Ballot Order Effects in Referendum Elections

John G. Matsusaka*  
University of Southern California

Are propositions listed at the top of the ballot more likely to pass than propositions listed at the bottom of the ballot? A large body of research has investigated the effect of ballot position in candidate elections, but there is little research on order effects in referendum elections. This paper offers evidence from California during 1958-2012 using a research design that addresses some challenges to causal inference. The main finding is that being listed at the top of the ballot has essentially no effect, positive or negative, on the approval rate. There is some evidence that ballot position matters conditional on initial voter beliefs, and that certain types of proposition fare better at the bottom than the top of the ballot. The paper develops a formal model explaining how ballot order effects might emerge, based on the idea of decision fatigue.

February 2014

* Marshall School of Business, Department of Political Science, and Gould School of Law at the University of Southern California. Comments welcome: please contact the author at matsusak@usc.edu. For helpful comments and suggestions, I thank participants at the Initiatives and Referendums Conference at USC in November 2012. I thank USC for financial support.
Ballot Order Effects in Referendum Elections

1. Introduction

In the summer of 2012, allies of California Governor Jerry Brown persuaded the legislature to amend the state’s election code so that the governor’s tax-raising initiative would be listed first among 11 propositions on the ballot. Although the change was officially motivated by a desire to ensure that voters were able to “carefully weigh the consequences of [the] important measures” on the ballot, it was widely believed that the real purpose was to increase the initiative’s chance of passing. Opponents of the initiative argued that the governor’s allies had cynically manipulated the election code to secure the most favorable position for the governor’s proposal.

The implicit assumption in the debate was that ballot position matters for referendum elections, and in particular, that the first position confers an advantage. Yet this assumption is not self-evident, and there is almost no scholarly evidence in its support. There is a healthy literature on ballot order effects in candidate elections, but the explanations offered for order effects in candidate elections do not extend naturally to referendum elections. Voters might be more inclined to select the first name from a list of candidates, perhaps because they lose interest or more quickly accept one of the options as they move down the list, but this line of reasoning applied to propositions would seem to imply roll-off (abstention) moving down the ballot, not a proclivity to vote “no” on propositions at the bottom of the ballot. Although the current literature gives little theoretical or empirical reason to believe that ballot position matters for referendum elections, some political practitioners believe that the first position has an advantage, so it could be that the academic literature has failed to detect an underlying relation that those on the ground have observed.

This paper offers two contributions to the literature. First, a formal model of vote choice is developed that illustrates when and how ballot position effects can emerge in referendum elections. The model revolves around the idea that making decisions is costly, and voters can become fatigued when moving down a list. Decision fatigue is well attested in the experimental literature; the main

---

1 The findings and declarations in the new law (AB 1499, Section 1(a)) stated: “bond measures and constitutional amendments should have priority on the ballot because of the profound and lasting impact these measures can have on our state . . . In recognition of their significance, bond measures and constitutional amendments should be placed at the top of the ballot to ensure that the voters can carefully weigh the consequences of these important measures.”

2 The only empirical studies of this question that I have been able to identify are California Secretary of State (1981), Bowler et al. Happ (1992), Augenblick and Nicholson (2012), and Matsusaka (2013), and each has significant limitations, as discussed below.
innovation of the model is to explain how fatigue interacts with ballot order to influence the choice between voting yes or no on a proposition. The model shows that if decision fatigue makes voters less able to recall information related to a proposition, it creates predictable biases in their vote choices. When fatigued, voters who are inclined initially to support a proposition become less likely to support it, and voters who are opposed initially become less likely to vote against it. The model establishes a logical foundation for ballot position effects, but shows that the first position is not necessarily advantageous.

The second and more important contribution of the paper is empirical evidence on ballot order effects that overcomes some of the previous challenges to causal inference. As discussed below, the existing empirical literature relies almost entirely on correlations that cannot be given causal interpretations without strong assumptions. The main challenge to causal inference is the absence of counterfactual or control data that indicate how a proposition would have fared had it not appeared in the position that it did. The problem is compounded by the fact that ballot positions are not assigned randomly. The paper’s research strategy, which I believe is new to the literature, is to use pre-election opinion data as a “control group.” The Field Poll routinely surveys likely California voters about their voting intentions on select ballot propositions, but in a way that does not depend on the order in which the propositions will appear in the ballot. Therefore, one can argue that the Field Poll captures voter preferences about a proposition independent of the proposition’s position on the ballot. With this pre-election survey data as a benchmark, we can compare a proposition’s actual approval rate when “treated” with its actual ballot position to its expressed pre-election approval rate.

Examining all 670 California propositions from 1958 to 2012, I am unable to find a robust unconditional effect of ballot position on the proportion of votes in favor of a proposition. The data show a modest negative correlation between approval rates and ballot position, but this turns out to vanish when other determinants of approval are controlled. However, the data do show some evidence of a conditional effect of ballot position on approval rates. Using pre-election data to gauge initial voter inclinations, I divide the sample into propositions that initially were supported by a majority of voters, and propositions that initially were opposed by a majority of voters. Consistent with the model of voter fatigue, initially-supported propositions do better at the top of the ballot and initially-opposed propositions do better at the bottom of the ballot. The estimates contain significant noise, but suggest that each position farther down the ballot reduces support by 0.26 percent for initially-supported propositions and increases support by 0.14 percent for initially-opposed propositions.

3 At least since Simon (1955), social scientists have studied the idea that decision making is costly. On the notion that decision making depletes mental resources, see Vohs et al. (2008) and Levav et al. (2010). See Tierney (2011) for a nontechnical overview.
The paper is intended to speak to policy makers and practitioners who are engaged in the design of ballots; to the extent that ballot position conveys an advantage, ballots should be designed to equalize the playing field. The paper is also intended to speak to scholars of direct democracy. Ballot propositions continue to play a central role in the policy making process in many American states and cities, and appear to be driving the national agenda on some issues such as same-sex marriage and marijuana legalization. Because the use of direct legislation is motivated by the belief that laws passed directly by the voters are more likely to reflect their preferences than laws passed by legislatures, it would be of concern if inessential factors such as ballot design have a big effect on the fate of propositions. The evidence in the paper suggests that on average, ballot position is unlikely to have a large effect on election outcomes, allaying the concern to some extent. But at the same time, the evidence suggests that positional effects can arise in certain circumstances, and that it may be useful to devote some thought to ballot design in these situations.

2. Institutional Context
At the level of basic correlations, propositions listed at the top of the ballot do better than propositions listed at the bottom of the ballot. Figure 1 plots the approval rate \( \frac{\text{yes votes}}{\text{yes votes} + \text{no votes}} \) on each California ballot proposition during the period 1958-2012 against the proposition’s ballot position, where #1 indicates the measure was listed first. The solid line, from a linear regression, shows that there is indeed a negative relation between votes in favor and ballot position; approval falls approximately 0.5 percent with each additional position.\(^4\) Activists may be aware of this basic correlation, which could be the basis for their belief that appearing at the top of the ballot increases the chance of success.

