Preliminary General Election Forensics: Governor, Lt. Governor, Secretary of State, and Controller, Orange County, November 6, 2018

R. Michael Alvarez and Yimeng Li

November 27, 2018

Executive Summary

In this preliminary report, we examine data from four of the statewide candidate races (the races for Governor, Lt. Governor, Secretary of State, and Controller) in Orange County. Our analysis uses two different visualizations of preliminary precinct-level data from the preliminary Statement of Votes: histograms of candidate vote shares and scatter-plots of candidate vote shares by turnout. We find no evidence in these preliminary data of significant outliers or unusual distributions that would merit additional investigation.

Introduction

As part of our work developing elections forensics methods for the recent November 6, 2018 general election in Orange County, we have begun an analysis of data from the County's preliminary Statement of Votes (SOV) — these are data on precinct-by-precinct votes cast for each candidate and ballot measure on the general election election ballot. In this initial study, we focus on four of the statewide candidate races: Governor, Lt. Governor, Secretary of State, and Controller. Subsequent analyses will examine other statewide and down-ballot races on the Orange County general election ballot.

Our initial analysis uses visualizations of the SOV data, taken from the November 15, 2018 report issued by the Orange County Registrar of Voters (OCRV). We downloaded the pdf of the SOV from the OCRV website, extracted from the pdf data on total ballots cast by precinct, as well as the ballots cast for all the candidates in all four of the statewide races we study here. We subset the data, removing all-mail precincts (they typically have very small numbers of registered voters,

which tends to skew the visualizations).[1] We then compute the vote shares (the percentage of votes currently tabulated for each candidate, of total ballots cast in that precinct). These data are preliminary, and may not reflect the final vote totals once the OCRV certifies the general election.

There are two visualizations that we use here to look for potential anomalies in the precinct-level data in these four races. The first approach is to examine histograms of candidate vote shares across precincts. We expect to see that the distributions of candidate vote shares (for the candidates receiving appreciable numbers of votes in the Orange County general election) will have a relatively smooth and single-peaked distribution. Outliers, or multiple peaks, can be indications of precincts that might require further research.

The second visualization that we will present are candidate vote shares by precinct turnout. In general, we expect to see joint distributions between a candidate's vote share and precinct turnout that do not have any extreme outliers, and that the joint distributions do not appear to have multiple clusters of points in the scatter-plots we produce. In scatter-plots like these, anomalies that might call for further research would manifest themselves as extreme outliers, or situations where we see two clusters of points in the scatter-plot. For example, an unusual distribution might be a situation where a proportion of a candidate's vote shares come from moderate-turnout precincts, but the remaining proportion come from precincts with very high turnout and high vote shares for that candidate. In terms of our visualizations, this would manifest in highly irregular joint distributions: we would see clear evidence of multiple cluster of vote shares and turnout for a candidate in the scatter-plots.

All of these visualizations are attached this report. We will update this report as new data becomes available.

Preliminary Precinct Returns for Governor's Race

The candidate vote share distribution for Cox is shown in Figure 1, and for Newsom in Figure 2. Cox's vote share distribution appears very close to a normal distribution, with a slight skewing to the lower tail; Newsom's does as well, with a very slight skew in the upper tail. We do not see important outlying precincts in either of these distributions.

Next, we show the joint distribution between both gubernatorial candidate's preliminary vote share, and precinct turnout. Here we are primarly looking at these joint distributions to determine if there are any unusual joint distribution (bimodality, in particular). We do not see any unusual patters in Figure 3. We see a relationship that we also found in analyses of the SOV data from the June 2018 primary election: a strong positive association between precinct turnout and candidate vote share for the Republican gubernatorial candidate (Cox), and a strong negative association between precinct

[1] We also remove two precincts reporting anomalous turnout, precincts 25382 and 38083. See the "Precinct Turnout Forensic Analysis" on the project's general election dashboard, `https://monitoringtheelection.us/november-2018-general-election-dashboard/`.

turnout and candidate vote share for the Democratic gubernatorial candidate (Newsom).

Preliminary Precinct Returns for Lt. Governor's Race

Next we consider similar analyses for the two candidates running for Lt. Governor (both Democratic candidates). Their vote distributions are given in Figures 4 (Hernandez) and 5 (Kounalakis). Both of these distributions are single-peaked, and are smoothly distributed; we do see a slight skewness in the upper tail of both distributions, though nothing that raises concern.

We provide the joint distributions between candidate vote shares and precinct turnout in Figure 6. In neither case do we see joint distributions that might be cause for further investigation, as neither shows outliers, nonlinearities, nor oddities in the joint distribution. We again see that for both of these Democratic candidates, the joint distribution between precinct turnout and candidate vote shares has a negative association, which is stronger for Hernandez.

Preliminary Precinct Returns for the Secretary of State's Race

The Secretary of State's race involved a Republican candidate (Meuser) running against a Democratic candidate (Padilla). We provide the histograms of their respective vote shares in Figures 7 and 8. In neither histogram do we see outliers, both have single-peaked and relatively smooth distributions. Again we see a slight skewness in the upper tail distribution of vote share for the Democratic candidate, with a slight skewness towards the lower tail for the Republican candidate.

The joint distribution between candidate vote share and turnout for the Secretary of State's race is given in Figure 9. Neither of these joint distributions shows evidence for outliers or anomalies. We see here, like in the Governor's race, a strong positive association between vote share and turnout for the Republican candidate, while a srong negative associtation for the Democratic candidate.

