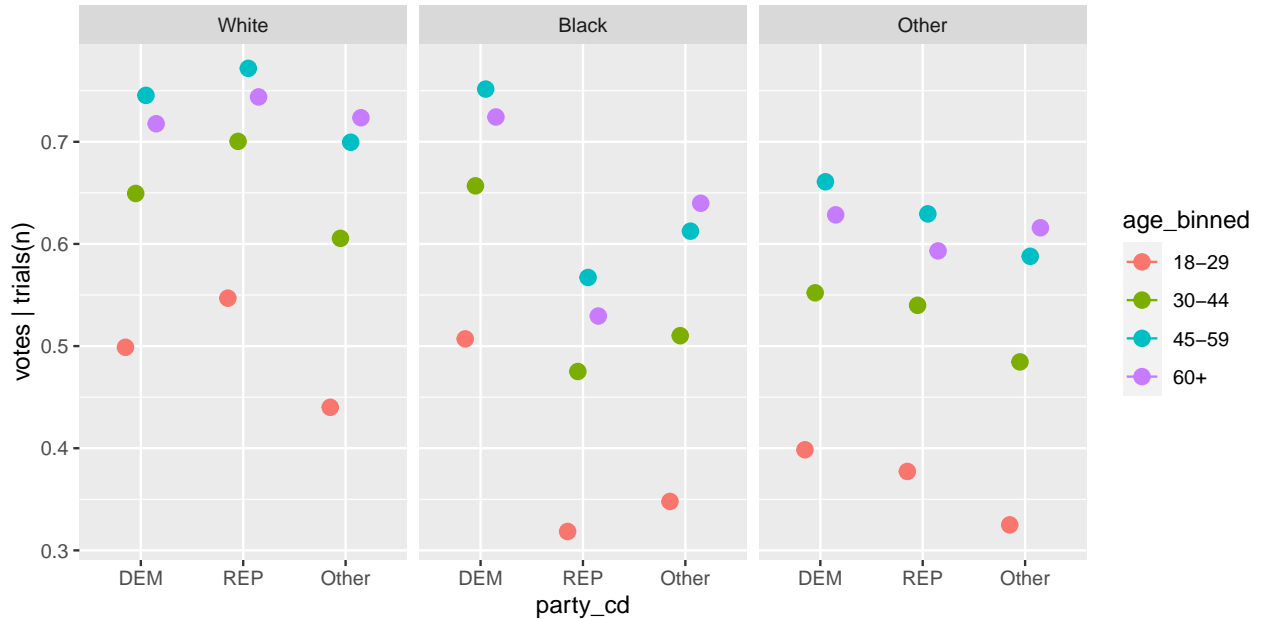
In the plot above, holding median household income level at baseline (less than $46,864) and gender at baseline (female), the expected probability of voting for white Democrats across all age groups is less than that for white Republicans. However, the expected probability of voting for black Democrats across all age groups is higher than that for black Republicans.

Appendix
