



## **CALTECH/MIT VOTING TECHNOLOGY PROJECT**

A multi-disciplinary, collaborative project of  
the California Institute of Technology – Pasadena, California 91125 and  
the Massachusetts Institute of Technology – Cambridge, Massachusetts 02139

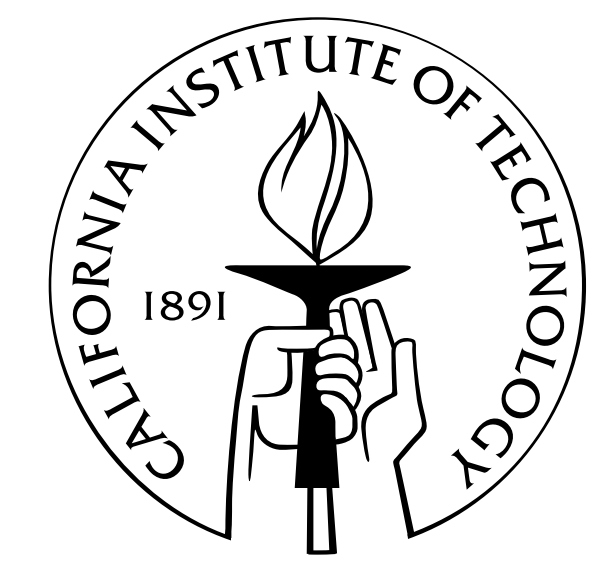
### **IS IT BETTER TO BE FIRST OR LAST? THE BALLOT ORDER EFFECT (POSTER PRESENTATION)**

Betsy Sinclair  
Caltech

Key words: *ballot order effect*

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# Is It Better To Be First Or Last? The Ballot Order Effect

Betsy Sinclair

California Institute of Technology

## Introduction

- Previous empirical research (and related research from survey methodology) holds that candidates listed first on an election ballot gain additional votes.
- Using California general election data from the 1998, 2000, and 2002 we test whether a candidate's relative position on the ballot has any statistical effect on vote shares.
- We improve on previous methods to examine this problem by accounting for the compositional nature of the data and by producing a balanced dataset (matching based upon a multi-valued propensity score) from which we replicate our results.
- We find little systematic evidence which indicates that candidates are necessarily benefited by being listed first on the ballot.

## Previous Literature

- Fails to account for compositional nature of data (and often relies upon OLS).
- Fails to include appropriate control variables.
- Analyzes only the advantage of being placed first (primacy) and not the advantage of being placed last (latency).
- With the exception of Imai and Ho (2004), fails to produce a balanced dataset.