Preliminary Precinct Returns for the Controller's Race

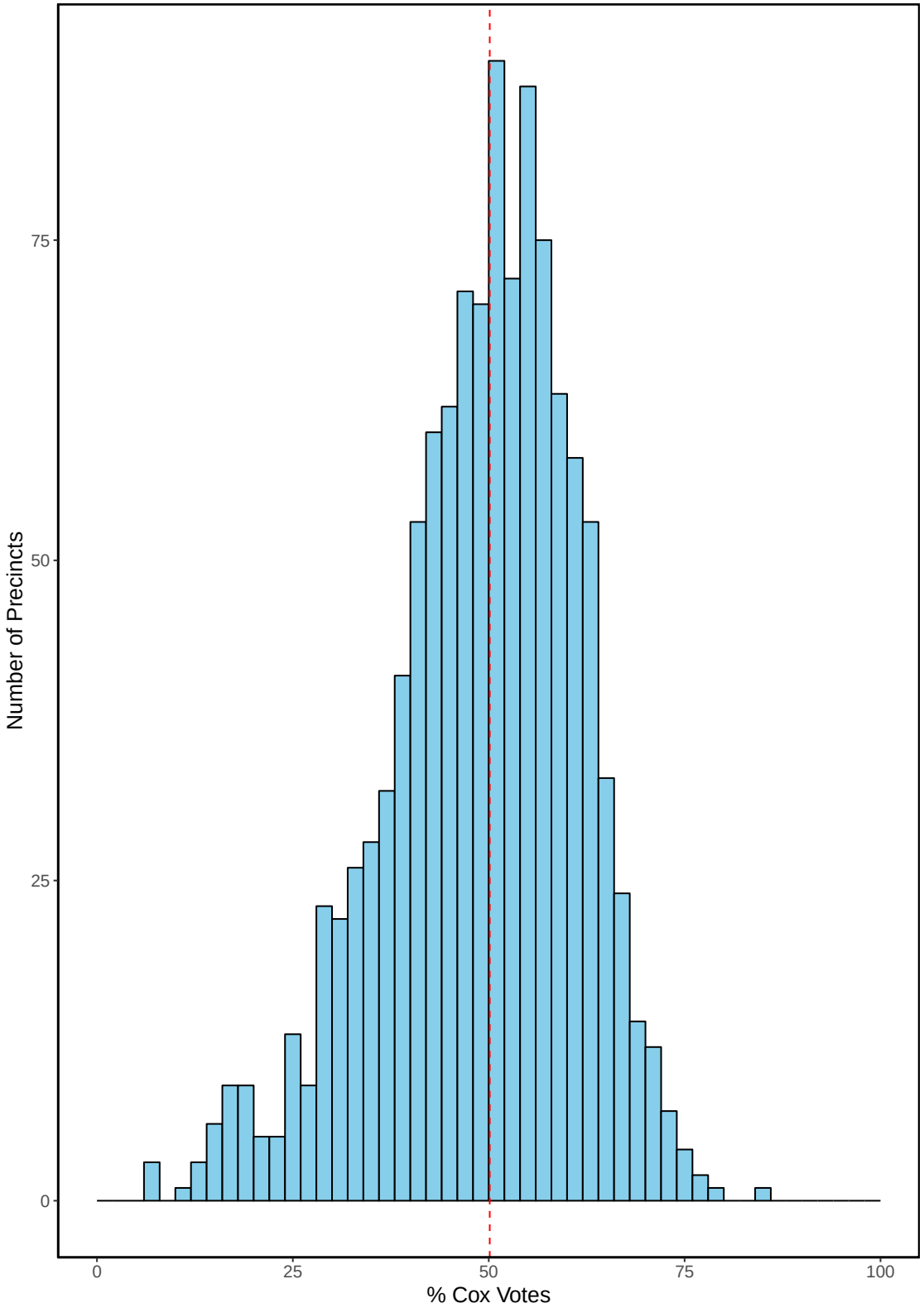
The Controller's race had Republican candidate Roditis running against Democratic candidate Yee. We show the distributions of each candidate's vote share in Figures 10 and 11 respectively. Both are unimodal, neither show signs of important outliers. We note that again for the Republican candidate there is a slight sknewness towards the lower tail of the distribution, while for the Democratic candidate we see a slight skewness in the upper tail of their distribution of vote share across precincts.

Finally, we provide the joint distributions of candidate vote share by precinct turnout in Figure 12.

These joint distributions show no evidence of important outliers, or anomalies in the joint distribution. We note again the same positive association between candidate vote share and precinct turnout for the Republican candidate, and a negative association for the Democratic candidate.