Of course, while Figure 1 shows that historical approval rates decline moving down the ballot, it does not tell us that ballot position causes the declining approval rates. It could be that more popular measures are more likely to be placed at the top of the ballot, or that some other factor drives both approval rates and ballot position. The recent California episode illustrates how this could happen. Before it was modified in June 2012, the state election code read:\(^5\)

> The order in which all state measures that are to be submitted to the voters shall appear upon the ballot is as follows:

\(^4\) The figure includes 670 observations. The data source is the Initiative and Referendum Institute. For a more extensive description of voting patterns on California propositions, see Matsusaka (2013).

\(^5\) California Elections Code 13115, enacted by Stats. 1994, Ch. 920, Sec. 2, SB 1547.
(a) Bond measures in the order in which they qualify.
(b) Constitutional amendments in the order in which they qualify.
(c) Other Legislative measures in the order in which they are approved by the Legislature.
(d) Initiative measures in the order in which they qualify.
(e) Referendum measures, in the order in which they qualify.

To define terms, (a) a bond measure is a proposal placed on the ballot by the legislature that authorizes the state to issue bonds; (b) a constitutional amendment is a proposal to amend the state constitution, placed on the ballot by the state legislature or by citizen petition; (c) “other legislative measures” are statutory proposals, usually modifications of initiatives; (d) an initiative is a new law—constitutional amendment or statute—that is proposed by citizens and qualifies for the ballot by petition; and (e) a referendum is a proposal to repeal a law recently passed by the legislature, qualified for the ballot by petition.6 As can be seen, the original code placed legislative proposals (bond issues, constitutional amendments, statutes) first followed by citizen proposals (initiatives and referendums). Within each category, propositions were ordered by the date at which they qualified for the ballot.7

After it was modified in June 2012, the election code became:8

The order in which all state measures that are to be submitted to the voters shall appear upon the ballot is as follows:

(a) Bond measures, including those proposed by initiative, in the order in which they qualify.
(b) Constitutional amendments, including those proposed by initiative, in the order in which they qualify.
(c) Other Legislative measures, other than those described in subdivision (a) or (b), in the order in which they are approved by the Legislature.

---

6 Ballot proposition terminology varies by state and country. In the California election code, a “referendum” is a proposal to veto a law passed by the legislature; elsewhere it refers more generally to any popular vote on a law, as in the title of this paper.
7 The pre-2012 code is actually somewhat ambiguous. One could read the law to say that a bond measure proposed by initiative is to be included in subdivision (a) and a constitutional amendment proposed by initiative is to be included in subdivision (b). Under such an interpretation, subdivision (d) would seem to apply only to non-bond, non-amendment initiatives. The description in the text describes how the law was implemented in practice.
8 An underline is new text; a strikethrough is deleted text. The code was modified by Stats. 2012, Ch. 30, Sec. 2.
(d) Initiative measures, other than those described in subdivision (a) or (b), in the order in which they qualify.

(e) Referendum measures, in the order in which they qualify.

The new code blurs the distinction between legislative and citizen-initiated proposals. Now bond measures are listed first, regardless of whether they originate from the legislature or citizen petition, followed by constitutional amendments, regardless of whether they originate from the legislature or petition. For non-bond statutory proposals, the ordering stays the same: legislative proposals followed by citizen initiatives. Referendums remain at the bottom of the ballot.9

The California elections code introduces several potential selection effects. First, prior to 2012, it placed proposals from the legislature ahead of citizen proposals. Because legislative proposals must garner support in both houses – supermajority support in the case of constitutional amendments – they are likely to have broad appeal.10 Initiatives and referendums, on the other hand, require only signatures of a small percentage of the electorate.11 Historically, legislative measures have a much higher probability of approval than citizen measures; during the period 1958-2012, 72 percent of legislative proposals were approved compared to 38 percent of citizen-initiated proposals. Second, bond proposals appear before constitutional amendments which appear before statutory measures. Bond proposals have to pass a different screening process than constitutional amendments (see footnote 10), which could cause voters to view them differently. It is also possible that voters may be more hesitant to amend the constitution than to approval a bond measure. Historically, during the period 1958-2012, voters approved 78 percent of legislative bond measures, 68 percent of legislative constitutional amendments, and 79 percent of legislative statutes. Third, measures that qualify at an earlier date appear toward the top of the ballot. Proposals that are inherently more popular may qualify earlier because it is easier to achieve a legislative consensus on them and easier to collect enough signatures.

9 Governor Brown’s Proposition 30 was an initiative that proposed to amend the constitution. Because it was an initiative, it was originally included in subdivision (d), and because it qualified later in the cycle than other initiatives, it was slated to appear near the bottom of the ballot. By giving precedence to constitutional amendments, whatever the source, the revised code moved the governor’s proposal to the top of the ballot; there were no bond propositions in that election and Proposition 30 was the only constitutional amendment.

10 To reach the ballot, a bond proposal requires a majority vote in both the Senate and General Assembly and signature of the governor; a constitutional amendment requires a two-thirds vote in both houses but does not require signature of the governor; and a statute that amends an initiative requires a majority vote in both houses and signature of the governor.

11 The signature requirement, expressed as a percent of the votes cast for governor in the previous election, is 8 percent for initiative constitutional amendments and 5 percent for initiative statutes (since 1966) and referendums.
3. Existing Literature

The literature on ballot position effects in candidate elections is extensive and long-running. In a well-known survey, Miller and Krosnick (1998) observe that while much of this literature concludes that candidates benefit from being listed first, the estimated effects are often small and the research designs often do not offer convincing identification of causal effects. The more recent literature that employs stronger research designs does not always find meaningful or consistent position effects (see Alvarez et al. (2006) and Ho and Imai (2008), or in contrast Meredith and Yuval (2013)). Such ballot order effects as do exist are typically attributed to voters losing interest or ceasing to seek favorable information about candidates as they move down the ballot (satisficing).

When considering the evidence from candidate elections, it is important to recognize that selecting one candidate from a list is a fundamentally different problem than deciding whether to vote yes or no on a series of propositions. In a candidate election, voters face a problem like the following:

Choose one:
- T. Butler
- A. Iommi
- J. Osborne
- W. Ward

Voters can select one and only one name from the list. If voters satisfice – stopping once they find a “good enough” option – or become tired moving down a list, then appearing at the top of the ballot in a candidate election would confer an advantage.

The problem facing voters in a referendum election is different:

Proposition 1  Choose one:  □ Yes □ No
Proposition 2  Choose one:  □ Yes □ No
Proposition 3  Choose one:  □ Yes □ No
Proposition 4  Choose one:  □ Yes □ No

If voters become fatigued when moving down the list of propositions, we might expect to see more abstention moving down the ballot, but it is less obvious why voters would be more inclined to check
the “No” box as they move down the ballot. Evidence of order effects from candidate elections, then, does not seem to extend easily to referendum elections. To understand whether position matters in referendum elections, we need to evaluate evidence from referendum elections.