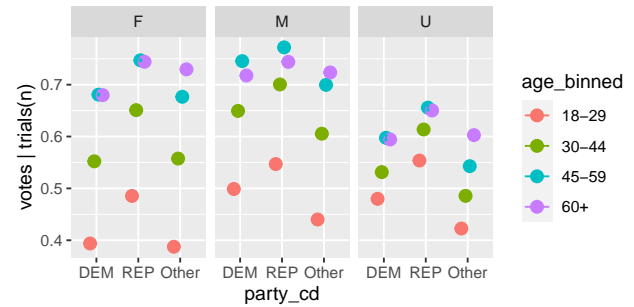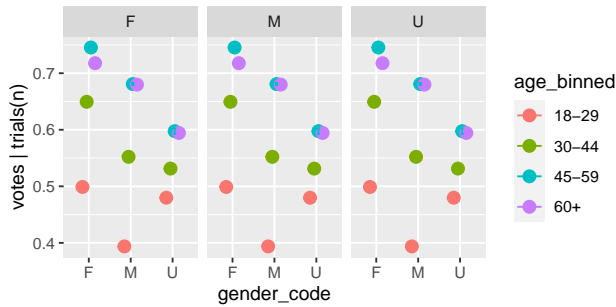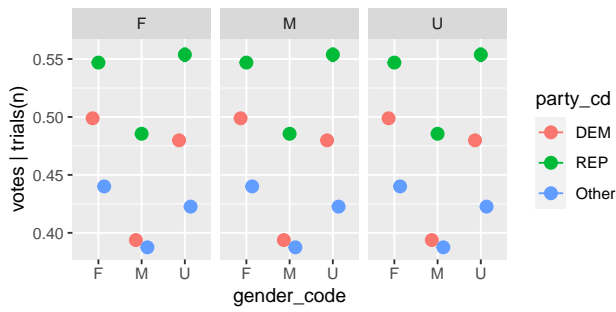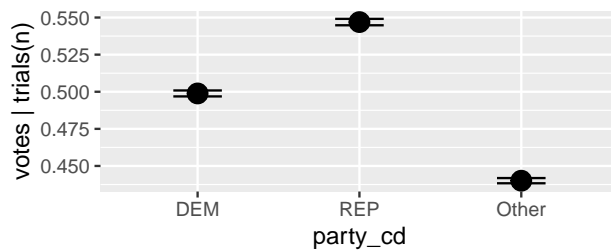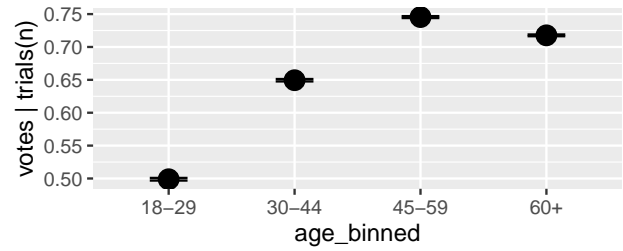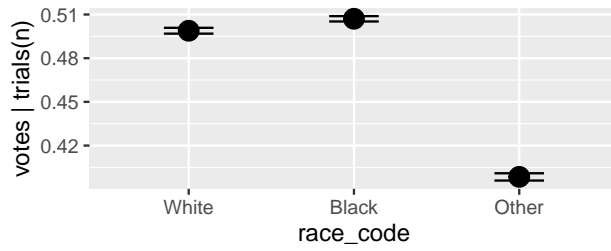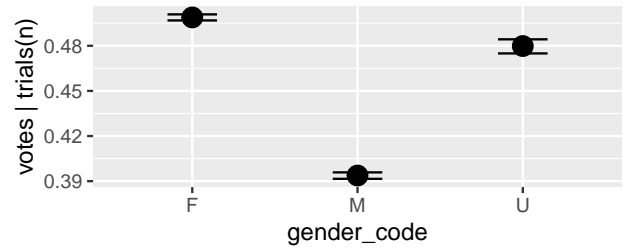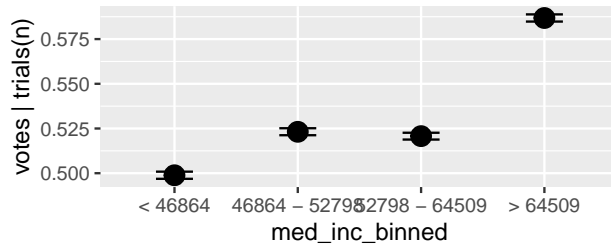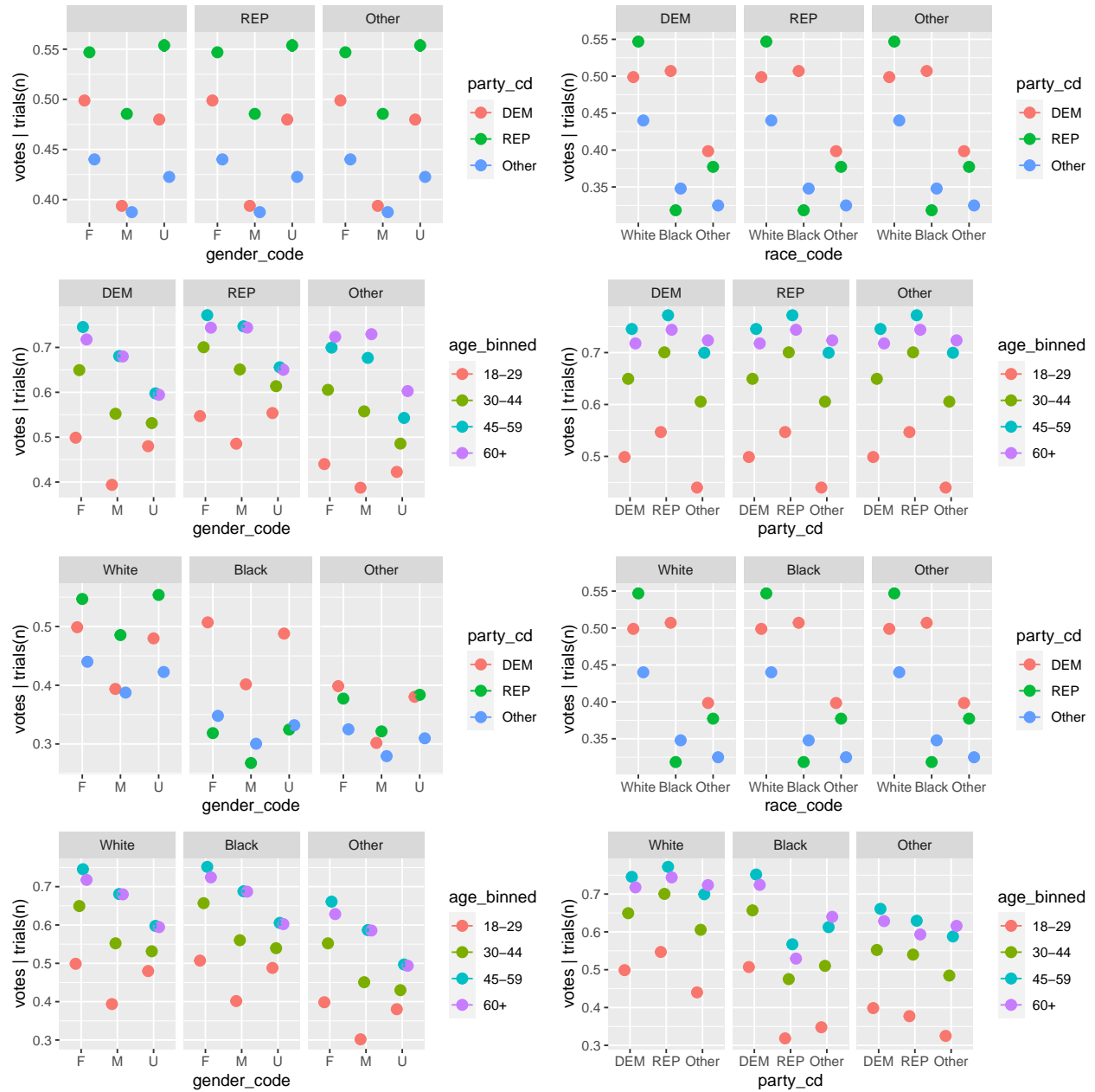
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