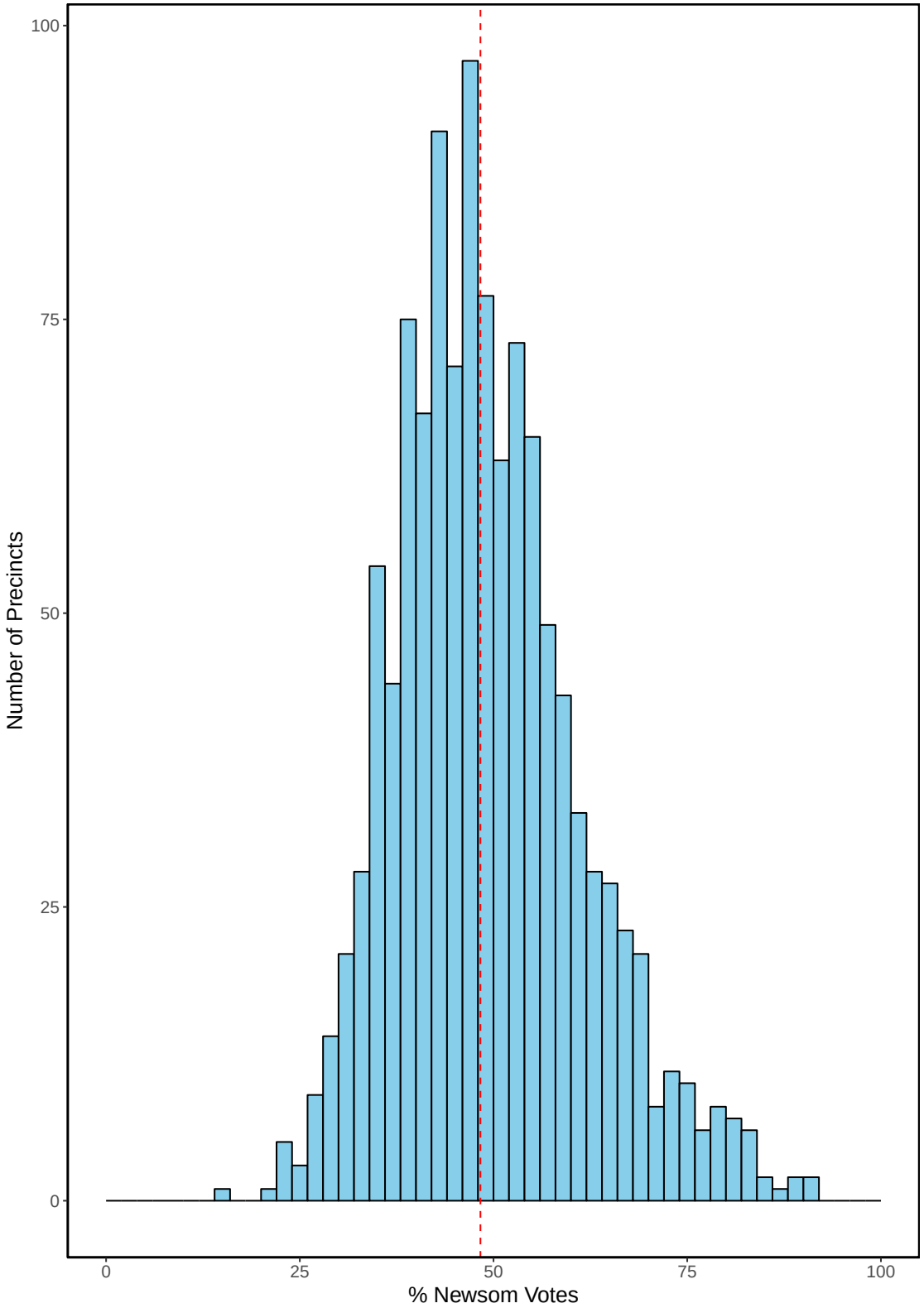
Conclusion

In this preliminary report we have provided a visual forensics analysis for candidates in the Governor, Lt. Governor, Secretary of State, and Controller elections in Orange County. This is an analysis similar to the one we produced for the primary election in June 2018. In the candidate voter share histograms and in the scatter-plots of vote shares by turnout we see no evidence of anomalies needing further research. We find that there is a correlation in both races between the vote shares and turnout for some candidates, which is consistent across the statewide races: in general we see that there is a negative association between candidate vote share and turnout for Democratic candidates in Orange County, while a positive association between candidate vote share and turnout for Republican candidates.



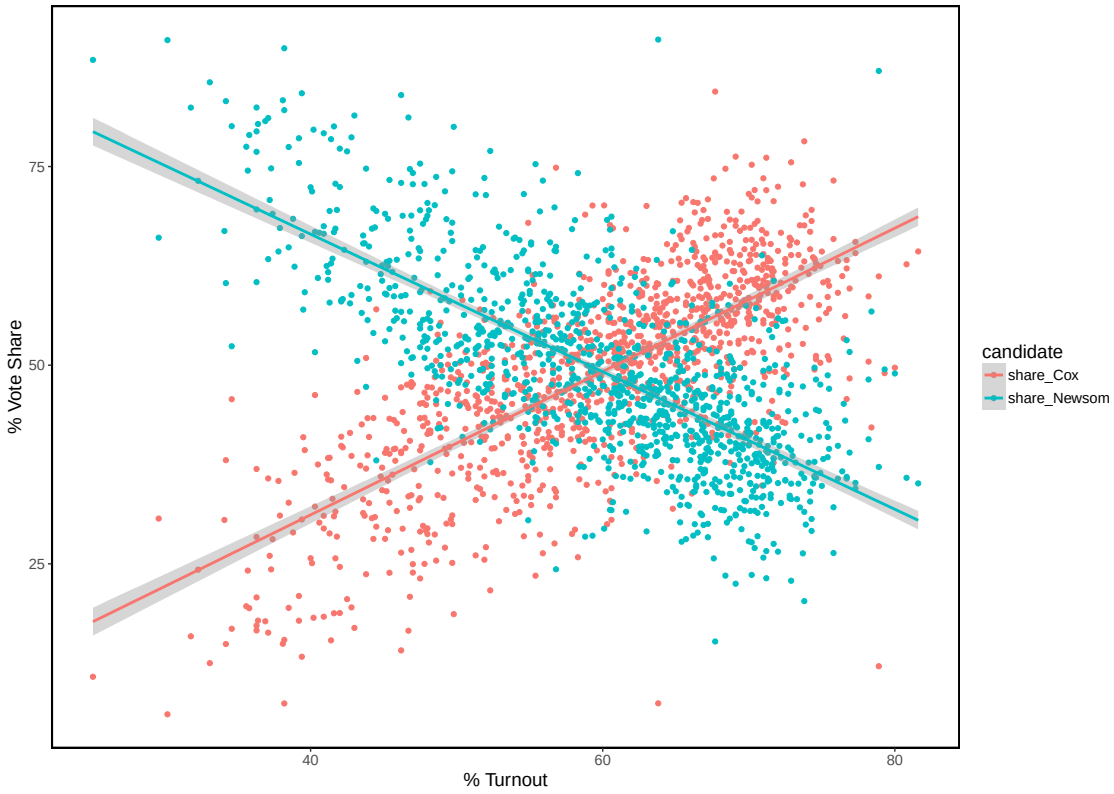
November 15, 2018 data.
Preliminary data from the Orange County Registrar of Voters.
These figures are estimates, and may not reflect the final totals.