The existing literature using data from referendum elections is meager. The earliest statistical evidence appears to have been compiled and published by the California Secretary of State (1981). That study reports the mean percentage of votes in favor by ballot position for all California propositions during the period 1884-1980. The data show an irregular pattern, with no clear evidence that approval rates drop when moving down the ballot. The presentation is entirely descriptive; no statistics or parametric results are reported and no attempt is made to control for selection and other effects.

Bowler et al. (1992) examine a subset of these data, 190 California propositions during 1974-1988, in a more systematic way. The study reports regressions of the percentage of votes against a proposition on its ballot position and several control variables, including type of measure (initiative, bond measure, constitutional amendment), type of election (presidential, general, primary), number of words in a proposition, and campaign spending (Table 1; reproduced in Table 5 of Bowler and Donovan (1998)). The regression includes first and second order terms for ballot position, and the coefficient estimates imply a U-shaped relation that bottoms out at position #8. That is, votes against a proposition decline over the first eight ballot positions, and then increase over the subsequent ballot positions. There is no theoretical reason to expect ballot order effects to reverse at position #8, so one might suspect the pattern to be spurious.

Matsusaka (2013) examines 637 California propositions during 1960-2010. The study documents an overall negative relation between approval rates and ballot position, but shows that this relation is mainly due to the fact that voter initiatives, the least popular type of proposition, are typically assigned to the bottom of the ballot. When initiatives, bond measures, and legislative constitutional amendments are considered as separate groups, the correlation between approval and ballot position vanishes, except in the group of bond proposals. The study also reports non-California evidence on ballot position using a sample of all 1,058 state-level propositions that appeared in the other states during the period 2003-2012. A negative relation between approval and ballot position appears in this sample as well, but again, much of it appears to be due to legal rules that place inherently unpopular propositions at the

12 For overviews of the literature on initiatives, referendums, and other ballot propositions in general, see Gerber (1999), Lupia and Matsusaka (2004), and Matsusaka (2004).
13 The data are reported in an unnumbered table with the heading, “Success Rate of Each Ballot Position.”
14 The coefficient on ballot-position is -2.12 and the coefficient on ballot-position-squared is 0.13. Therefore, the inflection point is \(\frac{-2.12}{2 \times 0.13} = 8.2\).
bottom of the ballot. When estimated as separate groups, a correlation between approval and ballot position does not appear for bond measures and legislative constitutional amendments, but does appear for initiatives. It is difficult to determine if the correlations that appear in subsamples are causal or spurious.

The California Secretary of State (1981), Bowler et al. (1992), and Matsusaka (2013) studies are largely descriptive. The one existing study that employs plausibly random assignment to identify effects is Augenblick and Nicholson (2012). That study, which uses precinct-level voting data from San Diego County during 1992-1996, exploits the fact that a typical ballot includes a set of state and local candidate races that are listed before the state propositions, and the set of state and local candidate races varies by precinct. Because of variation in the number of state and local candidate races, voters in different precincts may find the ballot propositions preceded by a different number of races. For example, if voters in one precinct face a state senate race while voters in another precinct do not face such a race, the propositions will appear one position farther down the ballot in the first precinct than the second precinct. Using this variation, the study finds that proposition approval rates are lower when they are listed farther down the ballot; specifically each position farther down the ballot results in 0.11 percent fewer votes in favor. The Augenblick and Nicholson study is an important step forward in estimating the effect of ballot position, and is the clearest evidence to date that fatigue may generate ballot order effects. However, the study may be something of a special case because the variation it exploits – moving the entire block of propositions lower on the ballot – may not be the same exercise as moving one proposition to another position within the block.

4. A Model of Decision Fatigue with Position Effects

A. Theoretical Background

The literature is not rich in theoretical explanations for position effects in referendum elections, and formal models appear to be nonexistent. Most empirical work has been motivated by findings in the psychology literature. One idea is confirmatory bias: people search through a list until they find an item that is acceptable and then they stop searching. According to this argument, fatigue causes voting against a proposition because tired voters stop seeking information that would justify a vote in favor (Miller and Krosnick, 1998). This argument is based on experimental evidence showing that when faced with choices, people begin by searching their memory for reasons that would lead them to select an

---

15 An early version of Augenblick and Nicholson (2012) contained what appears to have been the first formal model, but the authors have retired the model in the latest version.
option rather than reasons not to select an option. When fatigued, they think less about each option and are less likely to generate supportive thoughts. If we think of voting yes on a proposition as the confirming or supporting action, this argument implies that as voters become fatigued they will become less likely to vote in favor of a proposition. However, the underlying experimental evidence does not seem to rule out the possibility that voters use mental effort to seek out evidence to justify a vote against a proposal, in which case position would work in the opposite direction.

Another argument has to do with risk aversion: fatigue causes voting against a proposition because weary voters become averse to the risk inherent in new proposals (Bowler and Donovan, 1998). Some research suggests that as people become fatigued, they are more likely to choose simple or default options (see Levav et al. (2010) for discussion and evidence.) If voters view the proposed new law as more risky than the status quo – or feel that sticking with the status quo is the safe or default option – then fatigue would lead to a greater proclivity to support the status quo, that is, to vote no.

Both the confirmatory bias and risk aversion arguments are premised on the notion that voters become fatigued when moving down the ballot. Because fatigue is known to be associated with decision avoidance (e.g. Iyengar and Lepper (2000)), both arguments seem to predict increasing roll-off moving down the ballot. It is less obvious why mentally depleted voters would switch to voting against propositions rather than take the option of abstaining.

This section outlines an explicit formal model of decision fatigue in referendum elections. The model does not assume that fatigue changes decisions per se, but rather that it affects the cost of recalling information used to make decisions. From this assumption, the model shows how fatigue can lead to order effects. The model is intended to formalize and explore the logical implication of one particular argument that has initial plausibility and has attracted some attention. Because the purpose of the model is to bring out basic intuitions and frame the empirical analysis, I make a number of strong but inessential assumptions that keep the model fairly simple.

B. Model

The voter faces a list of propositions with ballot positions indexed \( n = 1, \ldots, N \), each of which can be approved or rejected. If a proposition is approved then a new law takes effect, giving the voter a payoff \( x_{NEW} \); if the proposition is rejected then the status quo prevails, giving the voter a payoff \( x_{SQ} \). Payoffs are uncertain and depend on the state of the world \( s \in \{1, 2\} \) according to:
Payoff = \begin{align*}
\{ & x_{\text{NEW}} = B, & x_{\text{SQ}} = 0, & \text{if } s = 1; \\
& x_{\text{NEW}} = 0, & x_{\text{SQ}} = B, & \text{if } s = 2; \}
\end{align*}

where \( B > 0 \) is the “stakes” of the election. Each voter casts his or her vote for the option that provides the largest expected payoff, and therefore the decision to vote for or against a proposition depends on which state the voter believes is most likely to be true. Initially, each voter has “agnostic” beliefs that the two states are equally likely. During the course of the campaign, voters acquire information that changes their beliefs: a fraction \( \alpha \in [0,1] \) of the voters (“initial supporters”) acquire information indicating that \( \Pr(s = 1) = p > .5 \), and the other \( 1 - \alpha \) voters (“initial opponents”) acquire information indicating that \( \Pr(s = 2) = p \). \(^{16}\) Information is acquired during the campaign as a result of advertisements, endorsements, research into the issues, casual discussions, reflection, and so forth.