## Data and Methods

### Data from California's Natural Experiment

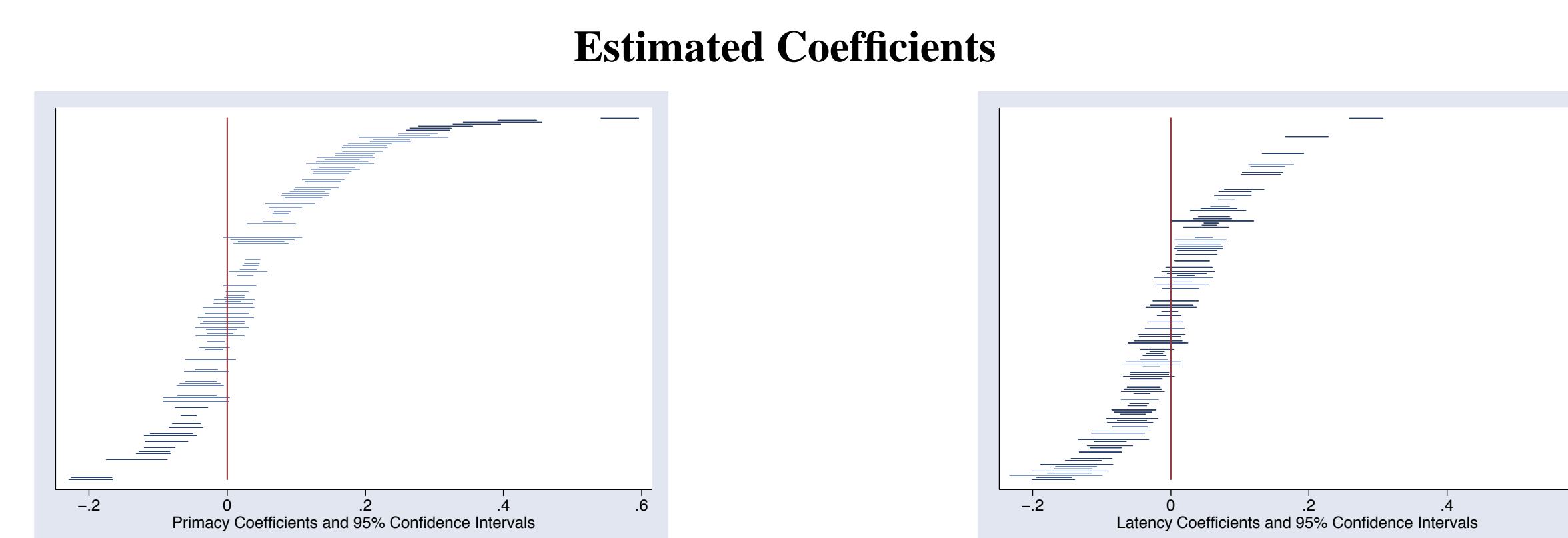
- In California statewide races, the Secretary of State conducts a random drawing of letters of the alphabet and this determines the order of candidate names on all ballots in Assembly District 1. The order is then rotated, so that in Assembly District 2 the candidate who appeared first in Assembly District 1 is moved to the bottom of the ballot list.
- We use general election data from 1998, 2000, 2002. Our unit of analysis is census tract (1998 and 2000) or precinct (2002).
- **Control variables:** Ideology (factor score of each observation's vote on all propositions and initiatives), partisan registration, percent registered female voters, percent registered Hispanic voters.
- **Dummy variables:** Indicator of the candidate is first, indicator if the candidate is last.
- **Dependent variables:** vote shares in each census tract/precinct received by every candidate on the statewide ballot for each contest. Thus, to take the governor's race as an example, we had seven dependent variables, one for the respective percentage of the total vote received by the candidates running as Democrats, Republicans, American Independence Party (AIP), Green, Libertarian, National Law Party, and Peace and Freedom Party.

### Vote Shares and Compositional Data

- Since our dependent variable is vote share, we anticipate that an increase in one candidate's vote share will affect the other candidates in that contest.
- We use the estimation procedure developed by Tomz, Tucker and Wittenberg for compositional data.
- Transform dependent variables (candidate vote shares) into log-odds ratios (to account for boundedness of vote shares), then use SUR to allow the error terms to be correlated (to account for compositional nature of data).

## Results

- Our goal is to test whether or not the appearance of each party's candidate first or last on the ballot, relative to appearing in the middle of the ballot, produces a marginal increase or decrease in the party candidate's vote share.
- We do this by examining the regression coefficients on the dummy variables that indicate the candidate's position on the ballot (first or last).
- Below are the coefficients for these indicators and their 95% confidence intervals.
- We observe no pattern by contest.
- We observe no pattern by party.
- Primacy is more likely to occur than latency.