Figure 1: Cox Precinct Vote Shares



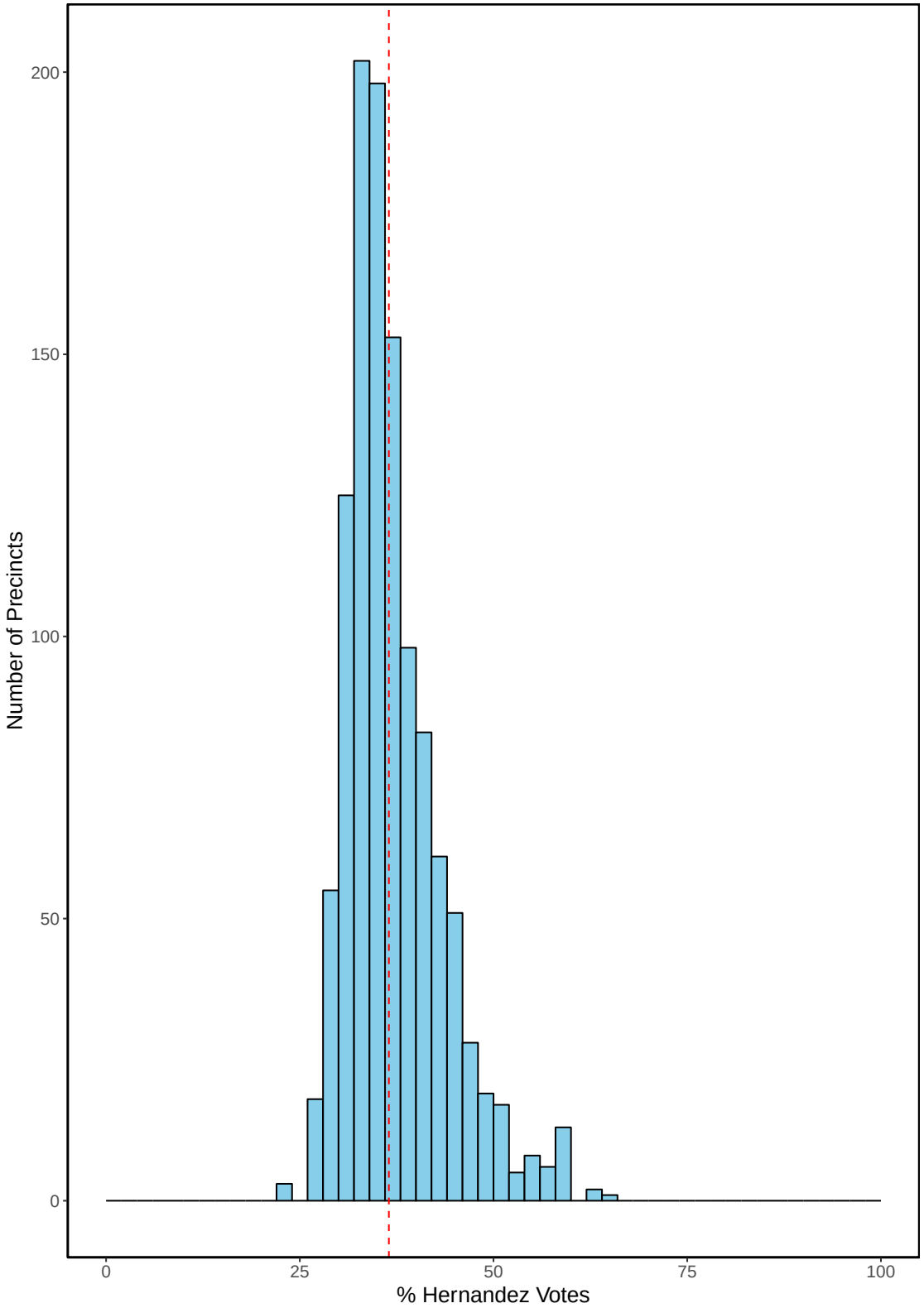
November 15, 2018 data.
Preliminary data from the Orange County Registrar of Voters.
These figures are estimates, and may not reflect the final totals.

Figure 2: Newsom Precinct Vote Shares



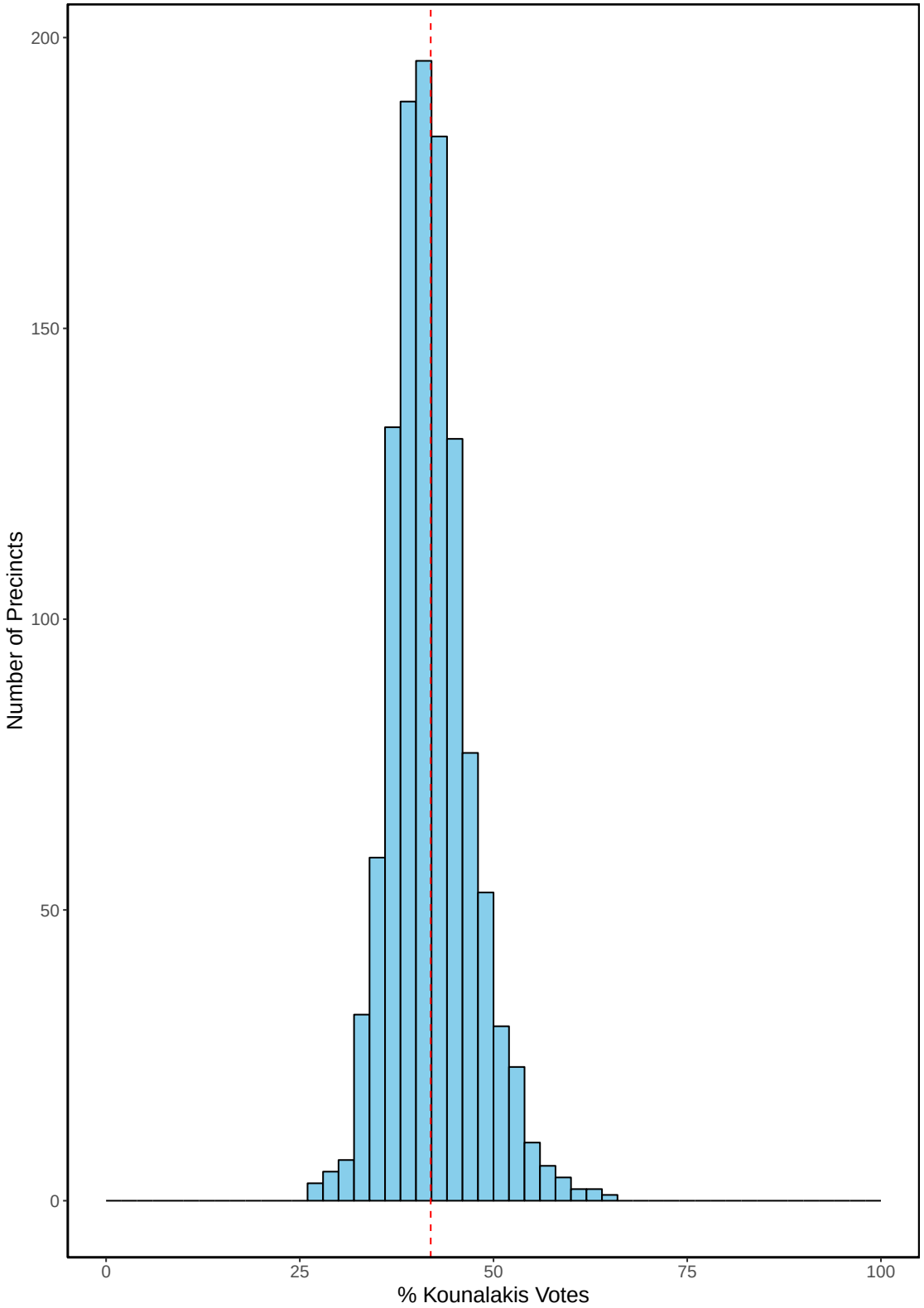
November 15, 2018 data.
Preliminary data from the Orange County Registrar of Voters.
These figures are estimates, and may not reflect the final totals.