To bring decision fatigue into the problem, assume that once in the voting booth the voter must make an effort to recall the information that he or she acquired during the campaign, and effort becomes more costly with each successive decision. The voter recalls the information on a given proposition with probability \( q \), which is a choice variable. The cost of recalling information with probability \( q \) is \( .5knq^2 \). In this formulation, \( k \) captures the possibility that voters have different costs of recalling information; and ballot position, \( n \), captures ballot fatigue: moving down the ballot, the voter finds it increasingly costly to recall information. As with other elements of the model, the precise functional form is not important; the material assumption is that the decision cost increases with \( n \).

A voter chooses how much effort to make in recalling information by weighing the benefits and costs. Information recall is valuable if it increases the voter’s chance of making the right decision. Without recall, the voter reverts to agnostic beliefs, and votes yes or no with equal probability.\(^{17}\) Successful recall of information then increases the probability of making the right choice by \( p - .5 \). For each issue, the voter chooses the quality of information to solve

\[
\max\{q(p - .5)B - .5knq^2\}.
\]

\(^{16}\) The essential feature of this formulation is that voters face some uncertainty about the consequences of a proposed law. The assumption that the probability is \( p \) for both types of voters economizes on notation but is not essential; the results would go through with separate probabilities \( p_1 > .5 \) and \( p_2 > .5 \). Similarly, the symmetry in payoffs with respect to \( B \) is for expositional convenience and not essential.

\(^{17}\) The assumption that the voter reverts back to agnostic beliefs if recall fails simplifies matters but is stronger than necessary. The main implications would also emerge if the voter could use “nondeclarative” memory (in the sense of Coronel et al. (2012)) to make the right decision with some probability even if recall fails, as long as the probability is less than one, that is, as long as nondeclarative memory is not a perfect substitute for declarative memory.
The solution is \( q^* = (p - .5)B/kn \). The voter is more likely to recall information when information is accurate (large \( p \)), when the stakes \( B \) are high, when the cost of effort \( k \) is low, and critically, when the proposition’s position \( n \) is higher up the ballot.

An initial supporter votes yes with probability one if information recall is successful and votes yes with probability .5 if information recall is not successful; therefore the probability of voting yes is \( q + .5(1 - q) \). An initial opponent votes yes with probability .5 if recall is unsuccessful, and otherwise votes no. Overall, then, the expected fraction of votes in favor is

\[
\text{Approval Rate} = \alpha(q + .5(1 - q)) + .5(1 - \alpha)(1 - q).
\]

The effect of ballot position on the approval rate is

\[
\frac{d \text{Approval Rate}}{dn} = (\alpha - .5) \frac{dq}{dn}.
\]

Because \( \frac{dq}{dn} < 0 \), observe that \( \frac{d \text{Approval Rate}}{dn} > 0 \) if \( \alpha < .5 \), and \( \frac{d \text{Approval Rate}}{dn} < 0 \) if \( \alpha > .5 \). In words, support declines moving down the ballot when initial opinion is in favor of a proposal, but increases moving down the ballot when initial opinion is against the proposal. The first relation – declining support – is the commonly conjectured situation. The second relation – increasing support moving down the ballot – is somewhat surprising. The intuition behind this result is that failure to recall information causes voters to lose confidence in their beliefs and revert back to their uninformed priors. By eroding support for a voter’s informed position, fatigue causes some initial supporters to vote no and causes some initial opponents to vote yes. Which effect predominates depends on the prevalence of the two types of voters in the population. Figure 2 provides a graphical depiction of the relation.\(^{18}\)

The relation depicted in Figure 2 differs from the theoretical predictions in the existing literature in its emphasis on the conditional nature of order effects. For example, the idea that fatigue makes voters more conservative and inclined to support the status quo, predicts that support declines moving down the ballot regardless of the level of initial support. Similarly, a theory that fatigue makes voters less inclined to recall affirmative information would also predict declining support moving down the ballot, independent of the level of initial support.

\(^{18}\) As an aside, it may be worth noting that the main implications of this model (and I suspect in most other theories) rely on an unspoken assumption that voters decide propositions in the order they appear on the ballot. In practice, voters can and sometimes do jump around the ballot and decide propositions in a different order than they appear. In terms of the model developed in this paper, it would be rational for voters not to decide issues in the order they are listed: voters should anticipate that they will become fatigued, and decide the most important issues or the issues where recall is most important first.
The model also produces auxiliary implications. One is that voters who find it easy to recall information (low $k$) will be more sensitive to ballot position. If general elections attract voters with higher information costs than primary elections, as some believe, then the model predicts weaker position effects in general elections. If education is a proxy for information acquisition costs, then highly educated people would be more sensitive to order effects than less educated people.

5. Methods and Data

A. Empirical Approach

Votes in favor of a proposition are assumed to be generated according to:

\[ V_i^{ELECT} = V_i^* + \sum_{j=1}^{N} \alpha_j 1_{j}^{n_i} + \beta Z_i + e_i, \]

where $V_i^{ELECT}$ is the percentage of votes in favor of proposition $i$ in an election; $N$ is the number of propositions on the ballot; $V_i^*$ is the “true” preferences of the voters in the hypothetical situation where voting is uninfluenced by ballot position; $n_i \in \{1,2,3, \ldots, N\}$ is the ballot position of proposition $i$; $1_{j}^{n_i}$ is an indicator variable with $1_{j}^{n_i} = 1$ if $n_i = j$, and $1_{j}^{n_i} = 0$ if $n_i \neq j$; $Z_i$ is other factors that might influence voting behavior such as ballot length and other races on the ballot; $e_i$ is an error term; and $\alpha_1, \ldots, \alpha_N$ and $\beta$ are parameters to be estimated. The parameters $\alpha_1, \ldots, \alpha_N$ capture the effect of ballot position, for example, $\alpha_1$ is the additional votes associated with being listed first. We are interested in the hypotheses $\alpha_j = 0$. The challenge arises when we cannot observe $V_i^*$ because then it becomes incorporated into the error term, and it may be correlated with ballot position.