## Balancing with a Multi-valued Treatment

### Randomization and Rotation Does Not Produce a Random Sample

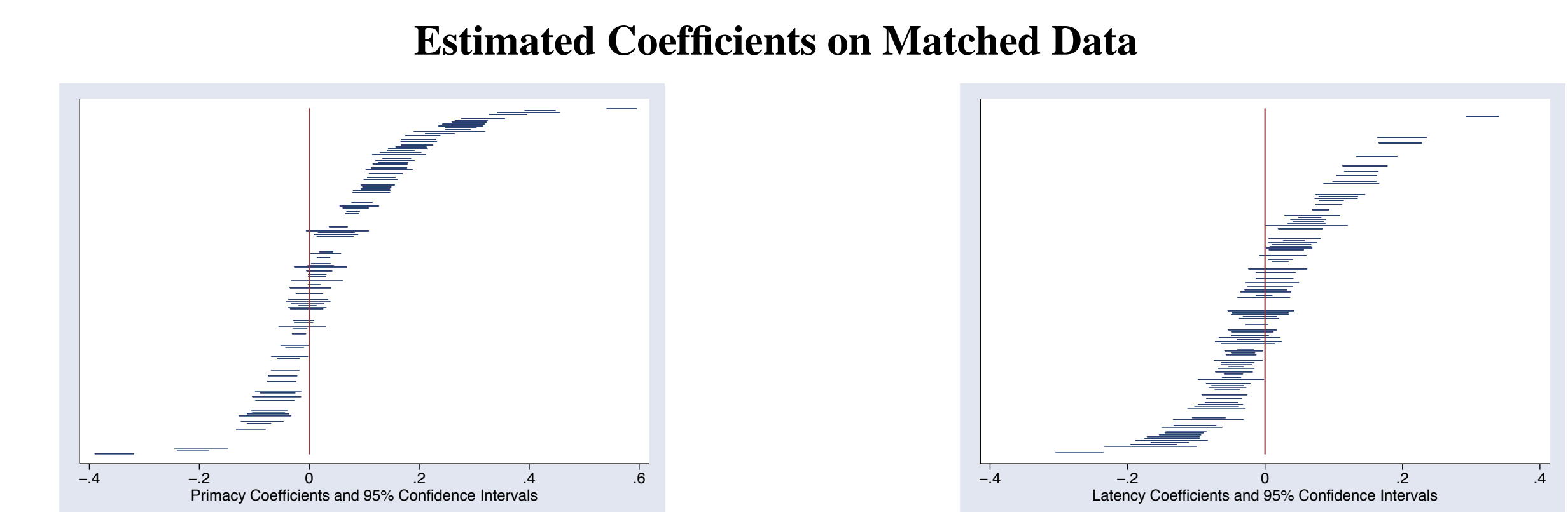
- We are concerned that the specific pattern of rotations could lead us to believe that one candidate or party was advantaged (or disadvantaged) by a ballot placement but instead the additional vote share could be attributed to having a specific rotation which placed them first or last in districts that had persistent differences (i.e.: had more registered Democrats).
- We do paired t-tests (with unequal variance) for all our control variables and recognize that our dataset is not balanced.

### Method for Obtaining Balance with a Multi-valued Treatment

- We estimate a multi-valued propensity score with multinomial logit, using the treatment values for each observation (1 through the number of candidates) as dependent variables.
- Based upon this vector of scores, we match our data by minimizing the largest distance within the group when we have one observation from each treatment.
- We then again run the Tomz, Tucker and Wittenberg procedure over our balanced data.
- We examine the coefficients on indicators for first and last to look for evidence of primacy and latency.

## Results Using Balanced Data

- Again examine the coefficients and 95% confidence intervals for the first and last indicators.
- Find similar results – that no single ballot order effect will necessarily occur in any particular contest or for any particular party.
- With the balanced dataset, there seems to be slightly more evidence for primacy (that candidates would be advantaged by being placed first) and slightly more evidence for anti-latency (that candidates would be disadvantaged by being placed last).



## Conclusions

- We have analyzed a wide variety of different electoral candidates in the 1998, 2000 and 2002 California general elections, employed a multivariate statistical model with control variables (ideology, partisanship, and demographic attributes of census tracts), and produced a balanced dataset from which to replicate our results.
- We have found little systematic evidence that indicates that candidates are necessarily benefited in terms of their vote share by being listed first on the ballot. Rather, sometimes candidates appear to benefit by being first, other times being first actually decreases their vote shares. Sometimes candidates benefit by being last on the ballot, but sometimes they also do worse if they are last on the ballot.
- We find little reason to believe, that once we control for partisanship, ideology, and demographic factors, that ballot order effects (no matter their direction) are potentially large enough to influence anything but a very small fraction of races that are exceedingly close.
- Our analysis does not indicate that ballot order effects (of any direction, or for either being first or last) are not more likely for any particular party candidates and are not more likely in less salient races.
- One possibility to consider that would help to eliminate any possible ballot order effect would be to increase the number of rotations. However, this entails additional costs (administrative costs of running the election and the potential for voter confusion).

## Works Cited

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