Figure 3: Gubernatorial Vote Share by Turnout



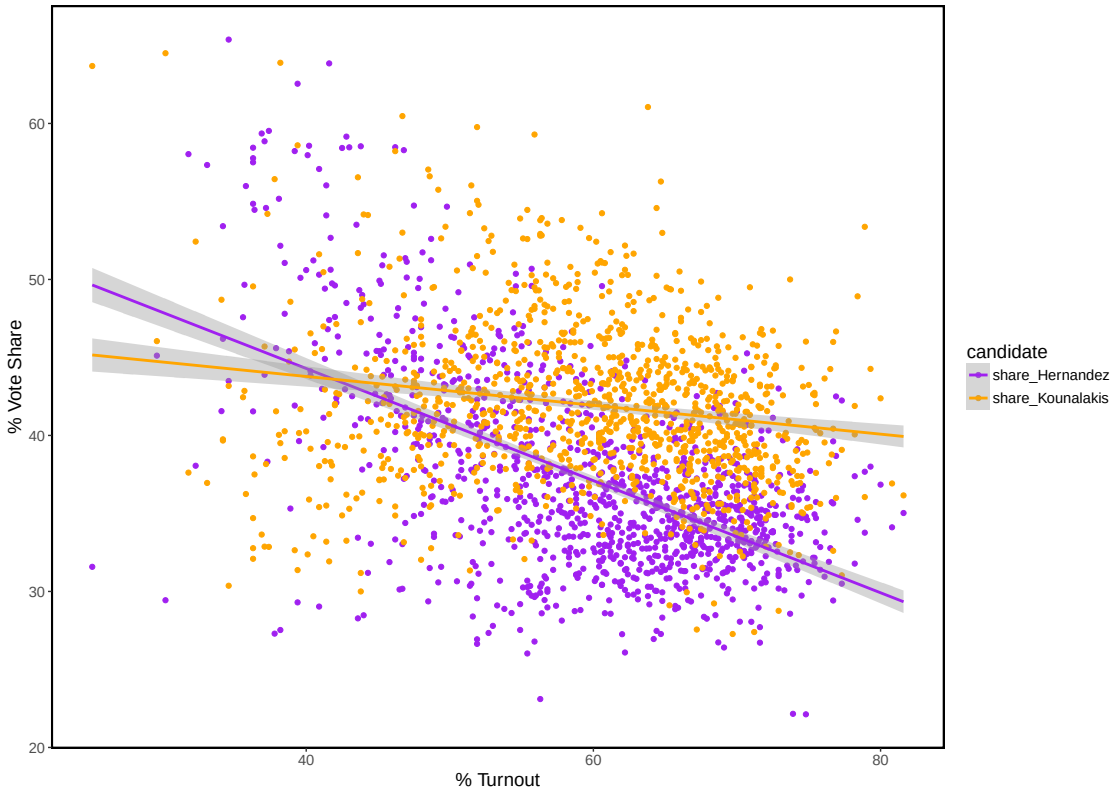
November 15, 2018 data.
Preliminary data from the Orange County Registrar of Voters.
These figures are estimates, and may not reflect the final totals.

Figure 4: Hernandez Precinct Vote Shares



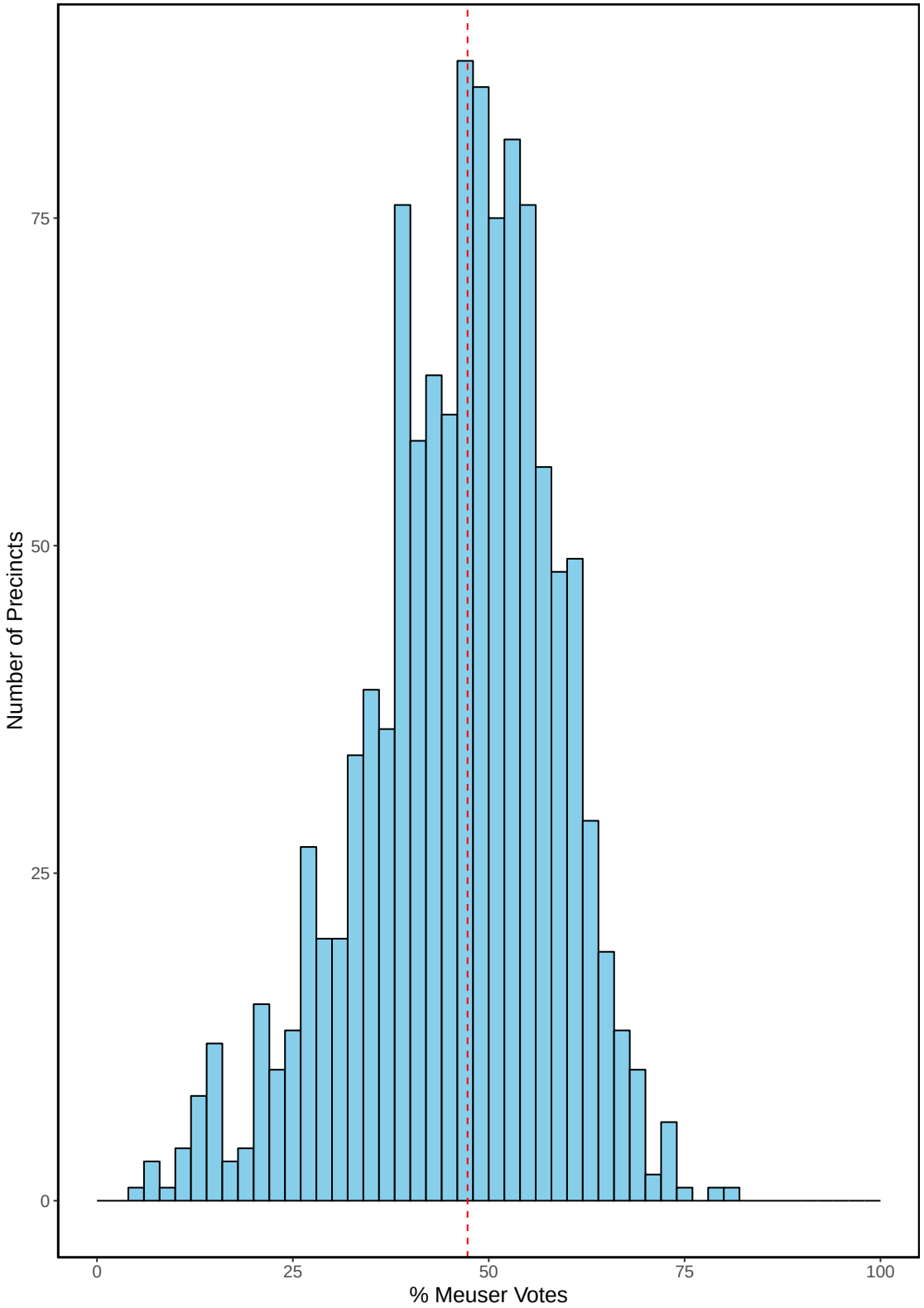
November 15, 2018 data.
Preliminary data from the Orange County Registrar of Voters.
These figures are estimates, and may not reflect the final totals.