I propose to get around this problem by using data from pre-election surveys to proxy for $V_i^*$. As discussed below, ballot position is unlikely to be a factor in the Field Poll survey. If the survey responses do not depend on ballot position, then we can assume them to be generated according to:

\[ V_i^{SURVEY} = V_i^* + u_i, \]

where $V_i^{SURVEY}$ is the percentage of respondents who express support for proposition $i$ in the survey, and $u_i$ is an error term capturing sampling error, bias in survey phrasing, and so on. It is possible that $E[u_i] \neq 0$. 
The basic empirical strategy is examine the difference between election returns and pre-election survey results, denoted \( \Delta \). Equations (1) and (2) imply that:

\[
\Delta_i = V_i^{ELECT} - V_i^{SURVEY} = \sum_j^N \alpha_j n_i + \beta Z_i + e_i - u_i.
\]

Assuming that \( u_i \) is uncorrelated with \( n_i \), we can regress \( \Delta \) on ballot position to recover the position effects without needing to knowing the electorate’s underlying preferences. The parameter estimates of \( \alpha_j \) will be unbiased even if ballot position is determined by underlying preferences rather than being randomly assigned.

A less formal way to think about this empirical strategy is that it uses pre-election survey information to reveal the “untreated” preferences on a proposition. This expressed preference is compared to the actual election outcome that has been “treated” with the position effect, and the difference is used to infer the treatment effect. A potential limitation of using pre-election data as a control is the possibility that preferences change between the time of the poll and the election, or that voters express different preferences in an opinion survey than they truly believe. However, to the extent that there are systematic biases in the survey, \( E[u_i] \neq 0 \), they will be absorbed into the intercept term, and will not confound inferences as long as they are not correlated with ballot position.

B. Data

The core data consist of election returns, taken from *Statement of Vote*, published by the California Secretary of State, and pre-election survey data taken from the Field Poll, available at [www.field.com](http://www.field.com) and the Field Poll at UC-Berkeley at [ucdata.berkeley.edu/data.php](http://ucdata.berkeley.edu/data.php). Unless otherwise noted, if the Field Poll conducted multiple surveys on a particular proposition, the data from the final survey, that is, the survey that was closest to the election are used. The Field Poll runs from 1958 to 2012. Of the 670 propositions that went before the voters during that time, Field Poll data are available for 238 of them.

One key variable of interest is the approval rate, or “%yes”, defined to be

\[
\%Yes = 100 \times \frac{\text{yes votes}}{\text{yes votes} + \text{no votes}}.
\]

This is the empirical implementation of \( V_i^{ELECT} \) when using election data, and \( V_i^{SURVEY} \) when using Field Poll data. Abstainers or, in the case of a survey, individuals who decline to state or otherwise fail to give
an opinion in favor or against are ignored. The gap between the election outcome and pre-election survey is defined as

\[ \Delta = \%Yes_{election} - \%Yes_{Field\ Poll}. \]

Summary statistics are reported in Table 1. The propositions in the sample are not representative of all propositions that appeared on the ballot because the Field Poll tends to ask about high profile or controversial propositions. The Field Poll propositions are less popular than other propositions, with a mean vote in favor of 48.5 percent compared to 53.8 percent among all propositions to reach the ballot. Field Poll propositions are much more likely than the full set of propositions to be initiatives (70 percent versus 33 percent), and much less likely to be legislative proposals (27 percent versus 65 percent). This raises a caution about external validity, and suggests that one should be careful about generalizing from the results in this study to low-profile non-controversial propositions. In particular, one might expect fatigue and other cognitive biases to be more important for low-profile than high-profile propositions, meaning that the sample studied in this paper might include propositions in which ballot order effects are least likely to occur.

Table 1 shows that the final Field Poll before the election overstates the percentage of votes in favor by 6.0 percent on average. This indicates a systematic bias in the Field Poll, or more plausibly, a predictable deterioration in support for a proposition leading up to the election. Many election observers have noted that support for propositions tends to deteriorate over time. This probably happens because proponents are usually the first to mobilize – they have to secure legislative approval or collect signatures – and their arguments are the first to reach the voters. As the campaign progresses, a proposition’s opponents become active and some initial support deteriorates in the face of counterarguments. This deterioration in support between the last survey and the election is not a problem for the identification exercise as long as deterioration is uncorrelated with ballot position, and there is no reason to think that the Field Poll bias is related to a proposition’s ballot position.

An underlying assumption of the empirical analysis is that ballot position does not influence responses to the Field Poll. This assumption would be questionable if the Field Poll asked voters about all propositions on the ballot in the exact same order that the propositions appeared on the ballot. That is not the case, however. As noted above, the Field Poll only asked about 35 percent of the propositions that appeared on the ballot. Furthermore, only 14 percent of the surveys included all of the questions, and in 37 percent of the surveys the questions were not asked in the order in which they appeared on
the ballot. For example, the 2002 general election featured seven ballot measures; the Field Poll asked about four of them in the order Proposition 47 – 50 – 49 – 52. The order on the ballot was 46-47-48-49-50-51-52. The survey contains omissions as well as reorderings and does not simply reproduce the order on the ballot.

6. Findings

A. Evidence on Unconditional Effects

Figure 3 provides a rough characterization of the data by plotting the mean gap by position, with 95 percent confidence intervals indicated. Positions greater than #15 are collapsed into a single group because of the scarcity of observations. The means do not show a consistent downward (or upward) pattern. As will be seen, the parametric evidence points in the same direction.

Table 2 reports various regressions of the gap, $\Delta$, on ballot position, following equation (3). These regressions adopt a specification that assumes a unidirectional position effect in order to assess the conventional view that approval declines moving down the ballot. Panel A reports coefficients from univariate regressions. Regression (1) is the simplest; it shows that as a proposition’s position increases by one (that is, it moves down the ballot by one position), the gap decreases by 0.21 percent. This coefficient is different from zero at the 5 percent level of significance. This is evidence that ballot position matters, and on the face of it supports the idea that voter fatigue causes support to decline moving down the ballot, but will be shown to be spurious.

The remaining regressions of Panel A explore the robustness of this finding. Regression (2) is the same as regression (1) except that extreme values of the dependent variable have been Winsorized at the 95th percentile. This regression mitigates the possibility of the pattern being driven by outliers. As can be seen, the coefficient is essentially the same in regression (2) as in regression (1). Regression (3) explores sensitivity to a different outlier concern by establishing a maximum ballot position of #16. As Figure 1 shows, the numbers of propositions with positions greater than #15 is rare, so the column (3) specification mitigates the chance that these extreme positions are driving the result. The coefficient remains essentially the same as in regressions (1) and (2).

---

19 The Field (California) Poll: Codebook 02-05, questions Q19 to Q26.
20 I also Winsorized (but do not report) at the 90th percentile and the results were similar.
21 I also estimated but do not report regressions in which the dependent variable was a dummy variable equal to 1 if the election outcome exceeded expectations, and 0 if the outcome fell short of expectations. The connection between this dummy variable and position was weaker than regressions (1)-(3) and not statistically significant.
Finally, regressions (4) and (5) of Table 2 estimate the regression separately for general elections and all other elections. Some argue that general elections attract a different type of voter than primary or special elections, in particular, less informed voters (see Berry and Gerson (2010) for a recent overview). One might expect less informed voters to be more vulnerable to cognitive biases such as those caused by decision fatigue, however, the formal model above predicts that informed voters will be more sensitive to order effects. Regression (4) shows that a position effect appears in general elections, while regression (5) fails to show significant evidence of a position effect in primary and special elections. As will be seen, this pattern is not robust.