Figure 5: Kounalakis Precinct Vote Shares



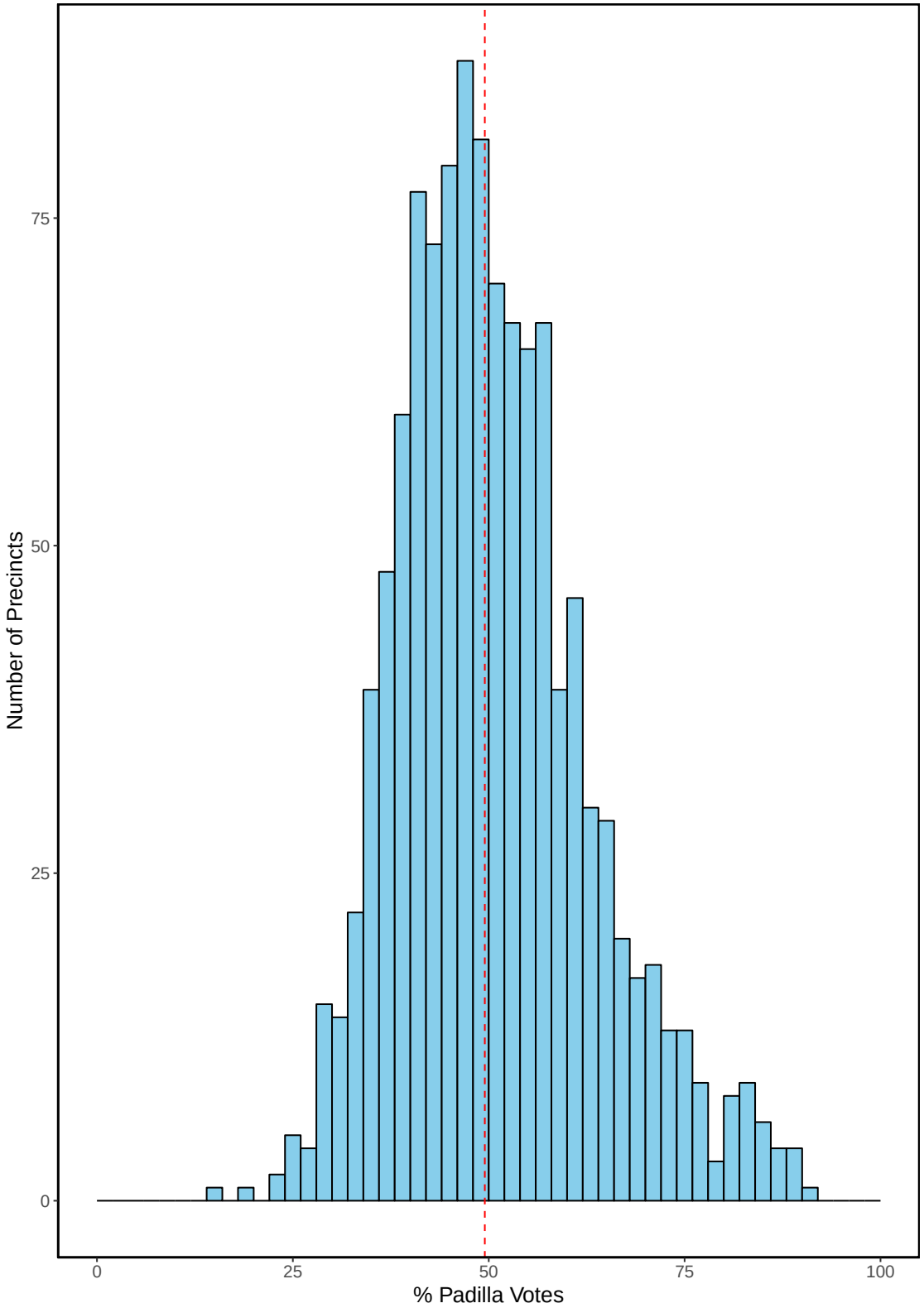
November 15, 2018 data.
Preliminary data from the Orange County Registrar of Voters.
These figures are estimates, and may not reflect the final totals.

Figure 6: Lt. Governor Vote Share by Turnout



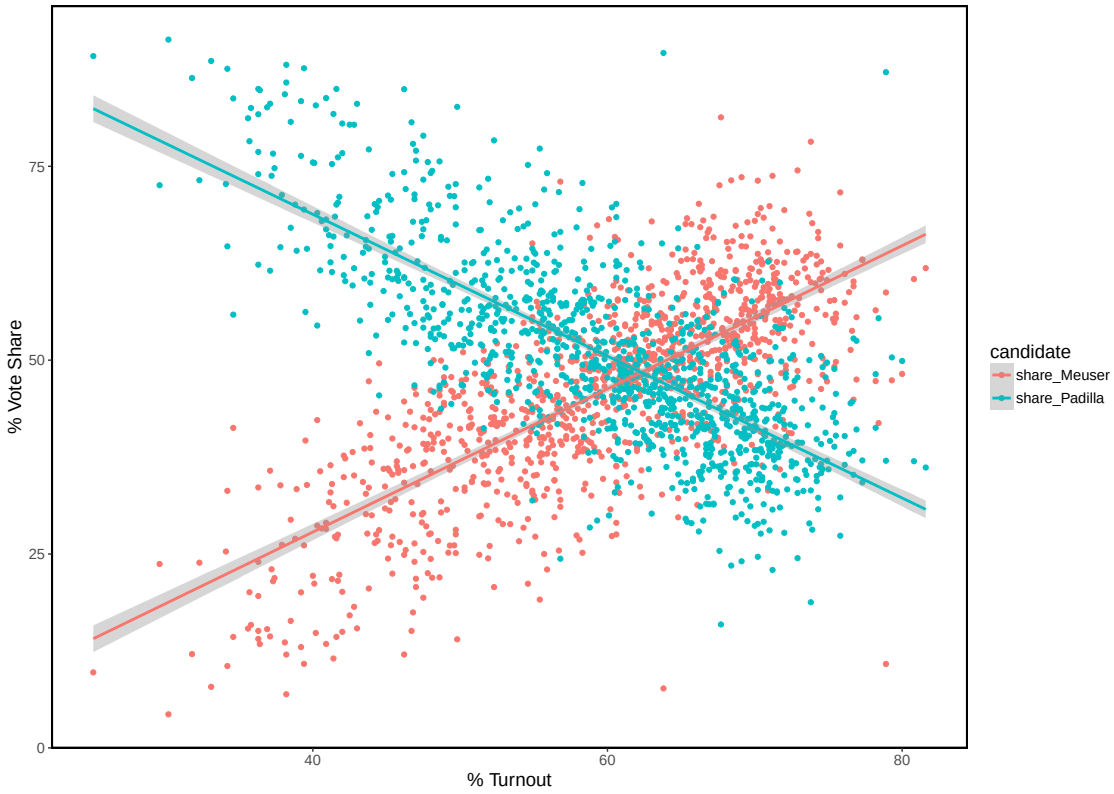
November 15, 2018 data.
Preliminary data from the Orange County Registrar of Voters.
These figures are estimates, and may not reflect the final totals.

Figure 7: Meuser Precinct Vote Shares



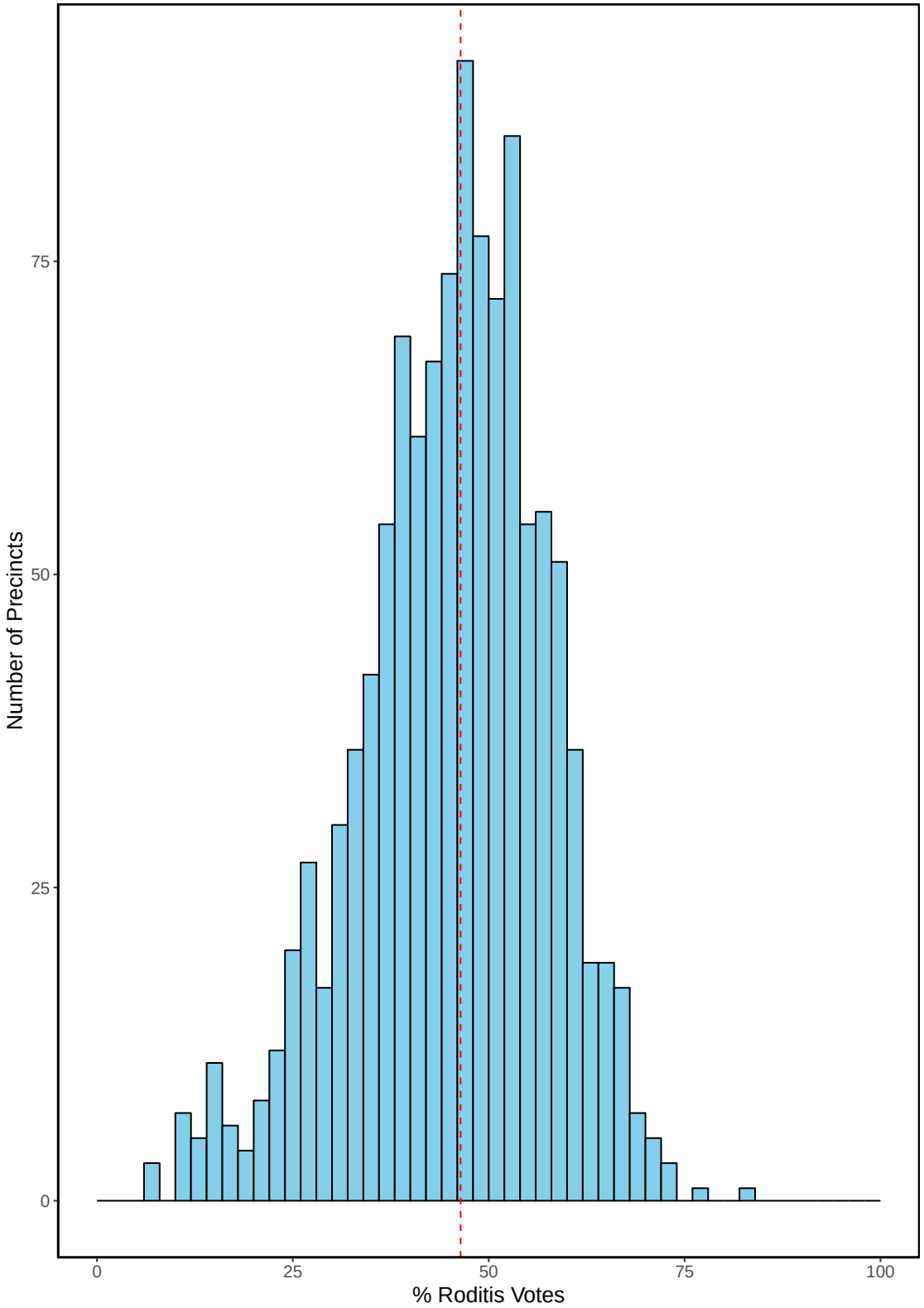
November 15, 2018 data.
Preliminary data from the Orange County Registrar of Voters.
These figures are estimates, and may not reflect the final totals.