Panel B of Table 2 adds control variables to the regressions. The first control variable is ballot length. Previous research suggests that voters are more likely to vote against a proposition when it appears on a ballot with many other propositions (Bowler et al., 1992); see Iyengar and Kamenica (2010) for a general discussion of how the size of the choice set affects decision making. To the extent that long ballots erode support for individual propositions, the lower approval rate associated with high-numbered propositions may be due to the longer ballots on which those propositions appear. Regression (6) confirms that propositions on longer ballots receive fewer votes in favor, independent of the proposition’s own ballot position. Each additional proposition on the ballot reduces the approval rate by 0.29 percent on average, a relation that is statistically significant at the 1 percent level. The coefficient on ballot length is negative and statistically different from zero in all regressions in Panel B.

The second control variable is a dummy equal to one if the proposition was an initiative, as opposed to a proposal from the legislature or a referendum. Initiatives might be expected to attract more attention before the election, and therefore show less of a gap between election approval and pre-election approval. This turns out not to be the case: the coefficient on the initiative dummy suggests a larger gap for initiatives, although the coefficient is not distinguishable from zero at conventional levels of significance in any of the regressions.

In terms of the central question of how ballot position affects the approval rate, inclusion of the ballot length variable has an important effect. In regression (6) of Table 2, once ballot length is included, the coefficient on ballot position plunges in magnitude to -0.04 and is no longer close to statistical significance. The same pattern appears for the Winsorized specification in regression (7) and the capped position specification in regression (8). Inclusion of the ballot length variable also reduces the magnitude of the coefficient in the general election subsample regression (9), and it becomes statistically insignificant. Somewhat anomalously, inclusion of the ballot length variable in the primary/special election subsample increases the magnitude of the positive coefficient on position, and it becomes
distinguishable from zero at the 10 percent level, implying that being at the bottom of the ballot increases the chances of approval during a primary or special election.

I also estimated but do not report the Panel B regressions under a variety of alternative specifications in order to assess the robustness of the findings. Alternatives included: inclusion of election-specific fixed effects; allowing for a separate effect for the first position, and a separate effect for the last position; inclusion of time dummies allowing for the possibility of improvements in the Field Poll over time; inclusion of dummy variables for bond propositions and for referendums; inclusion of controls for the fraction of undecided voters. For all of these alternatives, it continued to be the case that there was no significant relation between approval rates and ballot position.

The main message from Table 2 is the absence of a robust relation between approval rates and ballot position. After controlling for ballot length, votes are unconnected to ballot position. It follows that the negative relation that appears in raw correlations such as Figure 1 is probably spurious. The only hint of evidence for a position effect appears in the subsample of primary or special elections, where there is a noisy positive connection between ballot position and votes.

**B. Randomized Ordering in the 1994 Field Poll**

It turns out that the Field Poll conducted essentially a randomized controlled experiment in its survey for the June 7, 1994 primary election. Four bond propositions were on the ballot, Propositions 1A, 1B, 1C, and 180. Each proposition authorized a bond issue for a different purpose (seismic retrofit, K-12 schools, higher education, or parklands). The Field Poll asked respondents if they expected to vote for or against each proposition. Half of the respondents were asked the questions in a random order, and half were asked the questions in the order they were to appear on the ballot (1A-1B-1C-180). This experiment presents an interesting opportunity to check for order effects because of the availability of a clear “order-free” benchmark.  

Table 3 summarizes the responses. In the randomized sample, column (1), the highest pre-election approval rate was 72.9 percent for Proposition 1A and the lowest was 59.3 percent for Proposition 180. Column (2) reports the responses when the questions were asked in the order they were to appear in the ballot. If the top of the ballot is a favored position, the gap ($\Delta$) between the approval rates with the actual order and the approval rates with the randomized order should decline moving down the ballot. There is no evidence for such a pattern. Column (3) reports the approval rates

---

22 Although this study is not new, I am not aware of it having been discussed anywhere in the scholarly literature. I report it here to bring it to the attention of researchers in the area.
in the actual election. As is common, overall support eroded substantially between the survey date (early April) and the actual election (early June). More to point, the $\Delta$ between the approval rates in the election and the randomized order survey does not show a convincing pattern of declining moving down the ballot. This evidence is hardly conclusive, but it reinforces the finding in the previous section of a lack of evidence for order effects.

C. Evidence on Conditional Effects

The lack of evidence for a unidirectional effect of ballot position does not support the idea that propositions fare better at the top than at the bottom of the ballot. While not contradictory to the formal model of ballot fatigue developed above, this finding does not constitute a test of the model because the model can generate positive, negative, or no order effects depending on parameters. In order to put the theory to a stronger test, this section examines one of the model’s more parsimonious and nonobvious predictions, that the top of the ballot should be advantageous for propositions that are favored by voters at the beginning, while the bottom of the ballot should be advantageous for propositions that lack voter support at the beginning (Figure 2).

To evaluate these predictions, the propositions are divided into two groups, those for which the pre-election Field Poll indicated a majority in support and those for which the pre-election survey indicated a majority in opposition. The regressions are the same as before except that two variables are introduced for ballot position, one for the initially favored propositions and one for the initially disfavored propositions. The model predicts that the two position coefficients will be different from each other, with the initially supported coefficient negative and the initially opposed coefficient positive.

Table 4 reports the results. As before, each column reports coefficients from a regression in which the dependent variable is the difference between the final approval rate and the pre-election approval rate. The regression in column (1) with no control variables shows that approval rates decline moving down the ballot for propositions with a pre-election majority in support. Approval rates are essentially unrelated, both quantitatively and statistically, to position for propositions with a pre-election majority in opposition. The F-test for the hypothesis that the position effect is the same for initially supported versus initially opposed propositions rejects the hypothesis at the 1 percent level.

The regression in column (2) of Table 4 introduces three control variables: ballot length, a dummy for initiatives, and a dummy for general elections. The coefficient on position remains negative and statistically significant for propositions with a pre-election majority in support and remains positive but not statistically significant for propositions with a pre-election majority in opposition. The point
estimates indicate that each position down that ballot reduces the approval rate by 0.26 percent for propositions that are initially supported by a majority, and increases the approval rate by 0.14 percent for propositions that are initially opposed (although again the latter cannot be distinguished from zero at conventional levels of statistical significance.) As for the main issue, the hypothesis that the coefficients are equal can be rejected at better than the 1 percent level.

Because the Field Poll systematically overstates a proposition’s support by 6 percent compared to the final election outcome, one could argue that propositions with 50 percent support in the Field Poll are actually likely to fail. To allow for this possibility, the regression in column (3) of Table 4 divides propositions according to whether their pre-election support was greater or less than 56 percent. This classification slightly increases the magnitude of the coefficients of interest, but the basic patterns and main conclusion remain the same.