Figure 8: Padilla Precinct Vote Shares



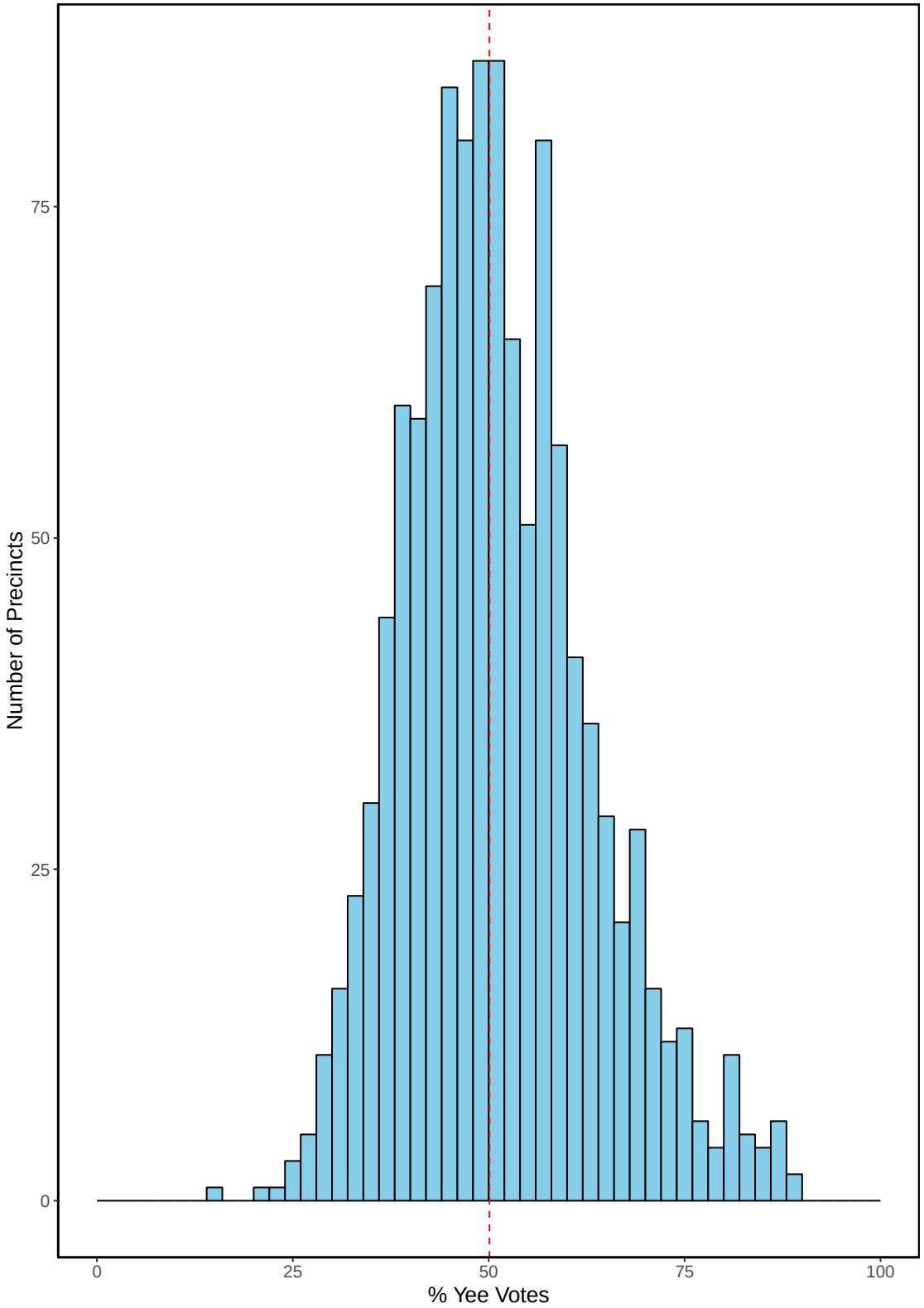
November 15, 2018 data.
Preliminary data from the Orange County Registrar of Voters.
These figures are estimates, and may not reflect the final totals.

Figure 9: Secretary of State Vote Share by Turnout



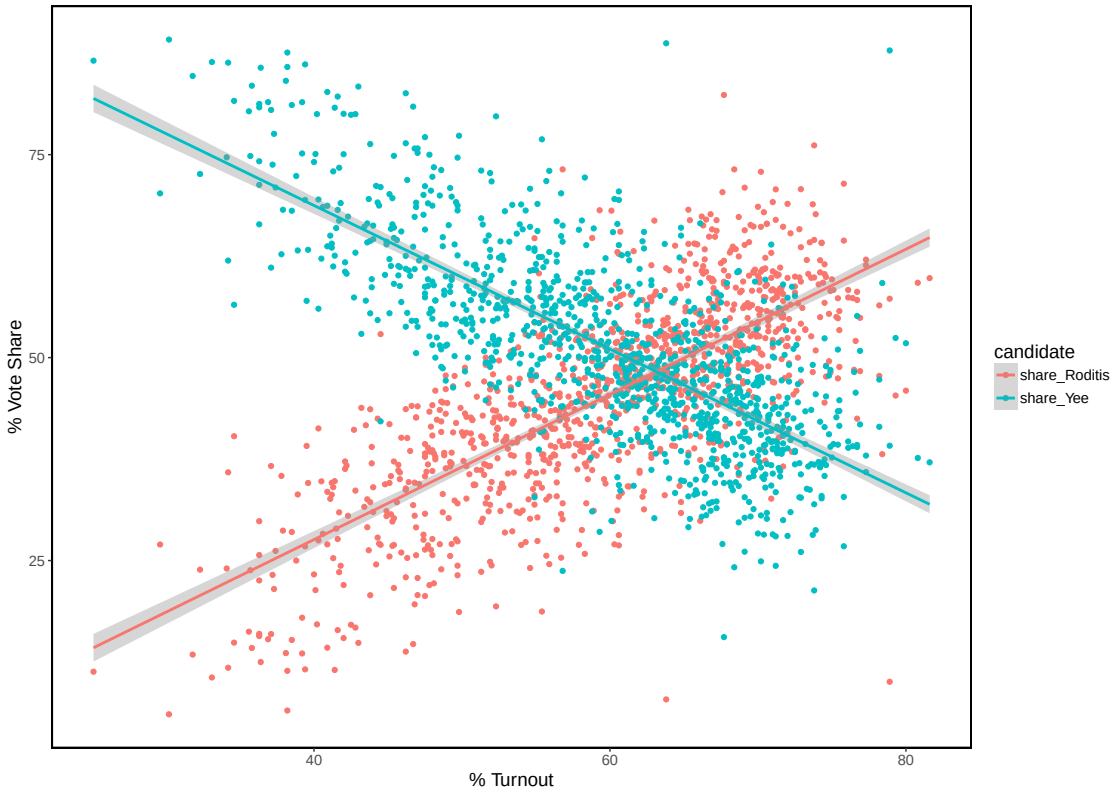
November 15, 2018 data.
Preliminary data from the Orange County Registrar of Voters.
These figures are estimates, and may not reflect the final totals.

Figure 10: Roditis Precinct Vote Shares



November 15, 2018 data.
Preliminary data from the Orange County Registrar of Voters.
These figures are estimates, and may not reflect the final totals.

Figure 11: Yee Precinct Vote Shares



November 15, 2018 data.
Preliminary data from the Orange County Registrar of Voters.
These figures are estimates, and may not reflect the final totals.

Figure 12: Controller Vote Share by Turnout