Finally, the regression in column (4) of Table 4 classifies propositions according to their support on the first pre-election survey (recall that elsewhere the paper uses approval rates from the final pre-election survey). This changes the classification of 28 percent of the sample. Under this classification scheme, the coefficient on position remains positive when there is a pre-election majority in support, and the coefficient on position remains negative when there is a pre-election majority in opposition. Neither coefficient is estimated with enough precision to statistically distinguish it from zero at conventional levels of significance, but the hypothesis of equality of the two position coefficients still can be rejected at the 1 percent level. In terms of the model, the early survey results may be capturing voters before they have been exposed to much campaign information, and therefore some still have agnostic preferences.

The main finding is that the coefficient on position is larger for propositions that are struggling than for propositions that are doing well before the election. To further assess the robustness of this finding, I estimated a variety of other regressions that I do not report. Among them, I estimated the regressions after winsoring the gap variable and after capping the position at 15; I included election-specific fixed effects; I included time dummies; and I estimated regressions separately on pre- and post-1994 samples. The main findings continue to appear in all of these alternatives.

To summarize, the main message from this section is that ballot position effects appear to operate in opposite directions for propositions that start out ahead and propositions that start out behind. While not always estimated with precision, the point estimates consistently indicate that approval rates decline moving down the ballot for propositions that start out ahead and increase
moving down the ballot for propositions that start out behind. These patterns are consistent with the simple model of decision fatigue that was developed above.

7. Discussion and Conclusion
Direct democracy continues to play an important role in policy making in many states, and recent initiatives appear to be influencing national discussions on same-sex marriage and marijuana legalization, among other issues. There is a healthy literature that investigates the effect of ballot position in candidate elections, but very little evidence whether position matters in referendum elections. In candidate elections, voters must choose one name from a list, while in referendum elections voters must choose yes or no on each proposal in a list. We might expect voters to tire moving down the ballot and start abstaining at some point, but existing theory gives little reason why they should develop a proclivity to vote no as they move down the ballot.

This paper attempts to make two contributions to the literature. First, it develops a formal model of voting based on the idea of decision fatigue. The model explains how decision fatigue can influence the choice between voting yes or no, and how ballot position might influence the outcome of a referendum election. The basic intuition is that fatigued voters are less inclined to recall information, and a lack of information tends to erode strong views for or against a proposition. Fatigue then causes some initial supporter to change their vote to no, and causes some initial opponents to change their votes to yes.

Second, and more important, the paper provides evidence whether position does in fact matter, using a new empirical method that avoids the main challenges to causal inference. The basic idea is to use pre-election data from surveys to identify voter opinion on a proposition independent of the effect of its ballot position, and then compare that information to actual election returns where position potentially matters. Based on analysis of 238 California ballot propositions during the period 1958-2012, I find no reliable evidence that approval rates decline when moving down the ballot. It is always challenging to document the absence of an effect; the approach I have adopted is to estimate a large number of regressions with a wide variety of specifications. I am unable to find evidence of convincing unidirectional order effects in any of these alternative specifications. The negative correlation between approval rates and ballot position that appears in simple comparisons such as Figure 1 thus appears to be spurious.

Even though there is no convincing evidence that any particular position on the ballot is generally advantageous, there does appear to be some evidence of conditional position effects: for
propositions that enjoy majority support before the election, approval rates decline moving down the ballot; conversely, for propositions that lack majority support before the election, approval rates increase moving down the ballot. This pattern is consistent with model of decision fatigue based on costly information recall.

Ballot design questions have attracted substantial attention since the controversies in Florida during the 2000 presidential election. From the perspective of ballot design, at first blush the paper seems to suggest that ballot order is not important for referendum elections because the data reveal no systematic difference in approval rates based on position. However, the model raises the possibility that the absence of an effect might not be due to an absence of bias, but rather to offsetting biases. And indeed, the conditional evidence, while preliminary, suggests that order effects may be operating in offsetting ways. Randomizing the position of propositions on the ballot, a procedure that can be effective in candidate elections, will not necessarily improve the situation in referendum elections. Randomization would simply equalize the bias across propositions – that is, no proposition would be subject to more bias than another – but it would not eliminate bias. The root problem from a representation perspective is that once voters become fatigued, they may stop using their available information and their decisions will be less likely to reflect their “true” views. Representation is going to be distorted for those propositions at the bottom of the ballot – assuming that fatigue is a real issue – regardless of whether they are assigned to that position randomly or not. A partial solution to fatigue problems would be shorter ballots. Short ballots also seem desirable given the evidence that voters seem to turn negative toward all propositions on a long ballot simply because the ballot is long.

In terms of generalizability of the findings, it should be kept in mind that the research design forces the analysis to focus on high profile or controversial issues that were interesting enough to be included in the Field Poll. These include only about a third of all propositions that went before the voters. The other propositions are likely to be decided in an environment with significantly less information available. Whether this leads to stronger or weaker cognitive biases and position effects is not clear ex ante from a theoretical perspective, but it seems important to understand how ballot order affects voting behavior on those propositions as well, especially when thinking about ballot design policies.
References


Figure 1. Percent in Favor by Ballot Position, California Propositions 1958-2012
Figure 2. Effect of Ballot Position on Approval Rate, Conditional on Initial Support

- **Majority in support initially**
- **Majority opposed initially**

<table>
<thead>
<tr>
<th>Ballot Position</th>
<th>%Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Majority in support initially</td>
<td>50</td>
</tr>
<tr>
<td>Majority opposed initially</td>
<td>50</td>
</tr>
</tbody>
</table>

- The graph illustrates the effect of ballot position on the approval rate, conditioned on initial support. It shows that the approval rate decreases as the ballot moves from the majority in support position to the majority opposed position.
Figure 3. Mean Gap (Δ) by Ballot Position
Table 1. Summary Statistics, California Propositions 1958-2012

<table>
<thead>
<tr>
<th>Variable</th>
<th>Field Poll sample ((N = 238))</th>
<th>All props ((N = 670))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>%yes, election</td>
<td>48.5</td>
<td>12.5</td>
</tr>
<tr>
<td>%yes, Field Poll</td>
<td>54.5</td>
<td>13.5</td>
</tr>
<tr>
<td>%yes (election) - %yes (FP)</td>
<td>-6.0</td>
<td>8.1</td>
</tr>
<tr>
<td>Position</td>
<td>8.6</td>
<td>5.8</td>
</tr>
<tr>
<td>Number of props on ballot</td>
<td>14.2</td>
<td>7.1</td>
</tr>
<tr>
<td>Type = legislative bond measure</td>
<td>0.17</td>
<td>0.38</td>
</tr>
<tr>
<td>Type = legislative other</td>
<td>0.10</td>
<td>0.30</td>
</tr>
<tr>
<td>Type = initiative</td>
<td>0.70</td>
<td>0.46</td>
</tr>
<tr>
<td>Type = referendum</td>
<td>0.03</td>
<td>0.18</td>
</tr>
<tr>
<td>Dummy = 1 if general election</td>
<td>0.61</td>
<td>0.49</td>
</tr>
</tbody>
</table>

*Note.* This table reports summary statistics for the ballot propositions in the Field Poll sample. The last column reports the means for the sample of all propositions (those included and excluded from Field Poll) during the period.
Table 2. Regressions of Gap Between Actual and Survey Approval Rates

**Panel A. Unconditional Regressions**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>-0.21**</td>
<td>-0.21**</td>
<td>-0.22**</td>
<td>-0.27**</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>(0.09)</td>
<td>(0.09)</td>
<td>(0.11)</td>
<td>(0.12)</td>
<td>(0.17)</td>
</tr>
<tr>
<td>Intercept</td>
<td>-4.23***</td>
<td>-4.25***</td>
<td>-4.22***</td>
<td>-4.13***</td>
<td>-5.64***</td>
</tr>
<tr>
<td></td>
<td>(0.93)</td>
<td>(0.90)</td>
<td>(1.03)</td>
<td>(1.35)</td>
<td>(1.30)</td>
</tr>
<tr>
<td>Observations</td>
<td>238</td>
<td>238</td>
<td>238</td>
<td>145</td>
<td>93</td>
</tr>
</tbody>
</table>

**Panel B. Conditional Regressions**

<table>
<thead>
<tr>
<th></th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>-0.04</td>
<td>-0.04</td>
<td>-0.04</td>
<td>-0.15</td>
<td>0.45*</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td>(0.11)</td>
<td>(0.14)</td>
<td>(0.15)</td>
<td>(0.24)</td>
</tr>
<tr>
<td>Number of props on ballot</td>
<td>-0.29***</td>
<td>-0.29***</td>
<td>-0.30***</td>
<td>-0.30**</td>
<td>-0.43**</td>
</tr>
<tr>
<td></td>
<td>(0.09)</td>
<td>(0.09)</td>
<td>(0.09)</td>
<td>(0.12)</td>
<td>(0.20)</td>
</tr>
<tr>
<td>Dummy = 1 if initiative</td>
<td>1.31</td>
<td>1.19</td>
<td>1.30</td>
<td>1.27</td>
<td>1.47</td>
</tr>
<tr>
<td></td>
<td>(1.23)</td>
<td>(1.18)</td>
<td>(1.24)</td>
<td>(1.98)</td>
<td>(1.47)</td>
</tr>
<tr>
<td>Intercept</td>
<td>-2.41*</td>
<td>-2.37*</td>
<td>-2.35*</td>
<td>-1.25</td>
<td>-4.25**</td>
</tr>
<tr>
<td></td>
<td>(1.36)</td>
<td>(1.30)</td>
<td>(1.35)</td>
<td>(2.40)</td>
<td>(1.76)</td>
</tr>
<tr>
<td>Observations</td>
<td>238</td>
<td>238</td>
<td>238</td>
<td>145</td>
<td>93</td>
</tr>
</tbody>
</table>

*Note. Each column of each panel reports a regression in which the dependent variable is \( \Delta \) (or some variant thereof as indicated at the top of each column), where \( \Delta \equiv \%\text{Yes}_{\text{election}} - \%\text{Yes}_{\text{Field Poll}} \). In columns (2) and (7), the dependent variable is Winsorized at the 95th percentile. In columns (3) and (8), ballot positions of 16 or greater are restated at position 16. Significance levels are indicated: * = 10 percent, ** = 5 percent, *** = 1 percent.*
Table 3. Approval Rates from Field Poll with Randomized Question Order

<table>
<thead>
<tr>
<th>Proposition</th>
<th>Ballot Position</th>
<th>Question Order = Randomized</th>
<th>Question Order = 1A-1B-1C-180</th>
<th>Election Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>1A (retrofit bonds)</td>
<td>#1</td>
<td>72.9</td>
<td>72.7 (Δ = -0.2)</td>
<td>45.7 (Δ = -27.2)</td>
</tr>
<tr>
<td>1B (K-12 bonds)</td>
<td>#2</td>
<td>68.0</td>
<td>69.8 (Δ = 1.8)</td>
<td>49.6 (Δ = -18.4)</td>
</tr>
<tr>
<td>1C (higher education bonds)</td>
<td>#3</td>
<td>60.5</td>
<td>58.8 (Δ = -1.7)</td>
<td>47.4 (Δ = -13.1)</td>
</tr>
<tr>
<td>180 (parkland bonds)</td>
<td>#9</td>
<td>59.3</td>
<td>64.2 (Δ = 4.8)</td>
<td>43.3 (Δ = -16.0)</td>
</tr>
<tr>
<td>Respondents/Voters</td>
<td></td>
<td>416</td>
<td>416</td>
<td>4,966,827</td>
</tr>
</tbody>
</table>

Note. The election took place June 7, 1994. Field Poll data are taken from *The Field Institute/The California Poll – 9403*, administered April 1 to April 9, 1994. Columns (1)-(3) report approval rates, defined as votes in favor as a percentage of votes in favor plus votes against. Δ in column (2) is the column (2) approval rate minus the column (1) approval rate; Δ in column (3) is the column (3) approval rate minus the column (1) approval rate.
Table 4. Regressions of Gap Conditional on a Proposition’s Pre-election Support

<table>
<thead>
<tr>
<th></th>
<th>Pre-election opinion based on final pre-election survey</th>
<th>Pre-election opinion based on first pre-election survey</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td><strong>Position, pre-election</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>support &gt; 50%</td>
<td>-0.42***</td>
<td>-0.26**</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.13)</td>
</tr>
<tr>
<td>support &lt; 50%</td>
<td>0.02</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.12)</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number of props on ballot</strong></td>
<td>...</td>
<td>-0.25**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.10)</td>
</tr>
<tr>
<td><strong>Dummy = 1 if initiative</strong></td>
<td>...</td>
<td>1.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.21)</td>
</tr>
<tr>
<td><strong>Dummy = 1 if general</strong></td>
<td>...</td>
<td>0.05</td>
</tr>
<tr>
<td>election</td>
<td></td>
<td>(1.17)</td>
</tr>
<tr>
<td><strong>Intercept</strong></td>
<td>-4.01***</td>
<td>-2.47*</td>
</tr>
<tr>
<td></td>
<td>(0.90)</td>
<td>(1.32)</td>
</tr>
<tr>
<td><strong>F-test for hypothesis that</strong></td>
<td>20.7***</td>
<td>16.9***</td>
</tr>
<tr>
<td>position coefficients are</td>
<td></td>
<td></td>
</tr>
<tr>
<td>equal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Each column reports a regression of the gap (Δ) on ballot position and other control variables. The gap is defined as \( \Delta \equiv %Y_{election} - %Y_{Field Poll} \). All regressions have 238 observations. Significance levels are indicated: * = 10 percent, ** = 5 percent, *** = 1 percent.